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Information Specialist and ICT Lecturer Co-Teach an Online Course: A New Way and What Students Think About It

Best Practice Article

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Abstract

The purpose of this paper is to share a multidisciplinary approach to teaching information literacy (IL) in Laurea University of Applied Sciences in Finland. The paper describes a practical case about the execution of a course 'Information management and communication'. It focuses on how the information specialist and ICT lecturer collaborate from the planning stage of the course to the evaluation phase, and how the implementation is evaluated. The course combines asynchronous learning in an online learning environment and synchronous online real time co-teaching in a virtual classroom. The described course is the first one the distance learning students attend as they complete their Bachelor's degree online. The overall objective of the implementation of the presented course was to ensure that students achieve basic computer and IL skills for further studies. Other important objectives were enhancing online socialization, creating a sense of belonging together as a group, building confidence in studying online and using the library's web services. The objectives were reached with co-teaching and interactive tools during online lessons. Laurea Library has experience from co-teaching with lecturers, and this practical case shows how multidisciplinary collaboration, which benefits all involved, can also be carried out in online learning environments.

Keywords: distance learning, online teaching, multidisciplinary collaboration, information literacy, ICT skills

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Introduction

Laurea University is a multidisciplinary university of applied sciences (UAS), which operates in the greater Helsinki metropolitan region in Finland. It offers degree programmes in Finnish and English for 8000 enrolled students in seven locations. Laurea Library provides services in all of these. Despite the geographical scattering of the unit libraries, Laurea Library is one administrative unit sharing policies, practices, and physical as well as electronic collections.

The worldwide trend in education is swiftly moving towards virtual environments. Also Laurea UAS is currently developing the provision of online education and virtual learning environments. Simultaneously, the staff's know-how about virtual pedagogy and practical skills are promoted. The general trend to teach in online environments is evident in libraries as well. Laurea Library needs to keep up with the changes and develop new ways to deliver information literacy (IL) instruction in order to reach out to the users. The students communicate online and use materials in e-format.

The library has taught freshmen a course on IL basics for many years. The traditional face-to-face teaching has been integrated into the students' first compulsory courses. The aim is to introduce the new students to library services, the library's collections stressing e-materials, and to effective information retrieval. Even though most of the lessons are taught alone, information specialists in Laurea have also been co-teaching with lecturers in the traditional classroom and in projects (Huovila & Puttonen, 2012; Puttonen & Huovila, 2011).

Laurea Library offered an online course for freshmen in early 2000, then changed to face-to-face teaching in classrooms, and is now moving back to teaching in online environments. One reason is technological development. The aim of this article is to present a practical case of a new way where an information specialist and ICT lecturer co-teach the course 'Information management and communication' on the web. The European Conference on Information Literacy (ECIL) in 2013 offered an overview on the current development in IL-teaching (Kurbanoglu et al., 2013). There were several presentations about online IL courses. However, the presentations did not include examples of real-time co-teaching in virtual environments.

This article addresses the question of collaboration between library and teaching staff in virtual environments and discusses the benefits of working together. It also discusses how students experience the implementation. Previously students have completed the library online course by studying independently and self-paced on an asynchronous online learning environment. This case represents a new way in Laurea to carry out a library online course, which 1) has been executed from planning stage to evaluation in collaboration with the teaching staff; 2) is multidisciplinary; 3) combines online real time co-teaching in a virtual classroom with an online learning environment. This article begins with an introduction to online learning and then moves on to describing how the online course was implemented in Laurea UAS. The article ends with a discussion about students' feedback and evaluation of the delivery, and conclusions.

Online Learning

The terminology describing delivering education via the Internet is ambiguous. Definitions change because technology, and hence applied pedagogy, evolves rapidly. Distance learning is a broad term referring to a mode of delivering education when the teacher and learners are physically separate (King, Young, Drivere-Richmond & Shrader, 2001). The content has changed in terms of the technology to span the distances. The path is from postal correspondence via mass media to interactive technologies, and now distance learning is moving towards intelligent flexible learning with semantic web technologies (Anderson & Dron, 2011, p. 81). Currently, in the stage of interactive technologies, terms such as virtual learning, computer-based learning, eLearning and online learning are used interchangeably.

In sum, the above-mentioned terms cover learning which relies on technology to deliver teaching materials and means of communication on the net. Another consistent theme is that computer technologies produce Internet-based learning experiences (Horton, 2012, p. 12; Signor, 2009, p. 11). Blended learning is associated with technology because it combines virtual components and face-to-face delivery. Basically, blended learning refers to using a mixture of different types of learning design to accomplish a certain goal (Horton, 2012, p. 12; Signor, 2009, pp. 12, 6). In this article, the term 'online learning' will indicate the learning process enhanced by ICT. Online learning coincides with the terminology in Laurea UAS's pedagogical strategy. It is a general term for the utilization of data networks and ICT technology as a learning tool (Laurea, 2013).

The term 'virtual learning environment' is closely related to online learning. Learners can log into a course platform and find learning materials, often embedded with multimedia, and assignments provided by the teacher. The learners and teachers communicate using online forums on the platform, chat or other text-based sessions, and email. Web conferencing is a tool for interacting with real-time online audio and video in online learning environments, commonly called virtual classrooms. Despite the change in the instructors' role, pedagogical skills are still needed in moderating online collaboration and creating learning resources (Shepherd, 2013, pp. 13, 16).

The advantage of online learning is that it can combine two types of activities: asynchronous and synchronous. Asynchronous activities support individual needs since learners can control their own pace, materials can be accessed instantly and there is the possibility to learn in smaller chunks, which decrease the cognitive overload. Learners can experience these activities self-paced and stimulate their learning, e.g. by deepening knowledge with the help of permanently posted web pages, multimedia and other background materials. Thus, asynchronous activities require self-directed learning.

Synchronous activities reinforce motivation for studying by peer pressure, because the study group is simultaneously present in the environment. They offer real-time interaction, are time sensitive but geographically insensitive. This kind of activity is useful when all learners have the same needs or questions, or when real-time interaction with the lecturer is essential for the enhancement of studies (King et al., 2001; Shepherd, 2013, pp. 8-9). The challenge is to find a balance in combining these activities so that the design supports the defined learning outcomes as the course design can vary between organizations and even between educators in an organization.

The phases of online course design include: first, preparing the learning process and guidance, which includes designing the online content; then leading and facilitating the online learning; and finally, evaluating for further development. Just as is the case with all courses, there should be an overall objective and explicit learning outcomes. One should note that different pedagogical approaches can be applied also in online environments (Horton, 2012, p. 21; Koli, 2008, pp. 22-23, 48).

A face-to-face course cannot be reproduced as an online course. Shepherd (2013, p. 5) brings forth that in online learning the problem is not the medium, but how the learning environment is designed. According to constructivist pedagogies, interaction is a critical component of quality distance education, despite being always mediated. It must offer possibilities for interaction and collaboration, also with peers, and be engaging. For teaching presence it means design and support of interactions, which ensure the learners' connections with existing and new knowledge resources (Anderson & Dron, 2011, p. 88).

In her literature review, Signor (2009, pp. 27-31) analysed studies comparing performance outcomes in online courses and face-to-face courses. According to the review, the majority of the studies report no significant differences when comparing academic results of

students who experienced online delivery with students who experienced face-to-face delivery. Some studies found improvements to students' academic results during online courses. The increase of deeper understanding and reflection was mentioned. In her own study comparing students who experienced face-to-face teaching (n=182) to those studying also with blended learning (n=274), Signor (2009, pp. 40, 56) found that both groups performed equally well in exams.

Sharon Q. Yang (2013a, 2013b) presented findings on learning outcomes from nine studies comparing library instruction in distance courses to traditional face-to-face IL sessions. The topic is important since there is an ongoing trend of integrating library instruction and IL into online courses. Her findings were similar to those mentioned above. In terms of learning outcomes found in these nine studies, online and face-to-face instruction were equally effective, albeit there might be differences between disciplines. Some studies reveal that online instruction may be slightly more effective.

Online Course 'Information management and Communication', at Laurea Library

As online IL courses started gaining popularity in the beginning of the 21st century, also Laurea Library created an IL basics course with compulsory exercises for freshmen students. The online course was asynchronous, and looking back, emphasized technical skills. After a few years it was cast aside and all IL teaching shifted to traditional classroom teaching. One reason for the change was the lack of personal contact with students and unawareness of the online course's impact. Technology has vastly developed in ten years, which is resulting in moving teaching back to modern online environments. Laurea Library staff already uses online environments in their daily work. Consequently, it is relatively easy to transfer IL teaching to virtual environments.

In 2011, Laurea UAS launched a Bachelor's degree program in business, which is completed with distance learning. All courses are online and contact days take place at the university only twice a semester, for orientation in the beginning and for some exams and student presentations at the end. According to Laurea's pedagogical strategy: "online learning takes place in a virtual environment, where people meet in relation to guidance, counselling and the challenges contained in various learning exercises". The key online learning tool in Laurea is Optima Online Learning Environment (Optima). Tools supporting simultaneous online work e.g. guidance and lectures, include Adobe Connect (AC) remote meeting and teaching system (Laurea, 2013).

It was decided that the first online course in the new virtual degree program, 'Information management and communication', would be executed by two lecturers: an information specialist and an ICT lecturer, who had the main responsibility for the whole course. Optima served as the environment for asynchronous activities by offering materials and instructions. AC was the medium for synchronous activities and as such a platform to experience real time interaction and co-teaching. In addition to scheduled lessons in the lecturers' virtual classroom, the students could interact via webcams and audio in their own AC meeting room.

The challenge in the execution of the course was to merge the expertise of both lecturers to a mixture which would motivate the students and contribute to the defined learning aims. Another challenge was that the enrolled students were adults and concurrently working. It was several years since their previous studying experiences and learning in an online environment was new for them. The motivation for enrollment had been the flexibility to combine studying and working life.

Designing the Course

The course overall objective was to make sure that the students achieve basic computer and IL skills for further studies. IL skills are defined in accordance with the standards for higher education (ACRL, 2000). An important target was to create a positive attitude towards technology as a means of learning, and lessen the fear for technological problems hindering studies. It was of utmost importance to succeed in this, because the whole degree must be completed in the virtual environment. The synchronous real-time lessons are important in order for the lecturers to observe that the participants have mastered the needed skills (Shepherd, 2013, p. 9).

Almost as important was to create a sense of affinity and online socialisation among the students. They would interact during the next three years via the web in various ways as part of their assignments. In addition, peer support is very important, especially during online studies which demand independent study. The sense of belonging together as a group must be achieved right at the beginning of their studies, because later on in distance studies it is challenging. That is to say, the implementation of the discussed course had an influence on the future study process. Horton (2012, p. 3) points out that "instructional design involves selecting, organizing and specifying the learning experiences necessary to teach somebody something".

The primary objectives, which means what the learners were able to do by the end of the course, were: use the technical features of AC and Optima, master efficient use of Office programs, apply library's online resources in their studies, benefit from improved IL skills, and feel comfortable working online. The course outline also included writing references and basics in communication. The course design is already part of online guidance. Therefore the objectives should be reached by assignments, which intertwine different phases of the study process and thus enhance deepening learning (Koli, 2008, p. 103). In the next section, the 2013 implementation is described in detail.

Optima Online Learning Environment and Assignments

The content of the course 'Information management and communication' was divided in Optima into an introduction unit with basic information on how to complete the course, and three substance units. The introduction unit included the course timetable with links to recorded online sessions as the course progressed and a discussion area. It also had links to videos recorded in advance for independent learning. The first unit was titled 'Information technology tools' (A). The content dealt with Office programs and other tools for everyday studies. The other units were titled: 'Information retrieval' (B) and 'Communication and team work' (C).

The three substance units in the learning environment had a simple structure: an introduction page with instructions, folders labelled materials and assignments, and a box for submitting assignments. In our experience, it is important in an online learning environment to inform about dates, assignments and where to find materials very clearly. Designing instructions without misunderstandings is demanding as the overall design must be consistent. Therefore the course had a simple repetitive folder structure with pieces of information in the same order on the information pages. Special attention must be paid to linking course pages with precision.

As Signor (2009, p. 17) notes, the development of online material is resource-intensive both technically and on the educator's workload. The design of an online course requires an added layer of complexity, because the study unit elements are bound to technology. Also high-quality learning outcomes require technical skills when the learning environment is designed.

The information retrieval unit's (B) first online page began by motivating students: "Critical and effective information retrieval and management skills are core skills in working life and studies". Then the aims are listed: to make information retrieval skills more effective, to acquire a diverse way to use the library's e-materials and the Internet, to apply skills learnt in

information technology unit (A), to compile references, to reflect on their own skills. The list is followed by practical details about completing the unit and evaluation.

The overall idea behind the assignments was to combine technological and IL skills. It was important to include the multidisciplinary approach to assignments so that they would match the idea of co-teaching. For example, background materials for the compulsory assignment for the technology unit (A) were found in the library's e-materials, and the assignment for the information retrieval unit (B) put into practice the technological skills taught in unit A.

Project skills are important in the Laurea UAS's learning model. Accordingly, the first unit B assignment was to write a paper reflecting the students' own project management skills. The paper had to be compiled according to layout rules taught by the ICT lecturer. The outline had to be first approved by the ICT lecturer before the information specialist glanced through the text and checked the quality and variety of references. Information retrieval was taught in an online lesson and the background materials about library resources were available on the Optima learning environment. Therefore it was expected from the students, and also mentioned in instructions, that the references must be comprised of versatile types of information from multiple sources, and written according to Harvard style, which is used in Laurea UAS. The information specialist commented every student's reference list by email.

This is a good example of the previously mentioned workload, because it was time-consuming to write individual suggestions about how to correct the mistakes and answer questions by email. Still, in order to advance the students' skills to master the compulsory reference system, they had to be guided individually since mistakes differed. Koli (2008, p. 83) notes that the minutes for guidance per students should be counted already in the planning stage according to the given time resources. This has a direct effect on the intensity of guidance in a course.

The ICT lecturer and information specialist first graded the papers individually, then shared assessments, and finally decided on the final grade together. The chosen information sources and the students' responses on the suggested corrections to writing references were one part of the evaluation criteria. The elements in this assignment, the evaluation, and the real-time teaching, which are discussed later, were based on co-teaching and multidisciplinary interaction.

The second assignment for information retrieval unit B was to make a PowerPoint presentation which included compulsory elements according to the ICT lecturer's instructions. The topic was information literacy skills. The unit B material folder had links to web pages and multimedia which explained what is meant by information literacy, media literacy, and how to critically evaluate web pages. The students had to hand in a presentation which reflected their own skills to the mentioned material. The information specialist did not comment on these assignments. Nevertheless, it was interesting to analyse based on the presentations how the adult students evaluated their own information skills. On the one hand, they considered themselves as competent information seekers, and on the other hand, experienced difficulties in the information flow. The findings from the presented case will be discussed later under evaluation.

The third unit 'Communication and team work' (unit C) was based on self-study before a compulsory online lesson. Shepherd (2013, p. 5) points out that it is less stressful to learn at one's own pace, which was the designed experience for completing this unit. The information specialist chose the unit's background materials to the learning environment and the ICT lecturer recorded a video for self-study. The information specialist added a document to Optima which listed books about communication found in Laurea Library's OPAC Laurus. The document

had a deeper function than just to list books. Firstly, the references could be used as examples of Harvard style. Secondly, keywords were also marked in order to remind the students that the core contents are described and to point out the importance of choosing accurate search words. The topic 'communication' is a good example with many narrower terms. For example books about oral communication were chosen for the list especially to support the assignment for unit C.

The topic of unit C 'Team work and oral communication' was implemented through practice. The assignment was compulsory participation in online group work on social media as a means for communication. Oral communication was integrated into the students' other ongoing course 'Service business'. There was one contact day where the students gave 20-minute team presentations on enterprises analysed for the other course. Putting everything together in the online environments was an indication of team work. As was the case with grading papers, the expertise of the ICT lecturer and information specialist was amalgamated in the evaluation of oral presentations. Both commented during the seminar on fluency, the information specialist on conveying information, and the ICT lecturer on appearance of the PowerPoint. In addition, the students evaluated each other's team presentations as peers according to the same criteria. The information specialist and ICT lecturer compiled a summary feedback of both the written papers and oral presentations, which was saved on Optima.

Adobe Connect (AC) Remote Meeting and Learning System

The last phase in the course design was to "furnish" the virtual classroom and decide on the pedagogical approach. According to Horton (2012, p. 248) "virtual classrooms use collaboration tools to re-create the structure and learning experiences of a physical classroom". As the core outcome was to enable the students to use the AC features with confidence, the virtual classroom had to be interactive and versatile. It was strongly recommended that students attended these online lessons in order to master the features in AC, and they did. In addition, online socialisation was enhanced during synchronous activities.

The lessons were recorded and links to recordings were added to the course timetable in Optima. There were altogether six online lessons, and co-teaching during four of them. The lessons had to be fluent, making sure in advance that no technical problems would arise, because students had to be offered a motivating Internet experience. In practice, this meant on the one hand exact scheduling of interactive assignments dialogues, on the other hand spontaneous dialogue. Still, it was important to use the terminology specific for the AC environment to help the students become familiar with the remote meeting environment.

Both lecturers (hosts in AC) were visible via webcam and audio, which made the virtual class lively and interactive. The students (participants in AC) could communicate by microphone or chat, since too many webcams slowed down the network. Only during one online lesson they interacted via webcams while divided into breakout sessions for group work. When the students entered the virtual classroom, similar types of elements were on display every week. This helped the students to orientate as well as to find instructions and other current information quickly.

The first online lesson began with introductions. Although it took time to ask everyone in turn to introduce themselves, hearing the voice of fellow students created a sense of belonging to a group as well as making everyone's presence live in the new learning environment. After introductions to completing the course, the ICT lecturer discussed and information specialist commented on the general competences which to be achieved before graduating. The PowerPoint presentation in the virtual classroom revealed the confluences of the general competences and IL skills. As an example, the competences include that students acquire, use and evaluate information critically, understand ethical conduct, apply information from their own subject area in research and development.

Next, the students were activated with multiple choice questions to recap what they had heard. Again, both hosts commented on the visible results as experts of different fields. Another activity followed: testing agree, disagree and raise hand statuses. The information specialist wrote statements, such as 'I use Google advanced search, 'I have read e-books' to the online chat and the students expressed their opinion showing their status. At the same time, the activity was an introduction to next week's lesson about information retrieval and gave the information specialist a preconception of the groups' skills. The lesson ended by demonstrating how the hosts can open a web link remotely on the students' computers. This feature was tested with a link to an online quiz, where the students tested their Internet search skills.

The information specialist was the primary host in the second online lesson, albeit the ICT lecturer made remarks and posed questions, and the topic was information retrieval. The dynamics of the lesson were built on alternating five-minute demonstrations with five- to ten-minute individual hands-on exercises. The students were instructed to open another browser, follow the instructions given after the demonstrations, do the exercises in the other browser, return to the virtual classroom when they were ready, and identify themselves with the agree status symbol. It was compulsory to strictly keep the schedule to ensure the planned flow. Hence, some students were asked to return to the virtual classroom unfinished.

The first demonstration in the virtual classroom covered search possibilities with Google. When the information specialist stopped sharing her computer display after the demonstration, an exercise note was available so that students could jump back from another window to check the instructions. The following demonstrations and exercises concentrated on how to find material from the sources available on the library's website. Naturally, the focus was on databases providing e-material and available for students as remote users. The aim was to guide students to new information resources which they could immediately use for their assignment. Even though the third co-teaching lesson contained many hands-on tasks, the information specialist perceived that in order to maintain the students' concentration, the duration of online teaching could not exceed one and a half hours.

The ICT lecturer was the main host in the third lesson, whereas the information specialist's role was merely to explain the reference system. The last co-teaching lesson was about communication and the hosts had equal roles. Introduction to communication was given by the information specialist. The ICT lecturer continued to explain a new AC feature, session breakouts, which the students would later use especially in language studies. Yet, the main point was to encourage students to work in teams in the virtual classroom as well as in their own virtual AC room, which meant interacting in small groups with webcam and audio. Their task was to compile advantages and disadvantages of social media in working life on a collaborative whiteboard. The groups' ideas were shared real-time at the end of the lesson. Hosts could visit the separate rooms, while the team work was progressing and check that the students were able to interact. From the IL viewpoint, critical evaluation was brought up when the output was analyzed and there was a discussion about social media as an information source.

Students' feedback and evaluation

Laurea UAS gathers student feedback at the end of courses in order to receive ratings and open-ended comments, which can be exploited before the next implementations and improve the quality of teaching. Students are expected to fill in a questionnaire with four statements, which are rated from 1-5 (highest), and two open questions about the course implementation. Lecturers of the course concerned have access to the data.

Regarding the presented course, the information specialist analyzed the gathered data. The first and most recent questionnaire is analyzed in order to find out how students experience online teaching. The 2011 course was evaluated by 14 out of 21 enrolled students. In 2013 the

corresponding numbers were 18 out of 22. The cited quotations below are from these questionnaires. This article continues with observations from the students' assignments followed by a reflection by the course lecturers. The analysis offers an insight into the students' needs and ideas about learning in online environments and into their IL competences.

The questionnaire showed that the general evaluation and statements covering learning and teaching of the presented online course varied in 2013 between 4.0 and 4.6 on a scale of 1-5 (highest). The overall result was the same in 2011. However, the students were slightly more discontent about the course design in 2013 ('The implementation functioned in its entirety' from 4.5 to 4.2.), but on the other hand they were more content with teaching ('The guidance supported my studies' from 4.2 to 4.5). This result is supported by the open-ended questions and the lecturers' own evaluation. During the third time around, the lecturers had gained experience from conducting the same course and were more confident online.

The answers to the open-ended question 'In your opinion, what was successful in the course implementation?' were very encouraging. In 2011 and 2013 the ICT lecturer received positive feedback on teaching Office programs, which is challenging when the students' basic ICT skills varied. The students also found co-teaching pleasant and the model with two lecturers functional. Here are some comments from different students:

- *The assignments were good and enhanced learning. The lecturers were on time in the virtual environment and clearly prepared for the technical implementation. There was good interaction between the lecturers. (2013)*
- *The students had many channels and time to pose questions about this course or studying in general. The lecturers took into account that we were new students. (2013)*
- *The lessons were versatile and despite the length kept up interest. Assignments were fitted to the level of competences. (2013)*
- *AC worked surprisingly well. I liked that the students were activated with quick polls and other small activities (green and red check, raise hand). (2013)*
- *All in all, the course was successful and helped familiarize with the Optima environment. (2011)*
- *It was interesting to note that online learning really works, I was skeptical at first. (2013)*
- *Looking at the recordings afterwards has been a good thing! (2013)*
- *The online implementation functioned surprisingly well despite some technical problems, just the right flexibility for adult students. And the possibility to look at the AC-recordings afterwards is great. (2011)*

There were also comments on the questionnaires about information retrieval:

- *Also learning to write references and information retrieval from different sources has been useful. (2013)*
- *I put into practice the different tips in information retrieval. (2013)*
- *I learnt much about information retrieval, the use of information and critical evaluation. (2013)*
- *It makes studying much easier, when I have learnt to utilize different ways in searching for information. (2011)*

The second open ended question was: "In your opinion, how could the course be improved?". In 2011 the suggestions were related to more detailed instructions for references and document layout. Two topics dominated the 2013 answers: finding information from the Optima learning environment and technical problems. In 2011 there were not any comments about Optima, but in 2013 Optima was criticised. Combining two substances in assignments seems to have been confusing at first. The decision to have shorter instructions and more links between pages did not work as well as intended. Regarding technology, there were only a few instances during the 2013 real-time online lessons when the network slowed down or someone had difficulties with the audio. But attending students reacted quickly to any inconveniences in the virtual environments in chat and later in the questionnaire. All in all, the students were satisfied when they got more familiar with the learning environments.

- *I don't have anything to say about the course or what we had to learn, but connections and programs aren't always working well, it would be good to have them functioning properly. (2013)*

- *The use of Optima. Finding the assignments and files was difficult because they were linked here and there. It was hard to follow where to go, and it was compulsory to start over when I got lost. It was also difficult to remember which assignments were finished and which unfinished when the assignments were "within" each other. It would be good to have one list of all assignments on the introduction page, especially since this was the first course and there were two lecturers. (2013)*

- *There should have been examples of a text and how that is referred to in one's own text, and how it is marked in the reference list. Now I looked at the PowerPoint instructions, but got everything wrong still. (2011)*

In 2013 the pedagogical execution of the discussed course's first online lesson was evaluated by a student of HAMK Professional Teacher Education Unit as part of his pedagogical studies. The hosts were unaware of the assessment, which resulted in valuable feedback by email concerning the authentic situation. Accordingly, the instructions in the beginning of the lesson formed a clear picture of the entire course. The varied use of interactive tools facilitated keeping the students focused. The fact that two hosts explained in a dialogue, made the online situation ordinary and natural. This feedback coincided with the students' course feedback.

The students' feedbacks provided many valuable, concrete ideas for the future and are taken into account in the currently ongoing design for the autumn 2014 course. For example, the information specialist and lecturer of communication will co-produce a video about the ethical use of information, the online lessons will continue to have two lecturers in each session, and navigating on the pages will be altered.

The participating students' view about their own IL skills was discovered by analyzing the PowerPoint presentations handed in as assignments. Their reflections on own competences was based on background material in Optima about IL skills, media literacy, and critical internet evaluation found in Optima materials. There were altogether 36 presentations (14 in 2011, 22 in 2013). These students almost unanimously considered themselves as critical and ethical users of information. They claimed to check that sources are accurate and reliable. Many students felt they had good technical skills when searching for information on the web; they also positioned themselves as versatile users of media. However, the weakness that was mentioned most was accessing the needed information effectively and efficiently. The students experienced difficulties in determining the extent of information needed and being objective when choosing information. They wanted to learn more effective information search strategies, as quite a few

described themselves as impatient information seekers. They also felt to have a lack of knowledge about different types of information.

The confusion can be seen from the course papers' reference lists as the students seem to have difficulties in recognising different types of information especially in e-format. As an example, they do not identify an article's issue number, year and pages if it is on the web even though the article would be identical to the printed one. The problem of recognising information types comes up also in everyday customer service, when students ask for advice. The overlap and differences of printed documents and e-documents should be explained in IL teaching, particularly as open access availability is increasing.

Results found in research on the Google generation's information behaviour (Rowlands et al., 2008, pp. 294-295) apply to the discussed online course students. In their study, users view just a few pages on an academic site, for example e-journal, and "bounce" out. The information seeking behaviour is characterized as horizontal, bouncing, checking and viewing. There is a poor understanding of information needs, and consequently, difficulties in developing effective search strategies. In addition, the study reveals a difficulty to assess the relevance of materials from a long list of search hits.

The ICT lecturer and information specialist had an evaluation discussion after the course and were content about the multidisciplinary approach. Co-teaching was a win-win situation. The ICT lecturer felt she was updated about the library's current provision of e-materials. She could benefit from the information: disseminate it to other ICT students when suggesting background materials for assignments, and find suitable e-materials more easily to future course descriptions. For the information specialist, it was an educational experience to collaborate with an expert of online environments throughout the whole process from planning and executing to evaluating. The acquired new skills could later be shared among library staff and put into practice in the libraries online communication, and in designing another online course with library staff. Both experienced that co-teaching online was more relaxing than teaching alone. There was support from a colleague if the planned script did not progress as intended. The problematic situations could be dealt with without the participants noticing them. And simply seeing someone else live on the platform, since students did not have webcams, removed the feeling that one is talking to 'empty walls'.

According to the evaluation discussion, the future challenge will be counting the time resources already in the planning stage according to the work-load, and how to deal with individual guidance in a more effective way. Since the ICT lecturer had the main responsibility and administrative responsibility for the course, reacting to students' questions and solving their general study problems was time consuming. The information specialist experienced the extra workload when commenting the papers. Both have noted during every day work that students of today find it easy to contact instructors and then expect immediate responses. Another challenge which came up in the discussion was sharing information about practical matters in co-teaching. Contradictory information about instructions is confusing for the students, especially when completing online studies. The hosts must also pull together during the online lessons so that they are perceived as professional. According to the students' feedback, the hosts succeeded in this.

Conclusions

In many discussions, there is juxtaposition between teaching online and traditionally face-to-face. In this case the dividing line is vanishing. Students were taught face-to-face in a virtual classroom: they were expected to be present at an agreed time, lecturers were "in front of the classroom" and there was immediate real-time interaction between participants. Laurea Library will continue to develop this mode of delivering IL teaching: face-to-face online with course

materials in a learning environment. Based on feedback and experiences, this mode of teaching and learning has proven to be motivating both for students and staff.

However, it became evident after the online lesson about information retrieval that it was hard for the students to absorb all the demonstrated possibilities, which is often the case in traditional classrooms settings too. They had individual questions, which varied according to individual levels and some could not be answered in front of the group. Answering by email was not always sufficient either, because solving the problem required guiding hands-on in real time. As a result, it was decided to provide an information retrieval workshop during the semester's contact day. The programme would be to recapitulate the provision and remote use of the library's e-materials, which is embedded in course descriptions and offer a possibility for individual guidance. The online environment with webcam and audio would suite individual face-to-face counselling as well. However, it requires agreed counselling hours when the information specialist would be present in the virtual classroom. This mode of instruction can be applied whenever an organization provides the possibility for web conferencing.

In IL teaching, special attention must be paid to clarifying different types of information. Confusion was evident both in the students' own evaluations and in the papers' references. It seems especially challenging to sort out the types found from the Internet. Internet is still seen as one information source instead of a platform for many types of information. This might pose a problem in the future as learning and teaching is moving to online environments, for example Massive Open Online Courses (MOOCs). However, the change can also encourage the collaboration between libraries and teaching staff (Calter, 2013). Critical evaluation should also be discussed thoroughly in IL teaching, as there is high confidence level regarding hits from search engines (Rowlands et al., 2008, p. 296).

One of the main advantages of co-teaching for the participants is the positive Internet experience. As has been mentioned earlier, a dialogue instead of a monologue helps maintain the attention span, which easily loosens in an online environment. An extra benefit for the students is that when interacting in online conference environments becomes commonplace, they obtain essential skills for future working life, which operate in similar environments.

From the information specialist's viewpoint, co-teaching is an effective way to broaden the image of library work in the organisation and enhance collaboration. In addition, multidisciplinary collaboration always helps understand what other professionals do. In this case, it gave tools and prepared us for meeting the challenges we are facing as learning is rapidly moving to online environments.

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