Karen Marie Øvern

Quick library fix
or basic educational skills?

Information Literacy in Higher Education

Masteroppgave i Bibliotek- og informasjonsvitenskap

Høgskolen i Oslo, Avdeling for JBI

Executive summary

This thesis is concerned with how students in higher education can benefit from an embedded information literacy (IL) course. Most information literacy courses are given, by librarians, as single, stand-alone lectures, unconnected with the subject discipline. This is in sharp contrast to most of the learning theorist, who state that learning in context is vital.

I conducted a quasi-experiment with radiography students in Gjøvik University College in Norway, embedding information literacy elements into a module about oncology. The results from the experiment are presented and commented, and they are discussed from a broader perspective of information literacy in general, focusing on how librarians use the terms and what they mean in a practical setting.

This thesis is divided into three main parts. After the introduction, the first part begins with the experiment and the results from the experiment as well as some discussions around them. The second part evolves around issues connected with how we teach and learn as well as assessment methods. The third part is a presentation of some of the concepts connected to information literacy, some of the frameworks that exist and a discussion about terms. This is followed by a final discussion and conclusions.

Main findings from this study are that librarians face a role extension with regards to teaching. More academic librarians will probably begin teaching and there is a need for better education and mentorships. It is not possible to teach in a vacuum and librarians and faculty staff must find better collaboration methods in order to make the IL courses effective and valuable for the students. There is also a great need for better assessment tools and efficient use of these to get a better view of what the students need. Librarians must go further into the students` academic texts and act as mentors and guides.

Information literacy is not a "quick library fix"; but rather a set of complex information skills that can only be taught and nurtured through the subject disciplines in the educational context.

Høgskolen i Oslo, Avdeling for Journalist, bibliotek- og informasjonsfag

Oslo 2011

Acknowledgments

I would like to thank my supervisor, Tord Høivik, for his valuable input and readiness to assist me whenever I needed to discuss process or content of this thesis. I have learned a lot from our talks and this process, and I will endeavour to take this experience with me as I teach.

A very warm thanks to all my colleagues at Gjøvik University College Library for their patience, encouragement and input. You are all special, and I feel lucky to embark on the larger projects ahead with you.

A heartfelt thanks to my mother, for being a pedagogical mastermind, and for sharing her wise and insightful thoughts about teaching. Last, but not least, I would like to thank my patient husband and lovely daughter who have watched me too much in profile lately, as I have been sitting in front of my computer most nights. Thank you all!

Høgskolen i Oslo, Avdeling for Journalist, bibliotek- og informasjonsfag

Oslo 2011

Preface: notes about language

Norwegians write and speak remarkably casual. For instance, it is not unusual for newspapers to write about the PM using his Christian name only. It is also customary for Norwegian scholars to use "I" and "we" instead of "one" and "the author(s)". This tradition is partly culturally based, as Norway is founded on socialistic and egalitarian principles, and partly based on the academic notion that it is impossible for the author to remove herself from the material she is writing about. The idea of the objective researcher has more or less been abandoned. It is, by many Norwegian scholars, considered "old-fashioned" to try to distance oneself from the text.

The thesis will mainly be used in Norway and I chose to follow the Norwegian tradition, using personal pronouns and a personal style, even though I know that this may be considered by others to be unacademic.

Høgskolen i Oslo, Avdeling for Journalist, bibliotek- og informasjonsfag

Oslo 2011

Table of Contents

1.0. Introduction

Information literacy (IL) has become a major issue amongst academic librarians worldwide. Some consider it to be an important shift in the librarians` roles while other considers it to be nothing but a new name for the same things librarians have done for years. This thesis is concerned with how librarians teach and how we can change some of our practices to enhance the students` learning outcomes.

Teaching information literacy can be a challenge for many reasons, and through my work at Gjøvik University College (GUC) the last five years, I have seen the need for something to change. The information literacy courses have not changed significantly the last ten years, even though the emergence of digital technology has changed the way we search for and use information. Digitalisation, globalisation and education for the masses have changed the old structures of academia. As a librarian I see this every day. New technologies, e.g. social media platforms of different kinds, have changed the ways we use the Internet. It has also changed our expectations about what kind of information we can find on the Internet.

However, information literacy courses are very much still delivered as stand-alone lectures unconnected with the subjects that are being taught. During my initial research for this thesis, I spoke to many librarians at different university colleges in Norway only to find that it was a very common problem. Librarians were expected to deliver a ready-made lecture on library services and how to access and search the library databases. No follow-ups on students and no feedback on the lectures. I decided that I wanted to explore this area further.

1.1. About this thesis

The goal of this thesis is to change the current practice of information literacy courses at GUC. I firmly believe that something must change and this has been my motivation for this thesis. A second goal has been to develop an assessment tool that can prove to be effective to assess learning outcomes students in higher education.

I have conducted a quasi-experiment at GUC, teaching one half of a class of radiography students through an entire module, thus integrating information literacy through a period of seven weeks. I have adapted a specific information literacy test for them and used the Critical Incident Questionnaire (CIQ) as an additional tool during the experiment. When the results are put together with an informal interviews of teachers after the experiment, my hope is that this will change the way we teach information literacy, not only at the Section for radiography, but for the entire school.

How do we teach Information Literacy? Is it even possible to teach “a literacy”? What specific skills do we expect students and researcher to have? Who should teach IL? What about assessment? Is information literacy something generic and transferable or something that must be learned in context? Even though my platform is connected to a practical context and seeks to find some answers through an experiment, I find myself sucked into a vortex of words, terminology and traditional patterns and I find it necessary to make my stand perfectly clear before entering into the research in this area.

Librarians often claim ownership to IL and cling to the perception that librarians are the only ones who can teach it. This strategy is not working, in my opinion, and we need to cooperate with teachers in order to get better learning outcomes. The issue will be briefly discussed in this thesis.

1.1.1. "Road map" to this thesis

Chapter one, the introduction, seeks to clarify the background for my project as well as a quick look at the field of research and my research questions.

Chapter two is dedicated the methods that I used or that was relevant for my experiment. There is also a discussion on the relevancy of the methods I used and a critical approach to my experiment.

I present the results from my quasi-experiment in chapter three. The results are commented.

In chapter four, I discuss some learning theories and how librarians teach, and in what way the theories relates to the practice.

In chapter five, I discuss the concepts of information literacy and why there is such confusion around the term. There is also a presentation of the theory behind information literacy and some of the frameworks that has emerged.

Chapter six is the discussion. It consists of three short essays discussing some major issues concerning the role expansion for librarians, what we should teach and how libraries and librarians have adjusted to the Internet era.

In chapter seven, I present my conclusions. After the reference list, there are four appendices containing the details from the experiment.

1.2. Previous research in this field

Information literacy has been the subject of much discussion the last few years, and I have only been able to explore a fraction of the available documents. I have focussed on some of the best-known authors and works as well as some well-known frameworks and ideas.

A significant part of the research in this field has been carried out by librarians or seen from the library's point of view. Many of the projects presented also have a local affiliation and narrow focus. Some papers focus on the contents of the IL training or course, and some discuss the necessity for partnerships in the organisation, for instance between teachers and librarians.

The research took a constructivist direction with Carol Kuhlthau, and it became the main path for most librarians interested in information literacy. The aim was to redirect the focus from the information in a technical scope to emphasise the user experiences. Her focus was the psychological processes of the users(Kuhlthau, 2004). Sadly, even this direction remains on a theoretical level and very far from the reality that many who teach IL encounter, although Kuhlthau in later years moved towards ideas of a more practical sort.

Christine Bruce(2007) explored IL from a phenomenographic perspective, and she is particularly well known for her seven faces of IL, while Olof Sundin (Sundin, 2010) focused more on information practices and the interplay with artefacts. A fellow Swede, Louise Limberg(L. Limberg, 2010), dealt with information seeking and the students` learning outcomes, also from a phenomenographic perspective.

1.2.1. A critical approach to this research

The research has often had a "best practice" goal, but it tends to lead to more frameworks and theoretical approaches instead of good descriptions on how to implement information literacy into the courses[1]. Why is that? Do the researchers start out with the goal of improving practice, but find it difficult or even impossible to do so? Is it taking the easy way out? Is it a way of trying to professionalise librarianship? In my opinion, information literacy has been a defence tactic to try to create a sphere for librarians only, secluded from pedagogy. If it is an attempt of creating or keeping our own sphere, I do not think it is a sustainable course. Many librarians feel insecure about teaching and the emerging technologies. I think we need to step out of our protected world and learn new things, otherwise we are marginalising what academic librarianship is.

The research in this area, meaning pedagogy for librarians in general and information literacy in particular, is problematic because it does not take a stand and it very often does not relate to the world most librarians find themselves in. We should start looking at the practice and look for useful models for teaching information literacy instead of developing models that has little chance of succeeding in the real world. This was one of my goals; to compare my own experience from practice with the theories in the field.

In most of the research publications that I have come across, there is no connection between theory and practice and nothing happens. It remains a professional issue for librarians and it does not spread outside this narrow circle of information professionals. The authors are not challenged by practitioners. I believe that a tighter relationship between theory and practice could do wonders for all who teach information literacy and by that, the students` learning outcomes.

1.3. Personal interest in this matter

The reason I chose this topic for my Master thesis is that it is closely linked to my work at Gjøvik University College. I teach classes in IL and have often seen that the courses seem to have little or no effect on the students when it comes to their information search behaviour later. I was therefore anxious to know if the students feel they do get a positive effect or if we should try another model of IL classes and training.

When the students have little or no effect of the IL classes and training that we provide for them at GUC, then I think it is safe to presume that similar training has the same lack of effect on many other Colleges and Universities in this country. And this makes me ask: Can we really afford to waste the libraries', librarians' and student's time this way?

This thesis is based on my belief that information literacy, or rather literacies in plural, must be learned in context. I believe that we must describe concrete learning outcomes and skills that we expect the students to learn. It is time to come down from the clouds and peg some cords in the real world of higher education. I want to see a working, well documented and assessed information literacy course in action, not just a plan for such a course in an ideal world. This thesis serves as the documentation for my experiment, the main part of my development project.

[1] This is presuming that "information literacy" is something tangible that it would be possible to implement anywhere.

1.4. Research questions

- *How can my students at Gjøvik University College benefit from an embedded information literacy course?*
- *What set of tools can provide me with information on the effect of information literacy courses?*

These are the two most important questions that I will address in this thesis, and that I will seek an answer to.

2.0. Method

When I chose to explore the field of information literacy and learning outcomes, I wanted to take a bottom-up approach, meaning starting with the practical level and work my way up towards the models. I chose to use a classic test and control study. The intention was to test a new way of teaching information literacy and to get data on whether or not this way could prove efficient with regards to learning outcomes.

2.1. The experiment

I taught the third-year students (seniors) at the Faculty of Health, Care and Nursing, Section for Radiography over a period of seven weeks. The class was divided into two groups, A and B. Both groups were given an initial IL test before the experiment. Group A, the test group, was given lectures on a regular basis, follow-ups on assignments and tutoring. I used the Critical Incident Questionnaire (CIQ)[2] (Brookfield, 1995) for this group. Group B received the regular, single lecture (lasts 3 hours) that I usually give them every autumn. Group B was my control group. At the end of the semester, group A wrote short summaries of their responses to CIQ and reflected on their learning outcomes and the experiment. The two groups, A and B, was thereafter given the same test.

The head of the Section for Radiography was informed on the details of the trial and my hypothesis on the experiments. The teachers involved in the particular class were brought in on counselling on the particulars of the "syllabus" and how to best implement the trial. This cooperation was necessary to make the experiment as seamless as possible. The Dean of the Faculty of Health, Care and Nursing has gave me permission to do the experiments and the necessary follow-ups.

While working with this thesis, I observed, planned, acted and assessed the process. This process fits the description of action research rather well.

> Action research integrates teaching and teachers` development, curriculum development and evaluation, research and philosophical reflection into a unified conception of a reflective educational practice.(Vezzosi, 2007, p. 21)

However, due to the limitations of this thesis, I have not been able to follow the action research cycle in its entirety, as it would have involved going back into the same class of radiographers to observe and then plan, act and evaluate again. Still, the experiences from this experiment will be taken into account in the next round[3].

This design, planning, acting and evaluating processes, is used by many teaching librarians. It encourages "reflection in action" as well as sharing and communication. (Vezzosi, 2007, p. 23)

Using this method enabled me to approach IL from a theoretic and practical side at the same time.

2.1.1. Plan for the experiment

The experiment took place during weeks 41 through 47 of the autumn semester of 2010. The class was during this period of time, working on six assignments that went into a portfolio. Two of the

[2] See chapter: "My assessment methods" for more information.

[3] I will be giving a similar, integrated course for radiography students in their second year in October 2011.

assignments were given special attention during my experiment. The subjects for the assignments were mammography and radiation therapy, as part of the module on oncology.

The test group received weekly lectures, tutoring and assistance. I had outlined the preliminary plan on my GUC website (www.ansatt.hig.no/kareno) and I have reproduced it here:

Week 41: Joint lecture. I'll explain the basics of the experiment and how to use the CIQs. I'll discuss the assignments and a possible structure of them. The students and I will fill out a PICO45 form together and start searching for literature. We'll choose an article and agree on a plan for the further experiment.

Week 42: Lecture. We'll work our way through the chosen article(s) and discuss the research methods used. We'll also discuss how we can use the article(s) in the assignments.

Week 43: Tutor sessions for groups. We'll look at the assignments in their present shape. We'll discuss the research questions and the structure of the texts. Has the students managed to integrate the research they've found? Maybe I'll present a good example and we'll discuss the paper.

Week 44: Lecture/ tutor sessions. We'll search the databases again. We'll use the same PICO form and repeat the structure of the assignments.

Week 45: Tutor sessions for groups. How is the work progressing? Are there particular problems? Reference lists and an introduction to the reference manager EndNote.

Week 46: A last touch-up. We'll have a discussion on the assignments and the experiment.

After the assessment:

Informal interviews with the teachers: How did the students perform? How did the teachers perceive the experiment? What could I have done differently? Student reactions?

I have summed up the responses given to the CIQ forms and presented them to students and teachers. I have used my website and Classfronter (LMS) to communicate to the students before and during the experiment, and the website also serves as a repository for the CIQ form for later.

2.1.1.1. Goals for learning outcome

The goals for this embedded information literacy course were closely related to the goals for the module that they were involved with at the time I am in the class. The students should:

- Be able to recognize peer-reviewed texts
- Be able to fill out a PICO form and articulate a relevant research question
- Be able to find relevant search terms
- Be able to choose relevant databases for their field of research
- Perform searches in said databases
- Be able to structure an academic text according to author guidelines of a specific journal
- Be able to cite correctly and make a bibliography according to the Harvard style.

[4] The PICO form is used mainly by health professionals as a tool to ask focused clinical and/or research questions. The abbreviation stands for Patient/problem/population, Intervention, Comparison, Outcome.

[5] I used the PICO form as a tool myself when I was working with my research questions for this thesis.

2.1.2. What we ended up with

Planning the experiment was one thing, carrying out the plan in real life was another. The experiment did not quite follow the lesson plan that I had outlined. One reason was that I outlined the plan before I knew the students, the assignments and the situations, and I had never made a lesson plan because my lectures are usually of a stand-alone kind. I never had to plan for an entire module. So, inexperience was one factor. Another factor was, as I moved along in the course, I saw that the students had other needs than anticipated. I therefore decided that rather than sticking to the plan and ignoring the students` needs, I adapted my course. I chose to give them more time to write and I sat down with them and corrected their writing, making them argue their points to me and gave them pointers to what was missing in their arguments. I did what their appointed, academic supervisor would have done. I believe, also based on the feedback from the students, that this was helpful and that at least some of the things we talked about will have some effect on their future papers[6]. However, this course of action made me differ from the plan, which I had made to match the learning outcomes for the oncology module.

2.2. Assessment

2.2.1. Classic assessment methods

There are many choices to make when conducting an experiment that involves assessment. Radcliff et al. (2007) outlines three levels of assessment; classroom assessment, programmatic assessment and institutional assessment. Classroom assessment is course assessment based on a class or a few classes during a semester. Its hallmark is that there is direct feedback from the students. Radcliff et al. (ibid.) explains that this is a level of assessment that is likely to be of use to librarians because our access to students is often limited to one period/hour. Programmatic assessment is centred on the learning goals for a program of study or a series of courses that comprise a program. This kind of assessment requires a close relationship with the academic faculty. Institutional assessment provides a broad overview of the student body as a whole. In an Information Literacy setting, an institutional assessment can mean testing students as they enter into higher education and again when they leave, or it can compare students in different faculties. Institutional assessment requires a high level of commitment and good partnerships across the institution.

Formative assessment is described as an assessment that takes place along the way or in process as a way of affecting the continued course or process. Formative assessment can be in-class exercises or reflections on the process of learning. Summative assessment focuses on a particular part of the curriculum. This can be a final exam or a survey at the end of a course or semester. The point is that it marks the end of something, eg. a course or a seminar. The summative test/exam is the grand finale. Authentic assessment is described as assessment that is a result of direct contact with a student, for instance a product or a portfolio of student work. Indirect assessment characterises assessment information that has been acquired through observations or surveys.(Radcliff, 2007, p. 14).

This study had elements from both formative and summative assessment. The post-test was summative for the students, but they were not marked on this and the test served mostly as an

[6] See appendix 3 for summaries from CIQ forms

indicator for me and not really as a tool for the students at all. The study was formative as regards to the CIQ forms and the pre-test. I used the results from the CIQ forms to adjust the contents of the course along the way. Still, the main focus was the papers they wrote for their portfolio as part of the module on oncology, and my project did not really have a formal assessment in mind, as my assessment was not part of the students final marks.

2.2.2. Information Literacy assessment

There are few acknowledged Information Literacy tests, and none of them have been implemented on a large, international scale. At first, I found this rather surprising. The library world is, after all, marked by its standardisation. We have, for example, agreed on cataloguing and classification systems. When it comes to information literacy, however, there are as many opinions as there are librarians. Why is it so hard to make a standardised assessment tool? I suspect that the problem is that trying to make the standardised assessment tool uncovers what lies behind the terms we use. It is when we try to make the instrument that we discover that we see how differently we understand the terms we are using. It is when we try to make an assessment tool that the differences are revealed and disagreements appear. It is easy to agree that information literacy is important, but it remains a "superficial agreement". The moment we try to operationalize, we realise that we have very different opinions as to what information literacy is. This again will determine how we assess.

The libraries are part of a crafts tradition, and we have not been used to thorough evaluation, unlike in schools where they have various international tests, like PISA. The cycle, meaning going from using terms to getting empirical data, to making the instrument and teaching to measuring learning outcomes and effect, is vital. We should get used to teaching, using a specific tool or set of tools, measuring the effect and changing our courses accordingly.

The assessment tools that exist[7] are standardised tests that only set out to evaluate certain tangible skills, like knowing when to cite and how to use Boolean expressions.

These (see below) are some of the tests that can be found online. I assumed the role of a librarian on the lookout for a tool that I could use in my own library, and it was not a very uplifting task. The tests I managed to test felt dated and too traditional to suit my needs.

2.2.2.1. ISST and ILT tests

James Madison University (JMU) developed Web-based Information-Seeking Skills Test (ISST).

> The results were used to measure the effectiveness of the instructional program for first year students and show where efforts needed to be strengthened.(Cameron, Wise, & Lottridge, 2007, p. 230)

[7] At least that are published in a way accessible to me

Prior to the tests the librarians and faculty members at JMU[8] had worked out a set of specific learning objectives to define the broader goal of Information Literacy. The learning objectives match the ACRL standards, but JMU has defined some concrete skills that is easier to assess.

JMU got requests from other universities who wanted to use their ISST. Due to information security this was not possible, so JMU started to develop a new test that could be used by other institutions. The new test was called Information Literacy Test (ILT). It was developed to measure the ACRL Information Literacy Competency Standards for Higher Education(ALA, 2006). The test is a multiple-choice test that can be completed within one hour. The ILT can be adopted to any institution.

2.2.2.2. SAILS test

Standardized Assessment of Information Literacy Skills (SAILS) is another assessment tool based on the same ACRL standards as mentioned above. It is also a multiple-choice tool designed to document certain information literacy skills and to pinpoint areas for improvement. The SAILS website says:

> Project SAILS began in 2001 with the goal of developing a standardized test of information literacy skills […]To make Project SAILS a success, we brought together a team of experts in librarianship, test design and measurement, data analysis, and programming. A three-year research and development phase involving more than 80 higher education institutions in the U.S. and Canada culminated in 2006 in the production version of the SAILS test.

In order to test SAILS you need a username and a password, and I have not been able to test it.

2.2.2.3. TRAILS test

Tool for Real-Time Assessment of Information Literacy Skills (TRAILS) is another multiple-choice test that is supposed to "provide an easily accessible and flexible tool for library media specialists and teachers to identify strengths and weaknesses in the information-seeking skills of their students".("About TRAILS: About the assessment," 2010). Like SAILS, it is made by Kent University College, but unlike SAILS, it is open and free to use for anyone. It is, however, based on sixth and ninth grade standards and as such not suitable for students in higher education.

2.2.2.4. TILT test

The Texas Information Literacy Test (TILT) was widely known, and an open version is still available for local hosting, but the original will shortly be removed from the web by the University of Texas at Austin. I tested the tool briefly and found the examples used a little dated and in need of some restructuring and updates. What is interesting is that, after a short intro, I was asked to read some statements about the web and tick the option that I was most interested in. The option I chose was thereafter used in examples to illustrate points in the lectures that followed. One of the reasons why it feels a little dated is that it strongly emphasises the differences between a library collection and the web, advocating the library`s orderly character and reviewed (as a mark of quality) content versus the anarchy on the web. As Brown and Adler (2008)noted; Google is becoming increasingly

[8] JMU also uses liaison librarians who perform course-related instruction for courses in the major (discipline-specific) and collaborate with faculty to ensure that students develop the intended information literacy skills.

more like a library, and it makes no sense to highlight the differences between the Internet and the traditional library resources.

2.2.2.5. iLit test

The Information Literacy in Technology (iLit) is developed by CSPlacement in collaboration with California Community College and California State University Librarians and others. The test is based on the ACRL standards and consists of both multiple choice questions and performance based questions. The test is a commercial product and not open for testing.

2.2.2.6. ROSS model

The Reflective Online Searching Skills (ROSS) environment is a step-by-step model or course that "allows students to reflect on their IL, where information literacy is embedded into the assessment tasks of units, enabling the assessment and the reflection to drive the learning". (Bruce, 2007, p. 46) They claim that ROSS in this way offers something more than the ordinary library IL programs. I

2.2.2.7. VIKO, Søk og skriv, UNSTUKK

Norwegian tools like "Veien til informasjonskompetanse (VIKO)", "Søk og skriv" and "Utpreget iNteraktivt STUdieteknikK Kurs (UNSTUKK)" are meant as training tools where the students can take modules and learn about things like "when and how to cite", "how to take notes", "how to prepare for your exams" and so on. There are modules that the student can take and at the end of each module there is a test or an assignment attached. The goal is to improve the students` study techniques. I leave it to others to look into whether or not these courses have any lasting effect, but for my part I remain sceptical towards them. The reason is that these courses treat these subjects as they were one generic skill to be learned and then transferred. Some of the examples like how to cite using the Harvard style, work really well because it refers to something exact and standardised. Others are more complicated, and I doubt that things like "find and combine good keywords" are transferrable. Another problem is that these courses are expensive to develop and maintenance is required.

2.2.2.8. Other tests

Many of the open, free tests that I've found on the web are published of, or on behalf of, institutional libraries. The tests are in many respects very alike. They are multiple choice tests and typical questions are "How do you find a book?", "What is a peer-reviewed article?", "What do you find in the OPAC?" and "Where do you go when you need to find relevant research for your paper?". And they often have very "obvious" answers. The available alternatives to the "How do you find a book"- question may be: a) Search the library catalogue b) ask a friend c) browse the shelf d) I don't know. The tests often feel irrelevant or old-fashioned. You get better scores if you always check the box that concerns library resources than if you say "Browse the internet" or "google it".

This suggest to me that the librarians still live in a world where we regard library resources as the only "safe place" to look for information. The anarchistic structure of the web and the dynamics of the web may not be as appealing to librarians and other information professionals as the structured databases, but there is no denying that it is the main way for information searching for many students and we need to address this in the test tools. This is one reason why I chose to include several assessment methods in my experiment.

The tools we choose have the power to define the field. The instruments define the contents and thereby the goals of learning outcome. From what I have experienced in talking to many Norwegian librarians about this, I do not think that librarians here have a strong enough orientation towards the methods we use. I have not come across many who have thought these things through and made evidence-based choices. This does not surprise me. It took me years of teaching to realise that the courses I gave had little or no effect. And even when I came to that conclusion I had few ideas on how to change it. This thesis is an effort to try to improve practice at GUC. If other librarians want to test my methods and assessment tools that is nice, of course, but I have no ambition of changing the entire library field. I am only determined to try to improve practice at GUC.

2.3. My assessment methods

Part of this thesis was dedicated to the development of a tool that could be used at the Radiography section at Gjøvik University College (GUC). I chose not to use any of the standardised IL test, but rather use an educational test, the Beile test of information literacy for education (Beile, 2005) as a basis for my own. This was done as an effort to "do as I preach", namely to contextualise the test to the subject discipline. My goal was to make a meaningful test that could be run as a pre-test and post-test and combine this with the CIQs. Experiments will continue later[9], and many alternative versions will be tested.

2.3.1. Critical Incident Questionnaire (CIQ)

Critical incidents are events that people in some way remember as significant. The Critical Incident Questionnaire (CIQ) is a way to ascertain the effect of the actions that a teacher makes. For a teacher it is necessary to know what these critical incidents are in order to adapt the actions according to what the students see as critical. The questionnaire is a simple form of five questions that is supposed to make the students reflect on their learning and give the teacher a quick response to what went on in class.

The questions in CIQ are as follows:

At what moment in the class did you feel most engaged with what was happening?

At what moment in the class did you feel most distanced from what was happening?

What action that anyone (teacher or student) took in class this week did you find most affirming and helpful?

What action that anyone (teacher or student) took in class this week did you find most puzzling or confusing?

What surprised you the most? (This could be something about your own reactions to what went on, or something that someone did, or anything else that occurs to you.) (Brookfield, 1995) [kap 6. Finn sidetall]

The questions are not designed to measure what the students like or dislike. It is not a popularity contest for teachers. Rather, it is a way of focusing on what is seen as meaningful to students.

The students handed in the CIQ after every class, electronically and anonymously, and they kept a copy of every form until the end of the experiment. After the experiment, they were required to

[9] For instance for students in Palliative nursing in the Spring semester of 2011, although on a much smaller scale.

write a short reflection paper where they saw the development in their answers and reflected over this as well as the necessary steps to reach the next level of this development.

After every class I reviewed the CIQs handed in, and I gave a short summary either at the opening of the next class or posted in their Classfronter room.

One cannot make constant changes to a program. It would become very unpredictable to the students and also, there are some things that are non-negotiable. But I believe that this method and the purpose can work very well. The clue is of course that it gave me ideas on how to run this program later and it gave me an opportunity to spot problems early, before we reached the point of "disaster".

A second, but just as important, goal is that the students will be more conscious about their learning processes and that this can give them an advantage later. It is also more democratic as it gives a voice to those who does not speak up in the classroom.

Brookfield(1995) gives a warning, though. Teachers can become too set on "converting" and "saving" all the students and get discouraged if they are not able to get them all to be engaged and interested in the program. Brookfield explains this as the "Perfect ten"-syndrome. Teachers want a flawless lesson without negative responses, a wish for perfection. This is of course irrational, but real enough.

2.3.2. The information literacy tests

I performed a pre-test on the entire class of radiographers. This test was adopted from the Beile Information Literacy Test for education(Beile, 2005, p. 195) to fit radiographers` field of interest. The test was a mix of demographic questions and a library and information skills quiz (multiple-choice).

After the control group received their lecture and the experiment (the seven-week program for the test group) was completed, the entire group was given a new test, similar to the pre-test, to see if I could detect any visible effect.

I also held an informal conversation about the experiment and its outcome with the teachers and head of the Section for Radiography. The teachers are more experienced with the class and assessment in general, and they were able to give valuable feedback. The full report from the meeting can be found in the results chapter, but key points they made were that they wanted to continue this form of teaching information skills in the future and that a liaison librarian would help integrating the courses into the course descriptions.

As far as I know, the CIQ forms and method has never been used in information literacy courses before, and I have no knowledge of it being used at all in Norway. This represents something new within the IL field. This kind of assessment is formative and it brings a reflective perspective to the field, as the students are encouraged to give feedback on the lectures in a form that allows them to heighten their attention to what went on in the lecture.

The goal of this triangulation of methods was to get a better overview of the whole situation. It gave me an idea on how the students and the teachers perceived this IL training, this seen together with the more standardised test results on skills, I felt more confident that I was getting a more complete "situation report" on the experiment.

2.4. Evidence-based librarianship and information practice (EBLIP)

Evidence-based librarianship (EBL), or more commonly Evidence-based librarianship and information practice (EBLIP) is about using scientific evidence as a basis for the decisions we make and the evaluations we do as librarians in our professional lives. Simply put: a reason to act as we do.

The EBLIP process consists of: formulating important and answerable questions; searching for evidence relevant to answering these questions; critically appraising evidence; making decisions; and, evaluating these decisions retrospectively.(Eldredge, 2009)

Evidence-based librarianship (EBL) provides a process for integrating the best available scientifically-generated evidence into making important decisions. EBL seeks to combine the use of the best available research evidence with a pragmatic perspective developed from working experiences in librarianship. EBL actively supports increasing the proportion of more rigorous applied research studies so the results can be available for making informed decisions. (Eldredge, 2007, p. xxii)

Eldredge(2007, p. xxvi) say that the reason we (meaning library practitioners) find EBL so appealing is that the process leads to a decision. If we manage to ask answerable questions, the process leads us through searching and finding and evaluating information, but most importantly, it enables us to make the decisions that again can lead to change. It is an active process. We need to use the research for something practical (practical decision-making tools). Otherwise, EBLIP is reduced to nothing but an empty, academic test. The questions that we ask must therefore be related to the "real world" and we must do reflective follow-ups. He continues to say that diverse questions lead to diverse approaches, and he mentions three basic categories: Prediction, Intervention and Exploration. The prediction category is about discovering patterns that may occur under special circumstances. Intervention is about finding comparative efficacy of one course of action versus another and exploration often ask why something exist or does not exist, like why some students not use libraries. (p. xxix)

EBL is also seen as a way of professionalising librarianship. Vezzosi(2007) explains how librarians have every opportunity to observe students and to measure the impact the library instruction has. It is hard not to agree with that. Librarians have good opportunities when it comes to studying students library use, but I have not seen many studies done by librarians on this. Either the librarians do not do these kinds of observations or the studies are not published in acknowledged publications.

Vezzosi may be right when she claims that "Evidence-based librarianship (EBL) is a means of developing librarians` professional knowledge and practice as it moves research into daily routine, merging scientific research with the need to solve practical problems"(2007, p. 20), but I have not seen many good examples of this in a practical setting, at least not in Norway.

2.4.1. My design in light of evidence-based librarianship

EBLIP is about drawing experiences from the practice field and combining this information with user experiences and evidence from research. In the midst of those three factors we will experience EBLIP. This was my basis when choosing my design for this thesis. I had experienced that the IL courses I gave had little or no effect and I was starting to doubt the common practice in teaching IL. I knew that many users (students and faculty staff alike) felt frustrated and lost in the databases and I started to dig into research and I found some articles that questioned several ideas on the common practice of teaching IL. That is why I wanted to use my experience, get the user perspective (through CIQ and the tests) and use current research to build my experiment.

It is hard to change old habits, in every aspect of life. That is probably why so many librarians, myself included up to this point, still teach "library stuff" to students and staff even though they have experienced that it has little or no effect at all. These kinds of examples can be found many places. In medicine, for example, blood-letting was used for hundreds of years for all kinds of illnesses. Even after a physician proved that it did more harm than good in some cases, the profession kept on doing the procedure for another 50 years or so(Pfeffer & Sutton, 2006). The library world is no exception and librarians have a hard time letting things go, even when they have proven that they have no effect. We tend to stick to the idea that we find appealing, "it is such a good idea and we`ll make it work", that we ignore the results that prove us wrong. Høivik (2010b)wrote about this in his blog. He said that when we have started a project, we do not dare to discuss if they should be kept on or put down, even when the demand for it is failing or the outer setting change. He goes on: "Politics, debates about values and good intentions cannot replace the need for evidence-based practice"(Høivik, 2010b) . The real issue remains that even though librarians "preach" the importance of evidence-based practice to students and try to make them realise the importance of finding and managing research results, librarians do not work evidence-based. There is an inconsistency between what we say and what we do. Part of the problem can also be that the research in our field is so detached from the real world of most librarians in teaching positions that it is hard to find "the pragmatic perspective", as Eldredge(2007, p. xxii) puts it.

The assessment methods I used were chosen to give me a fuller view of the students' competencies as well as their experiences of the information literacy course. The questionnaire gave me an idea of what competencies they possessed and what I should focus on in my classes. The CIQ forms gave me an idea on how they experienced the classes. This way I could tailor the classes to their needs. According to the three categories outlined by Eldredge(2007, p. xxix), my study is an Intervention-study.

2.5. The method used

I conducted a pre-test and a post-test of the students in my experiment. The tests were multiple-choice tests, based on the Beile information literacy test for Education (Beile, 2005), and tailored to radiography students. The students in my experiment used the Critical Incident Questionnaire (CIQ) after each session. The students used the answers from the CIQ forms as a basis for a short (one page) reflection where they were asked to sum up what they had learned and the overall impression of the experiment. Finally, I had a meeting with the teachers where we talked about the experiences with the experiment. As far as I know, the combination of the methods I used has not been tried within this field before, at least not in Norway.

The upside of the methods I used were that they allowed me to, on one hand measure something tangible through the pre- test and post-test, but on the other hand get a better insight into how the students work and what they want and need from my lectures (through the CIQ forms). I also learned much by conducting this experiment and it was interesting to test something new.

2.5.1. A critical discussion of the methods used

One experience from the experiment was that it is hard to be explicit about learning outcomes and to keep to the lecture plan outlined to meet those goals and still manage to customize and adapt to the students' needs. In retrospect it is easy to see the experiment would have benefitted by even better preparations.

Another experience is that the CIQ forms are harder to explain and understand than what I anticipated. Some of the students got the idea right from the start, but for others it was hard to see the difference between: “At what moment in class this week did you feel most engaged with what was happening” and “What action that anyone (teacher or student) took in class this week did you find most affirming or helpful”. The students tended to use the form as a direct feedback on what they liked or disliked about the session, but they were not very specific about the questions. Partly, I think this is due to me not explaining the method thoroughly enough. Partly, I think that the number of students had something to do with it. All though it was anonymous, there were only seven students and maybe they thought I would know who wrote what (and sometimes I think I did). I also think that this was an entire new way for the student to assess sessions and that it would probably take some time to get used to it. If I had spent more time with them and explained the method better, added with a larger selection of students, the results would have been better. I still believe in this method though; at least for some projects or experiments. I got valuable feedback on what was working and that is also why we didn`t keep to the initial plan for the experiment. I adapted the classes to the needs they wrote about in the forms every week. Another important factor concerning the CIQ forms was that it represented something new to me too. I think that if I choose to use this method later, I will be better prepared and find a way to teach the students what I think is important in accordance with the goals for the learning outcome in a way that appeals to the students and what they think is important.

One of the questions I have asked myself is: If I still believe in using a method even though I could not see any real, hard results, what does that say about my ability to work evidence-based? I criticised librarians in the chapter on evidence-based practice for not being able or willing to use the results from surveys and statistics for improvement of their teaching programs and now it seems I must include myself in that lot. My only defence for doing so, is that this was only a small sample of closely knit students involved in a small experiment and the results from the experiment should only be taken as a guideline or an example of how such a course might be integrated in a discipline. There are several theories to support the method, and I believe that more testing will be necessary before I can draw final conclusions. However, I do not believe that there is such a thing as a perfect, “one size fits all” course model for teaching information skills. I will have to tailor each course to the teachers` and students` needs and wishes, and there will always be a challenge to keep the balance right between tailoring and how much time the library can spend on each group of students from a resource perspective.

2.5.1.1. Weaknesses of the experiment

There were several weaknesses of this experiment. First of all, the group of students was very small. However, due to the structure of the Faculty, the only available options were either this class of radiographers (14 students) or a class of nurses (approx. 140 students). I chose the small class of radiographers for two reasons. Firstly, because the size of the class. Even though it was a little smaller than I wished, it made it easier to handle in this experiment than the class of 140 students. Secondly, the radiographers have a different approach to learning. They do not rely heavily on a syllabus the way that the nursing students do. They have a list of suggested and recommended literature (handed out by the teachers), but there is more room to move about than in the Section for nursing. That means that the students in radiography need to be more self-efficient and confident in their information searching behaviour. This suited my experiment rather well.

One of the problems of the layout on such a small sample was that I could not separate the students physically in all other classes for the seven weeks. It was therefore difficult to shield the control group completely. Even though only the test group received the lectures and individual tutoring, I could not stop these students from talking about the experiment or even helping out the students in the control group. However, this proved to be less of a problem than I anticipated. The assignments were of an open character and the students chose very different subjects and angles. There was therefore little room for “helping” their fellow students in the control group.

This is an exploratory study with a goal to improve practice. This initial test provides me with some experience with tools and using the method. I will have to test the tools on various groups in several disciplines in order to see the real results.

As a summary, I would say that using a subject adapted version of the Beile test allowed me to tailor some of the questions without having to come up with all the questions myself. It was necessary to easy my workload somewhat because of the time available, and the adapted version of the Beile test was adequate for the purpose. The CIQ forms proved very valuable, and I will continue to use them in the experiments to come. The standardised tests I found on the Internet, with no subject adaption, did not prove adequate for my needs, and I will probably have to tailor all future IL tests (to match the subject discipline) like I did with the Beile test.

3.0. Results

The students in my experiment were radiography students in their third and final year at GUC. They had been given information literacy courses both in their first year and their second year, consisting of lectures given by me and other librarians at GUC library.

The results presented here are processed data from two information literacy multiple-choice tests, feedback from CIQ forms and from an informal interview with the teachers involved in the module. The experiment I conducted was an exploratory study where the goal was to find a new model for teaching information skills. As far as I know, the method I used is new in the library field, at least in Norway. Doing the experiment and testing the method was an important piece of the learning outcomes for me in itself, but the hope is that it`ll also prove to be an efficient method that can be implemented on a wider set of students at GUC.

3.1. The initial Information Literacy test

The entire class was present at the information meeting preceding the experiment. The class completed a multiple-choice Information Literacy test for Radiographers[10]. Even though a standardised test like this will never give a full understanding of students' IL, it can give an impression on what level of skills and competencies the students possess. Some of the results from this initial test were quite interesting.[11] I have chosen to present the data in text form, but some of the questions and answers are highlighted in tables. I have also divided the results into some subdivisions to make them easier to read.

3.1.1. Introductions

When asked "How would you describe your ability to search databases (in order to find information)", one respondent replied "Excellent", one said "Poor" and the rest answered "Average". I think this is actually a quite true picture of how they perceive their abilities. They are used to searching databases, but they feel less confident because they have experienced that they can not always find what they are looking for.

How would you describe your ability to search databases?	Number of respondents
Excellent	1
Average	12
Poor	1

However, when asked "How would you describe your ability to search the Internet for information (generally speaking)?", one respondent said "Excellent", seven respondents answered "Good" and

[10] This test is facilitated Radiographers by me, but it is based on the Beile information literacy test for Educators (Beile, 2005).

[11] See appendix 1 for full test results.

six replied “Average”. The students are more confident searching with a search engine than they are using a database. These findings concur with other, larger surveys, like the one made by Griffiths and Brophy(kilde). Students feel more confident “googling” than they do searching the databases. I think that is because they have experienced that they find what they expect to find when they search the Internet. They enter their search terms and the results appear as by magic. Whether they actually find what they need is another matter. In my experience, the students are content by their findings even though they do not find what they were originally looking for. Plainly put, they do not know what to expect and are therefore happy with results that are not right for their research.

How would you describe your ability to search for information on the Internet generally	Number of respondents
Excellent	1
Good	7
Average	6

All the students state that they have visited the library‘s website to find information about academic writing and participated on one or more information literacy classes given by library staff, and with one exception, they had all visited the library website to get information on the databases. Ten out of the 14 respondents had attended a library tour and the same number of respondents replied that they had had contact with a librarian, either personally, via e-mail or on the phone. Three of the respondents had watched the library‘s videos on YouTube[12]. This tells me what I already knew, namely that the radiography students here at GUC are using the library and the library`s services regularly.

When asked about their skills of the English language, eight respondents replied “Good” and six respondents state that their English is “Average”. This is not surprising considering that these students are used to reading English texts. All of their textbooks are written in English.

3.1.2. About finding keywords and searching

After these initial questions, the students answered questions relating to certain situations and some general questions about research and scholarly publications.

One question regarded what could be considered the foremost characteristic of a scholarly text. 11 respondents answered that the text would have been reviewed by experts. Two said that the text was indexed by ScienceDirect or a similar database and one answered that the text would have been published by a university/faculty. Many of the students got this question right, but I am actually rather surprised that not all did. They know what peer-review is, or should know, because the teachers told me that this has been emphasised since they started their studies here.

[12] On-demand services, like instructional videos on YouTube are very ”in” in the library world right now. The GUC library makes videos demonstrating seaches in various databases, as well as ”how to use the PICO form”, ”basic functions in Word” and so on. We also make short videos to help remote students and staff when they need help with technical or computer related problems. The videos are published on our YouTube channel (www.youtube.com/higbibl).

What is the foremost characteristic of a scholarly text	Number of respondents
Reviewed by experts (peer-review)	11
Indexed by an academic database, e.g. ScienceDirect	2
Published by a university/faculty	1

The next question was: “Your teacher has asked you to write a paper on radiation therapy. You don‘t know the subject and decide to read a short summary about it. What source would you use?” Eight respondents replied that they would choose an article on the subject, while the remaining six respondents said that they would have chosen a book on the subject. No one answered “a general encyclopaedia” or “a medical encyclopaedia”, like I would have expected them to. This suggests to me that they are not used to using encyclopaedias in their studies. A quick look at the entries in both the Norwegian medical encyclopaedia and Wikipedia shows that the information found there would have been sufficient for the task. I find it plausible that the teachers do not encourage the use of encyclopaedias and that they even discourage use of Wikipedia, and that this is the reason why the students do not tick this option. I suspect that even when they use Wikipedia, they do not dare say it, because the teachers discourage using it.

When asked about the contents of journal databases (the criteria used), 11 respondents answered that the documents were selected by their relevance to a certain subject while three answered that the selection was made according to the library`s subscriptions. In retrospect, I must admit that this question was clumsily asked by me, and that the results should therefore be disregarded. (I should have said “journals” instead of “documents”)

I asked: “Most databases have both standard search and an advanced search option. Which of the following can you only perform if you use the advanced search option?” and then there was a number of options. Seven respondents answered “search in specified subject fields” while five answered “Add Boolean connectors (like AND, OR, NOT). One respondent answered “Search multiple subject terms” and one answered “Search subject terms”. I am not surprised that the answers differ here. The databases have very different GUI`s and their search options vary greatly. This often confuses the students. The option I was looking for was “Search in specified subject fields”.

Which of the following options can you only perform when using the “advanced search”	Number of respondents
Search in specified subject fields	7
Add Boolean connectors	5
Search multiple subject terms	1
Search subject terms	1

When I asked where scientific papers within the field of radiography usually first get published, seven repondents replied that these papers first appear in newsletters from radiography organisations. Five respondents answered “professional conferences and journal articles” and two answered “books published by radiography organisations”. This was constructed to be a trick question, as newsletters do not, as a general rule, carry scholarly texts. It is, therefore, a little surprising that as many as half of the students ticked this option. Still, in Norway there is only one, wide-ranging publication within radiography, in Norwegian, a professional journal called “Hold pusten” (“Hold your breath”). It is widely distributed and read by Norwegian radiographers, and the articles published often refer to scholary texts. I think this is why so many of the respondents ticked this option.

Where do scholarly texts within radiography usually appear first?	Number of respondents
Newsletters from radiographic organisations	7
Professional conferences and journal articles	5
Books published by radiographic organisations	2

Next, the students were asked what they would do if their teacher asked them to write a short essay on positioning a patient undergoing thorax MRI where they would have to use three, relevant scholarly texts as sources. Nine respondents answered that they would search a medical database, Four respondents answered that they would search one general academic database and one medical database. One respondent ticked the option “search the library catalogue for encyclopaedias”. Seen in retrospect I should have used another example as positioning a patient usually would be something the student should use guidelines for, and not necessarily journal articles. I didn`t have a particular opinion about what would be the correct answer here, but I think it`s interesting to see that only four respondents ticked the option “search one general, academic database and one medical database”. ScienceDirect is one of the most relevant databases we offer for radiography students at GUC and it must be considered to be a general, academic database as it is interdisciplinary. I am therefore a little surprised that the majority chose only “purebred” medical databases.

Where would you search for scholarly texts about positioning patients for MRI of the thorax	Number of respondents
A medical database	9
One general, academic database and one medical database	4
Search the library OPAC for encyclopaedias	1
Search the library OPAC for books	0

When asked to select a set of search terms that best represented the subject “which psychiatric problems can a patient undergoing radiation therapy encounter?”, ten of the 14 respondents answered “psychiatry, patient, radiation therapy”, while the remaining four answered “anxiety, patient, radiation therapy”. There were no perfect alternatives on this question and the students have chosen the two best alternatives available. The reason that as many as four students chose “anxiety, patient, radiation therapy” is probably because it has a narrower focus and represents the most probable (and common) psychiatric problem encountered by patients undergoing radiation therapy.

The students were now asked to select the set of subject terms that best represented “students in higher education”. 13 respondents answered “university colleges, universities, students” and one answered “generation y, students, undergraduate students”. I cannot help but wonder if the one respondent choosing the wrong option here did it on purpose.

The next question asked the students about the use of truncation signs. “If you type diagnos*, what will you retrieve hits for?”. One student has not answered this question, but all the remaining students answered correctly: “diagnose, diagnostics, diagnoses”. This is not surprising; as this is something they come across often in their own search behaviour.

Next the students were given a question on how they would limit the number of retrieved documents in a search on how patients cope with cancer and radiation therapy, where the initial search had been “cancer AND radiation therapy”. Eight respondents say that they would limit the search by publication date. Three say that they would add the term “patients”, two answered that they would add “psychological adaption” as a search term and one respondent indicate that they would limit search by publication type. I am a little surprised that as many as eight would rather limit by date than to add a search term, as the latter is usually regarded as a better method. Still, limiting by date can seem like a good approach as the teachers usually encourage using the newest research available. Also, the students have probably experienced that this method drastically reduces the number of retrieved documents and it becomes a coping strategy. Finding the right keywords can be a challenge for many students and this can possibly also prove to be a reason why so few choose these options. Three students would add the term “patients”, although this gives nothing to the search (as probably most would agree, all who are treated with radiation therapy for cancer could be considered to be patients). Only two students chose to add “psychological adaption”, even though this MeSH term not only drastically reduces the number of retrieved documents, it also finds several relevant articles.

How would you limit the number of retrieved articles for “cancer AND radiation therapy”?	Number of respondents
Limit by publication date, 5 years	8
Add term “patients”	3
Add term “psychological adaption”	2
Limit by publication type, only peer-reviewed texts	1

3.1.3. Citations and bibliographies

When given a citation (for a chapter in book) and asked to determine what type of publication we had cited, none of the students answered correctly. Eight respondents answered that it was a book, while five respondents said "journal article" and one respondent answered "a website". I cannot help but wonder if this last response was done wrong deliberately. No one could, in my opinion, mistake chapter in a book for a website. The radiography students are used to writing bibliographies as this is emphasised throughout their time here at GUC, and it is therefore a little discouraging that none of them could identify a chapter in a book. Had they all answered "journal article" I would have understood better as it is more similar to "chapter in a book".

Next, the students were given a citation for a journal article and asked what they would search for in the library catalogue in order to locate the article. The answers here are varied. 10 respondents answered "search for article title", two answered "search for name of author" and one answered "search keywords". Only one respondent answered this correctly, "search for journal title". This is clearly something that the students find hard to understand. They simply do not understand the system.

What would you search for in the library OPAC to locate a specific article?	Number of respondents
Article title	10
Author name	2
Keyword	1
Journal title	1

These last three questions on finding keywords (and limit the number of retrieved documents), citing correctly and finding documents in the library OPAC is at the very core of what librarians see as important elements in their teachings and what the teachers often expect librarians to teach. Then I ask, what does it tell us when even the radiography students that are frequent library users, answer wrong or at best are confused about this?

The students were now asked to look at an image from a website (Norsk Helseinformatikk) and asked to look closely before making up their minds what to do with the information. Six respondents said that they would check the reputation to the publisher by looking closer at the information found on their website. Six respondents said that they would check the reputation of the publisher by comparing what they had found to information found on other websites. Two respondents replied that they would not use the information because it was found on the Internet and that this kind of information cannot always be trusted.

I asked: "Some types of information should be cited when you write a paper. Which of the following statements should be cited?". I gave them 4 sentences to choose from. Only five repondents answered correctly. I cannot help but wonder at this. The students are used to citations and I expected them all to get this right. I am certain that they would have gotten it right if they had written the sentences themselves in a paper, but they have probably never been asked to identify it

like this before. Still, they should have been able to identify the sentence, especially because it was the only sentence with a proper name and that should have rung some bells.

Next, I asked "When is it ethical to use another person`s ideas in your papers?". Eight respondents answered that it`s ok if you cite them, five replied that you can only do it if you have his or her permission to do so and one answered that it is never ethical to use another`s ideas. This shows that the students are confused about citations.

When is it ethical to use another person`s ideas in your paper?	Number of respondents
It is OK if you cite them correctly	8
If you have that person`s permission	5
It is never ethical to use another person`s ideas	1

The students do not have an understanding of the scholarly processes. That`s why so many of them are confused about citations, publication types and searching the library OPAC. I think therefore, with this as evidence, that Head and Eiseberg(2010, p. 39) are right when they suggest that we should focus more on processes when we teach.

3.1.4. Study habits etc.

The last questions evolved around study habits. Like "How many times during you last academic year did you work on a paper where you had to use information from different sources", "How many times during your last academic year did you communicate/ share resources with your teacher of fellow students via e-mail, text messages or Classfronter (LMS system) [...] did you use social media like Twitter, Facebook, YouTube, Delicious or other to communicate or share resources"? The responses to these questions can be found in the appendix.

When asked how often they used the library`s resources when writing an essay/ a paper, 12 respondents answered "every month", one answered "every week" while the remaining one replied "rarely".

Half of the students answers "partly agree" on the question "The questions in this test reflect activities that I have done at school, at work or at home. Six of them answers that they "agree "and one replies "partly disagree". It would have been interesting to find out what kind of questions I would have to implement in this test to get more respondents to "agree" here.

The last question was: The outcome of this test shows a correct image of my ability to find, critically evaluate and use information. 10 respondents say "partly agree" and four "agree". Most of the students only partly agree that the test shows their abilities to find, evaluate and use information. Again, it would have been interesting to ask them why they do not find that the test shows a more correct image.

Even though a multiple-choice test like this almost always will be generic and superficial I think that it is possible to gain enough information to determine a starting point, if nothing else. Also, when faced when the empirics, it is harder to deny the general impressions that we have from observation. Even with a small number of respondents, it is possible to see some trends.

3.2. CIQ forms and the feedback given during the experiment

After every session, the students were given five to ten minutes to complete the Critical Incident Questionnaire (CIQ). The form was hosted on my staff website at GUC. The form was programmed in PHP and designed to send the answers to my e-mail address keeping the dispatcher anonymous while sending a copy of the form to the dispatchers chosen e-mail address. This was done to ensure my students complete anonymity, but at the same time enabling them to write a summary of their feedback after the experiment ended.

The summaries from the sessions are available in appendix 3

The CIQs gave me valuable information on how the students reacted to my sessions, and, as one student later explained in the summary, s/he felt more conscious about how the sessions were structured and how the time was spent. Still, there were some problems connected to the forms. In the beginning, the students seemed a little confused about how to use the form. Some did not understand that they were supposed to give concrete examples in the first question, so when I asked "At what moment in the class this week did you feel most engaged with what was happening?", some answered "at the beginning" or "in the middle" without specifying what was going on at the time.

Another problem was that they did not see the difference between "At what moment in the class this week did you feel most engaged with what was happening?" and "What action that anyone (teacher or student) took in class this week did you find most affirming and helpful?" and the same between "At what moment in the class this week did you feel most distanced from what was happening?" and "What action that anyone (teacher or student) took in class this week did you find most puzzling or confusing?". In retrospect, it`s easy to see that I should have translated the form to Norwegian and tried to differentiate the questions mentioned above better. The question "What surprised you the most?" was easier to understand for the students, and I got perhaps the most interesting feedback there, eg. that they were surprised at the level of guidance from the teacher (me), meaning that I sat down with them and went through their arguments and language as well as structure on their texts.

After explaining the method (CIQ) and the questions better, the answers improved and I got some valuable feedback, eg. "I felt most distanced when you exported data from the databases into EndNote. That was done too quickly (meaning the pace, my comment) and I felt stressed". This kind of feedback is important and perhaps something that students hesitate to bring up in class in fear of appearing stupid or slow.

Other interesting points the students made through the forms were:

- That they felt that EndNote (reference manager) was a useful tool that they wished they had been introduced to sooner.
- That they found it very helpful to get in-depth guidance concerning methodology, structure and language in their texts
- That they usually do not use their appointed supervisors as much as they could because they do not always know what to ask or how to ask the questions they want answered

- That they often find that there are small things, like finding *one* good sentence or word, that solves many of the debates and problems within the group
- That they find it hard to find good keywords and therefore gets "stuck" when searching for documents

They all stressed the importance of getting feedback on their writing and help with structuring their texts. Most of them also mentioned that they wish they had gotten this kind of training sooner, perhaps during their second year. Some also said that even though they felt they had been searching the databases often before the experiment started, they found it useful to get more help with it. The student stated that they were happy with the results from the experiment, but that the time was too limited and that I should have divided the group in two to use the time available more efficient.

This shows, I think, that the students want and need individual or group guidance down to the level I conducted. Making them aware of inconsistencies in their arguments, correcting language, pointing them to good databases and other sources and asking them to explain things are important elements in their learning. The students all remarked that this kind of training would help them when they would start writing their bachelor thesis.

When the experiment drew near, I experienced that the students` responses became shorter and less valuable. They were "economising" with their time (some reported that they were extremely pressed for time and very stressed about getting all of their work done) and this might explain some of this. Also, I can guess that they lost interest, as it was mostly an exercise that would benefit me and not them. I think this could be avoided it was a regular part of their work, like a mandatory part of a paper.

These students have written a lot while being students here. They have training, but still they feel very insecure about this. I believe that the only way of improving students` writing is to do frequent follow-ups, especially in the beginning. Content and form go together and if all they receive from us is a grade, it is hard to determine what to "fix" when writing the next assignment. The feedback I got from CIQ shows this with clarity.

3.3. Results from the post-test (questionnaire)

This test was similar to the initial IL test that I ran previous to the experiment. The test had similar questions as the first, although the examples used were different. Some of the questions were identical. I did not expect there to be a very distinctive difference between the test group and the control group because of the structure of the class assignments run parallel to my experiment. Still, since I did a pre-test, I found it useful to make a similar post-test to see if I could spot any changes, however minor. Unfortunately, two of the students in the class did not respond on the questionnaire. Due to the lecture plan for the class, it was not possible to get them together to answer the questionnaire (like I did with the initial test). The students were therefore left to do the test on their own time and some of them were in Denmark and Australia at the time due to a study exchange. The students were strongly encouraged to answer the questionnaire and were also reminded by their teachers, but two months after the due date, I decided that I had to give up getting the last two students to answer. I therefore lack the answers from one student in the test

group and one in the control group. The numbers will therefore not add up completely against the first, but at least there is an equal number from both groups[13].

3.3.1. Introductions

Five of the six students in the test group reported that they were well satisfied with the experiment. When asked what could have been done to improve the experiment, the students responded that they would have had more time and that the time should have been spent more efficient by dividing the group into two straight away and keeping it that way the entire experiment. They wanted to go straight to the assignments and having the teacher, in this case me, with them longer. This is interesting, because it concurs with the beliefs that I have, namely that it is very hard to give meaningful and rewarding, "once-off" lectures for larger audiences on these subjects. The skills must be learned in context.

3.3.2. About finding keywords and searching

When asked about their ability to search databases, six of the respondents answered that they were good and six answered "average". This is rather interesting, because in the initial test, one student said "excellent" and one said "poor", while the rest said "average". There seems to be a general improvement in the level of confidence of searching the databases. Whether or not there is an actual improvement is not easy to say, because the test only considers the students` opinion in this. It would have been interesting with an observation of a search process to see if the students` opinions on their own abilities match the real behaviour. Evidence from other studies like Griffiths and Brophy(Griffiths, 2005, p. 541) shows that students tend to overrate their own skills. The students who participated in my test group are less confident when they rate their own skills here.

Ability to search databases	Test group	Control group
Good	2	4
Medium	4	2

An overwhelming majority (11 out of the 12 respondents) said that they were good at searching for information on the Internet, generally. The question remains the same, does this concur with the actual search behaviour? As previously mentioned, studies have revealed that students tend to be happy with insufficient or even incorrect answers as long as they find any documents that matches their search terms.(Griffiths, 2005, p. 542) As Pharo and Järvelin also mentions, students do not use the "rational" steps when they search for information, they don`t look for the optimal matches for their information needs, but that they focus on finding sources that will help them reach a satisfactory solution(Pharo & Järvelin, 2006, p. 231).

When asked about which factors that best indicate that a paper is scientific, seven of the students said that it was peer-review. Two answered that it was accessible by an academic library and two answered that it was published by a university or a faculty and one answered that it would be

[13] See appendix 2 for full details

indexed in a database, like Medline. Still, the students are not unified about peer-review. Actually, the number of students that ticked this option has sunk from 11 to seven, and two respondents now answer "publication is owned by an academic library". I have no explanation for this, as it was not mentioned by me to either the test group or the control group. Even more interesting is that the students in the control group are more unified (all but one said "peer-review") while the answers differ much more in the test group. One explanation to why two in the test group answered "owned by an academic library" can be that they thought that was I would like to see. After all, I spent much time with them and they might have ticked this option as a sort of tribute.

Which factors best indicate that a paper I scientific	Test group	Control group
Peer-review	2	5
Available in an academic library	2	0
Published by a university	1	1
Indexed by a database	1	0

When asked about where to read a short summary on a broad subject, like mammography, only two of the students would go to a medical encyclopaedia, while seven would turn to a book and three would use a journal article. Two respondents now answer that they would use a medical encyclopaedia. In the initial test it was none. I asked the teachers if they encouraged the students to use these encyclopaedias and if they found them valuable at all. One of the teachers responded that they had no tradition for using encyclopaedias, and that the information found there to be too shallow to be of any real use. The teacher explains that to use the encyclopaedias you need a username and password[14] and that the information is not very relevant for radiographers. She also mentioned that the students buy textbooks in anatomy and physiology the first year and that this may explain why so few use encyclopaedias.

I asked the students about the criteria used by article databases to include documents, and the majority (nine) of the students answered that it was that the document had a relevant subject. Two respondents answered that it was owned by their library and the remaining respondent answered that the document could be found on the Internet. This question was very clumsily asked by me and I have chosen to disregard the results. What I should have asked here was "Which criteria are used by a database when they index *journals*" (not documents)

When I asked the students where scientific papers within radiography often appear first, nine respondents answered "professional conferences and proceedings". Two respondents said "books" and one answered "newsletters". Compared to the pre-test this was quite interesting. In the pre-test

[14] I had not specified online encyclopaedias. I only said "encyclopaedias" and it probably didn`t occur to her that I could mean in print.

the majority of the respondents (seven) answered “newsletters” here and only five said “conferences”. It looks therefore as the students have understood this better.

Where scientific papers within radiography appear first	Test group	Control group
Newsletters	1	0
Conference proceedings	5	4
Books	0	2

Nine of the students responded that they would search a medical database for journal articles for an assignment they were given while the remaining three answered that they would search one general academic database and one medical database.

The students were remarkably unified when asked to select search terms to represent a given subject. I do not know if this is due to them being more experienced in searching now or if the examples I gave them were too easy.

When asked about how they would limit the number of results on a search results list, half of the students answered that their first course of action would be to set a limit on the publication date, only retrieving the results from the last five years. Four would add a search term while the remaining two respondents would limit by publication type, only retrieving the peer-reviewed articles. They have been taught all of these strategies, so I am not very surprised by this.

3.3.3. Citations and bibliographies

However, when asked to identify a resource by an outtake from a bibliography, only seven respondents correctly identified it as a journal article, while four mistook it for a chapter in a book and one respondent thought it was a conference proceeding. This surprises me more. I expected there to be a 100 percent correct score here, especially after the experiment.

What kind of document is cited here (an example was given)	Number of respondents
Journal article (correct answer)	7
Chapter in a book	4
Conference proceeding	1

The next question was even more surprising. I asked students to choose what they would search for in the library OPAC when they were going to locate a specific journal article. Only three answered correctly, search for the journal title. Three answered that they would search the name of the author and six answered that they would search for the title of the article. I really thought that this had been

taught and understood by the students, but clearly I have to put more emphasis on this in the future. As suggested by a professor at Oslo University College, the reason may be that the students are used to "googling" the title of the article when they look up articles online. I find this very plausible.

I asked the students to pick the sentence that required a citation. Only five of the students answered this correctly, even though it was the exact same question as in the initial test.

The students are also confused about when it is ethically responsible to use other people`s ideas. Only five of the respondents answer that it is OK if they cite them correctly (correct answer). Three respondents insist that you need their permission and three state that it is never OK to use other people`s ideas. One respondent even state that it is OK if you do not use their exact words. I do not know if we (the teachers and I) have been to strict with the students in the past and that we have over- emphasised the dangers of using research as a basis, or if it`s just the wording of this question, "using other people`s ideas", that just seems like a violation by these students.

3.3.4. The writing process

11 of the 12 students correctly identified the definition on what a literature review is. I am rather relieved at this, because this was the subject of a thorough debate several times with the test group.

I am not sure how to interpret the answers to the next question. I asked: The methods chapter in a paper is usually designed to (multiple answers possible). 11 respondents answered that it should be a "recipe" that the reader could follow to get the same results as the author. Nine respondents answered that it should say something about how the author has reached the results s/he is presenting. Seven respondents said that it should say something about the pro`s and con`s of the method chosen. One answered that it should give tips on how to search the databases and one answered that it should give an introduction to scientific methodology. There is no great difference between the test group and the control group here. Choosing the "recipe" option here suggests to me that the students have a somewhat idealistic view on the process. I think they have learned it from their teachers, who, after all, might try to reconstruct the findings.

The methods chapter should …	Test group	Control group
Be a recipe the reader could use to reconstruct findings	5	5
Say something about how the author has reached the results	3	5
Criticising the method used	3	3
Tips on searching the databases	1	0
Give an introduction to scientific methodology	1	0

I cannot detect any major differences between the two groups, and this was not expected either due to the structure of the groups and the other constellations they were part of at the same time as my experiment. I therefore have to put more emphasis on the CIQ forms.

3.4. Notes from a conversation with the teachers

In February 2011, I had a meeting with the two teachers that were involved in the experiment and the module. The meeting was not formed as an interview, but as an informal conversation about the experiment and the students involved in it.

The main issues for this meeting included:

- The students reactions to the experiment: what they liked/disliked, how they handled the situation, work load and so on
- The experiment`s form, content and focus on learning outcomes
- Whether or not this is a good structure to conduct this kind of training
- Group dynamics and how the students influence each other
- If a liaison librarian would solve some issues concerning integration with the academic staff
- General work methods, library involvement and so on

The teachers were very positive towards the experiment and made it clear that they wanted to continue this form of course next year in some form. They said that they would think about other possible modules for me to be involved in, as module 7 is very work-intensive as it is. They suggest that module 3, which takes place in the students second year, might be better.

The teachers told me that I should be prepared to find no big difference between the test group and the control group in this experiment because the students know each other well and are a closely knit unit, and the students in the test group share their knowledge with the students in the control group on a daily basis. Also, there are currently two group constellations going at once. The students are in their module 7- groups (the ones I taught), but they are also in Bachelor thesis groups at the same time. That means that students from the test group and the control group are working together on their bachelor thesis. One of the teachers said that one of the bachelor thesis groups actually mentioned this. They were in the process of searching for information and that they drew experiences from the student that was in my test group. I was not aware of this when I started my experiment and it was of course quite unfortunate that my experiment would intersect with the students` work with their bachelor thesis.

This is of course one of the challenges of trying to measure effect, and the teacher said that if I had conducted my experiment on another set of students, like the management and economics students where they (quote) “hardly know each other”, I would have gotten different results.

I found it very rewarding to be able to get so close to the students, and to be able to say “We`ll deal with that next week”. I told the teachers this and they said they understood this situation. I told them about my “credo” concerning teaching and my belief that single sessions, detached from the academic work that the students are doing, simply have no effect. The teachers concurred, and

agreed that this kind of training must be included in the academic setting from the start to get the right impact. I asked them whether or not they thought a liaison program with librarians being in charge of a particular faculty might help the situation of detachment, and they were very positive towards this. The teachers had never thought of involving me (or any other teaching librarian) to the extent that I want because they believed the library didn`t have the time or resources for this.

The teachers also agreed that if they had a liaison librarian it would be easier to communicate what they wanted the teaching librarian to do and contribute with. They said that the liaison librarian could have participated in some meetings where modules and assignments were discussed and that this could have been a positive contribution on working towards the common goal and getting the outcomes we want.

The teachers were happy with the students efforts in module 7, and they said that they`d never seen the students work so hard. It is, however, hard to tell whether that was due to my experiment or not, because it was the first time they have done module 7 as a portfolio-based module.

3.5. A critical approach to my experiment: a summary

The main problem was, as previously mentioned, that the sample of students was very limited. If I had time and resources to do the experiment over, I would probably have tried to find a larger group. The main reason for approaching the Faculty for Health, Care and Nursing was that I knew that faculty best. I knew many of the teachers, administrators and even the Dean, and I knew the disciplines better. I have taught more at that faculty and I knew the databases well. In addition to this, the health sciences have come a long way in Evidence-based Practice, and this suited the purpose and aims behind my project well. However, I see that I might have gotten more distinctive results in a group that was not so accustomed to searching and using scholarly information, and had less experience with academic writing.

Even though there was not much improvements to find when comparing the pre-test and post-test, they gave me ideas about how the students think and act when they write academic texts. Because of the limited sample, I put more weight on the qualitative data from the CIQ forms than from the tests. The students told me, through their CIQ forms, that they were very satisfied with the tools they learned, like PICO and EndNote, and that they found it relieving and interesting to get help with their texts. They commented that they thought that the things they had learned from the experiment would help them when they were going to start their bachelor projects.

4.0. Teaching and learning: some theories in pedagogy and didactics

How do my results from the experiment line up with the theories in this field? In this chapter I will visit some of the theories of how we teach and how we learn. I will discuss some pedagogical and didactical models and try to compare them to the experiment I performed.

4.1. How do we teach?

4.1.1. My views on IL from a "Six frames" perspective

In order to be a more reflective, better teacher, I have tried to figure out what my own views of IL are and what I see as the keys of this concept. In order to shed some light on this, I used Bruce's "Six frames for information literacy"[15] and marked the cells that best represent my own views with a blue colour. It was a very useful exercise for me as it illuminated what I see as "right" or important, a kind of pedagogical credo. Still, I do not think it has had a big impact on the way I teach; at least not yet.

4.1.2. Librarians = teachers?

When I first started teaching I used the material left behind from my predecessor, a set of PowerPoint presentations and notes she had written onto them. A couple of manuscripts were also left behind. I started teaching after three weeks in my new job, and many of the databases were unfamiliar to me since I came from another kind of academic library. In the beginning I only gave lectures to classes, using the PowerPoints and scrips. The lectures must have been boring and pointless for the students, as the lectures were generic with no contextual searches or information.

I learned pretty soon that this kind of teaching did not suit me very well and I tried to communicate better with the faculty staff in order to at least make the examples relevant to the subject the students were writing about at the time. I talked to other teaching librarians I knew and they agreed that this was the norm. They were also using this model.

Using appropriate examples to the class helped somewhat on the attention paid when I presented the databases. Most people are more interested in learning things they can benefit from immediately. Still, this was not enough. I tried opening with a lecture and following up in a computer lab with practical (generic) assignments and I tried just being a supervisor in the computer lab while they searched for information concerning their current assignments. Even though this last example seemed to work better, the students were not sufficiently motivated to work. Many left after the lecture or simply failed to turn up. Often, less than half the number of students that were supposed to attend actually turned up. This felt frustrating and demeaning to me, especially since the library was understaffed and had to deal with a lot of students turning up, wanting to learn how to find information, separately when their thesis was almost due. Many of these students were supposed to have attended my courses and I started to wonder what I could do to make sure that they attended instead of being stressed and frustrated close to their deadlines. The real breakthrough, though, was when I understood that many of the students that wanted single tutorials and guidance actually had attended my course. Why had they not learned how to search the databases? Why was it so hard for

[15] See appendix 4

them to find and use good keywords? Why were they still struggling with formulating good research questions?

It is never pleasant to realise that what you are doing simply is not good enough, but for me this was a critical incident and I started to search for articles and books that discussed how to teach information literacy. Like Donald Schön(Tompkins, 2009, p. 224), a professor of urban studies and education at MIT, I think that it`s right to encourage professionals to become researchers in practice, constructing new theories as they carry out their day-to-day routine.

One of the real critics of using "information literacy" as a term is Stanley Wilder(2005). He writes that "information literacy remains the wrong solution to the wrong answer", meaning that librarians misunderstand the students` needs altogether. Wilder suggests that we abandon the idea that information literacy is something that will help libraries compete with the Internet. He continues:

> The idea behind information literacy is that our typical freshman is drowning in information, when in fact Google provides her with material she finds good enough, and does so instantaneously. Information literacy assumes that she accepts unquestioningly the information she finds on the Internet, when we know from research that she is a sceptic who filters her results to the best of her ability. Information literacy tells us that she cannot recognize when she needs information, nor can she find, analyse, or use it, when she demonstrably does all of those things perfectly well, albeit at a relatively unsophisticated level. Simply put, information literacy perceives a problem that does not exist.(Wilder, 2005)

He continues to say that librarians should not try to make students behave like librarians. Students (and faculty staff) only search the databases in order to find what they need. The search process is a mere mechanical procedure to get them to the core of their subjects. Instead of trying to teach them library lore, we should try to use our expertise to deepen the students` understanding of the subject they study through our understanding of our collections and writing processes.(Wilder, 2005) I think maybe Wilder`s ideas may be a little easier to implement in larger libraries in the US, where librarians often are subject specialists more than traditional librarians the way we see them in Norway. His thoughts are interesting, though. He suggests that librarians should act as guides to the collections and give advice on how to write bibliographies and so on while at the reference desk. I think Wilder is talking absolute sense when he suggest that we should interact with the students on that level, and I believe such a model is much more efficient when it comes to learning outcomes. It would mean we paid more attention to the students` needs instead of making assumptions that have no foundation in the real situations.

There is of course a downside. Wilder`s way leaves no opening for traditional lectures. There is no way of reaching all, or even a fraction, of the students enrolled. Many librarians I have spoken to feel that there is a need for all the students to meet a librarian, even if it is just to "let them know what we look like" as several librarians have said to me. Wilder himself say that

> [...]no instructional program can reach enough students often enough to match their steady growth in sophistication throughout their undergraduate careers. To do so would require enormous and coordinated shifts in curricular emphases and resource allocation, none of which is either practical or politically realistic.(Wilder, 2005)

Maybe it is fair to assume that some of the information skills we want the students to acquire could be taught in larger settings, like how to use a reference manager or searching the OPAC, just because it is a mechanical skill. Still, that is not what we should emphasise the most. We should emphasise

teaching the students how to read, understand and write about what they have read. However, my impression after talking to librarians, they are not willing to do this. They do not want to step into the teachers` world. We marginalise what academic librarianship is all about, Wilder (2005) says.

Houtman(2010) did a study on how academic librarians learned how to teach. It is a narrative study where the librarians shared their stories on how they teach and how they perceive their roles as educators. Her study shows an interesting picture of the librarians` lack of formal training as teachers and how this affects them and the students they teach. Her study shows that even though there has been a little more emphasis on this in more recent years there is still little focus on this from library educators. Most librarians learn how to teach when they start working through a sort of apprenticeship. Some of the participants in this study stated that they had been through some courses in presentation techniques, but that this was completely different than learning pedagogy. Most felt very alone in their positions with little support from library managers and faculty staff. Many also felt stress and anxiety related to teaching and a lack of collaboration. Several stated that it was hard to give fellow librarians harsh feedback whenever something was amiss. Some reports having seen other librarians teach with text heavy powerpoints and simply reading from pre-prepared manuscripts without being able to correct them. Many of the participants want mentors, but this has a better chance of succeeding in larger academic libraries where there is more than one in charge of teaching. (Houtman, 2010)

A quick look at the LIS bachelor program at Oslo University College (OUC) confirms that there is still little emphasis on teaching for librarians. There is a 5 ECTS course called “Libraries and learning” that covers some “theories and models for learning, teaching and tutoring”, “the library and the librarian`s role in teaching and learning” and “theories and models concerning user behaviour in information searching” (Høgskolen i Oslo, 2010, p. 10). I think it is positive that OUC, who are educating most of the librarians working in Norway, has included a course on this, but a 5 ECTS course is not enough. There should be much more emphasis on this both at bachelor and master level.

Tomkins, citing Lynch and Smith, has noted that eight out of ten job ads for academic librarians had listed instruction as a requirement in the 1990s. (Tompkins, 2009, p. 222) Although I have not seen statistics for Norway, I have no reason to think it is much different here. OUC is no single case either. According to Tomkins, the Association of College and Research Libraries (ACRL) found that even though 93 percent of LIS schools offer at least one course in instruction, only 48 percent of the schools offered two or more classes. And if they factored out the course offering for primary and secondary education school media specialists, the percentage dropped to 36 percent. (Tompkins, 2009, p. 222)

4.1.3. Integrating IL principles

There are 3 models for incorporating principles of IL into the curriculum, McAdoo(2010, p. 7) says. The first model is “Integrated”, where the principles are built into a course or an assignment. The second model is “Non-integrated” where the principles are presented as a stand-alone, independent credit or non-credit courses and the third model is “Hybrid” where there is a mix of integrated and non-integrated elements. I rather believe that most of the librarians I have talked to about this have

not been able to incorporate any of these three models. Their classes remain detached from the course/faculty curricula all together. My experiment is based on the first model.

4.1.4. Learning models

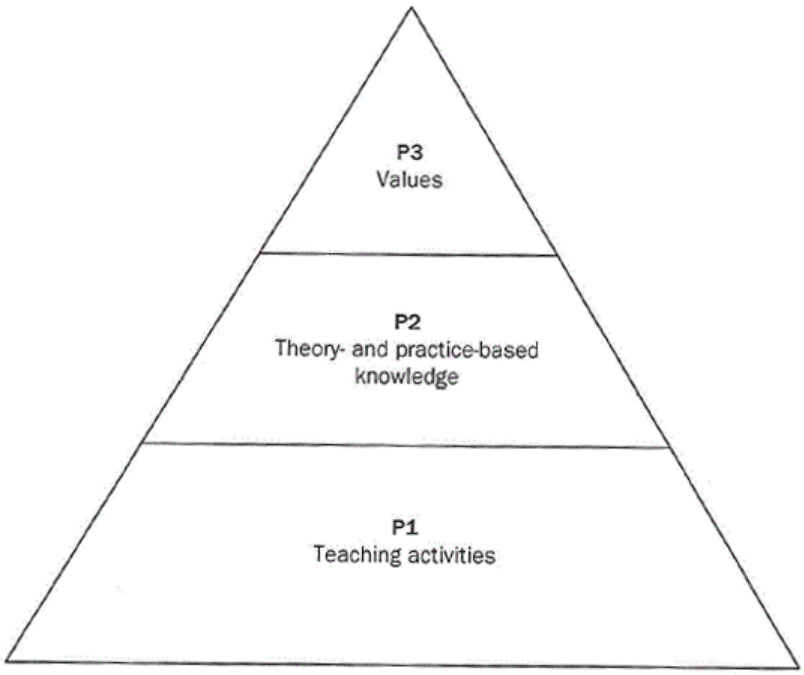
As previously mentioned, I think it is time we talk about skills, and Dreyfus and Dreyfus` widely known 5-stage model(1980), from novice to expert is of interest when talking about skills. When wanting to acquire a new skill, Dreyfus and Dreyfus say, there are two options. The first is to imitate action (like babies do) and the second is to seek aid from an instructor or a manual. The latter is often safer and more effective. The first stage in their model is called "novice", the beginner. The novice knows the ground rules in a non-situational way. Like the chess player sees the pieces as context-free pieces with some attributes (like how the Queen can move opposed to the pawns). The next stage is "competence". This stage is reached after considerable experience. The stage is recognised by the practitioner now being able to see the context and try to avoid special weaknesses of patterns. Like the chess player that now sees the pieces as part of a whole and where s/he can now compensate for weaknesses of the pieces, like the King`s moving limitations. Stage three is "proficiency". The proficient practitioner can see his or her position in the greater setting, and decide what is meaningful and what is not. S/he can decide what the correct action is according to the given circumstances. Stage four is "expertise". Up to this point the practitioner needed some sort of rule or guideline to connect his or her grasp of the situation to the specific action (p. 12). In this stage, however, the practitioner is so experienced, s/he can now rely on being guided by intuition. Like the way the chess player, released from the analytical stages, intuitively moves the pieces on the board. The last stage is called "mastery". This stage is a little less tangible, but the authors explain that the expert can sometimes achieve this stage. It is described as a stage where the expert lets "everything go" and is so absorbed in his or her work that s/he no longer needs to pay attention to the performance and let the mental energy go into the work/ action. (Dreyfus, 1980)

The authors (ibid.) are clear about the practical implications for this model. They say that when teaching skills, one must always know which stage the student is in and not be tempted to present something too sophisticated and intricate, even though it might help the student in the moment, if it impedes further progress. In my experiment I tried to ascertain what level the students were at before I started. The pre-test was supposed to give me the data I needed on that. In a way, it gave me ideas on what the students found difficult and that inspired some thoughts about what to emphasise in the sessions. However, in most cases this will not be possible. Most librarians are locked to the single sessions and there is no way to figure out what level the students are at. Most of the time, the librarian will have to make educated guesses and try to start at a level s/he thinks is sensible. As for the progress; Dreyfus and Dreyfus talks about moving through phases from novices to experts, but in the IL reality, there is little chance of controlling this. The radiography students I taught had received lectures in their first and second year before they came to my experiment. If I were to monitor their progress, I would have had to start in their first year. I would have had to define what a novice in information literacy is and for all the stages up to expert. Thereafter, I would have had to assess their skills and general understanding before, during and after each session in their first, second and third year. It would have been an interesting experiment, but too time consuming and demanding for its results to have any general effect.

Both Vezzosi(2007) and Head and Eisenberg(2010) conclude that today`s students need a different approach to information and research than the traditional one. They want a broader approach where

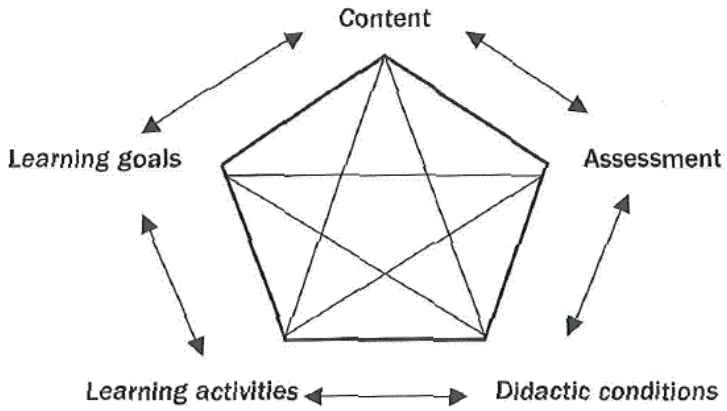
the students experience a real research process, where they enter the complex world of scientific information and are given research tasks that they can handle in a safe environment (Vezzosi, 2007, p. 26). In Vezzosi`s project the students had a 15- hour workshop with a librarian. The students stated that they felt "empowered" and more reflective towards their own practices(p. 32). But as the author herself says, action research "works" for librarians in teaching positions, but it`s labour-intensive and it takes a lot of time and dedication. Also, it is hard to prove students` learning processes and this is heavily debated within action research. (pp. 32-33)

Torras and Sætre(2009) have tried to implement Løvlie`s pedagogic triangle of practice and Bjørndal and Lieberg`s didactic relational model to create a framework for teaching information literacy. The pedagogic triangle of practice, as illustrated below, consists of three practice levels. Level 1 defines the actual teaching activities, level 2 defines the theoretical and practical knowledge that the teacher must take into account when planning a course or a session, and level 3 defines the overall values and ethical guidelines that we use as goals for our teaching.



(Torras & Sætre, 2009, p. 17)

There are some interesting sides to this. The authors (ibid.) start by saying how important it is for teaching librarians being part of defining a course program in information literacy and that they should be involved in setting the values (P3 in the model) for the library and the IL training. Then the authors use Bjørndal and Lieberg`s didactic relational model to describe the second level (P2). The didactic relational model (see below) is a dynamic model that shows how all stages, from planning to evaluation, are correlated and how changing one parameter changes all the others.



(Torras & Sætre, 2009, p. 33)

All that is well, but when they address the issues actually involved in planning the training, the problems start to emerge. The authors (ibid) use "Didactic conditions" as an example. They look at how students` conditions, teachers` condition and administration conditions effect the overall didactic conditions.

> Student conditions include their previous knowledge, their skills and motivation. Planning must take into consideration students` previous skills and knowledge about the content of both information literacy and the discipline course. The information professional should try to find out about what stage the students are at in their study degree and what they are writing about. In addition, it is important to bear in mind psycho-social conditions, for example, students` motivation to attend a specific information literacy course and their emotional state regarding their academic work. (Torras & Sætre, 2009, p. 35)

How should a teaching librarian be able to take these things into account?[16] It may all sound very well on paper, but the fact of the matter is that it would be close to impossible to gain this kind of information about all students attending one of the library`s courses. Besides, the students are also individuals, and cannot be treated as a unified entity here. They will have as many opinions, attitudes and differences in motivation as there are students. The only way this could work was if the "information professional" mentioned in the quote was a teacher that followed the students on a regular basis and knew them well as individuals.

As almost always when trying to squeeze something complex, like in this instance, teaching information skills and content, into a model, we either end up with a model that is so widely defined that it loses its usefulness, or we end up with a model that does not fit at all. That does not necessarily mean that it is a pointless exercise, but that we have to prepare ourselves for the discovery that not everything will fit. Maybe there are some good ideas on how to teach in several pedagogic and didactic models, and that we have to choose a little here and there, and then combine them to see if we can tailor something to suit our own needs.

[16] How should any teacher, librarian or not, be able to do this? I do not recall any teacher trying to find out what academic level I was at before commencing with lessons. Teachers make educated guesses and start from there.

It is not easy to determine the cure, in this instance how to teach, if we cannot even agree on the nature of the disease, in this case what the students find hard about learning processes. Angela Newton writes:

> It is a common assumption in UK higher education that students at all levels self-develop effective strategies for finding and managing grips with some key skills [...] Students new to research are plunged into a world filled with big expectations and high ambitions. Providing training related to finding, using and managing information effectively is just one way of helping those students to succeed, but it is an important one.(Newton, 2007, p. 119)

Newton explains that students are often insecure about not finding the "crucial papers" that are "out there". This is in sharp contrast to what Stanley Wilder writes here:

> Librarians should not assume that college students welcome their help in doing research online. The typical freshman assumes that she is already an expert user of the Internet, and her daily experience leads her to believe that she can get what she wants online without having to undergo a training program. Indeed, if she were to use her library's Web site, with its dozens of user interfaces, search protocols, and limitations, she might with some justification conclude that it is the library, not her, that needs help understanding the nature of electronic information retrieval. (Wilder, 2005)

So, who should we believe? Newton, and probably most of the library world, and her student that claims she needs help to find and evaluate information, or Wilder that insist that IL is the wrong solution to the wrong problem? Indeed, the answer to that will determine how we see our role as educators and which methods we choose when we teach. The answer may well be that, as teachers, we must give the students assignments early on that makes the students realise that they do not master these skills. Let them experience it first hand. Then we can make a move on to teach them how to master the research process with more efficiency.

4.1.5. Encouraging metacognition

> Metacognition can be defined as knowledge on how, why and when it can be appropriate to use specific strategies, as well as control of one`s strategy use through monitoring of one`s work and ability to shift strategy if necessary, to evaluate results and one`s performance [...] It is thus important for the information professional to think about learning activities that help students develop their metacognition. (Torras & Sætre, 2009, pp. 48-49)

There are several ways to do this. The authors (ibid.) suggest asking students to describe how the task was solved and justify their actions throughout the process, thus emphasising the process just as much as the product. In their report on how college students use information, Head and Eisenberg (2010) suggest that the students should be required to write an annoted bibliography as part of their assignments, and this seems to me to point in the same direction. Making the students aware if how they work and why they make the choices they make, seems to me a very sensible first step towards bringing a process approach to IL training.

4.2. How do we learn?

To teach information literacy skills, we must know something about how students learn. This thesis is very much concerned about how students learn, and even though this is a large field of study that cannot be completely explored by me, I find that it is important to know something about pedagogy and didactics, and the theories in the field.

Globalisation and the emergence of new technology heavily influence the way we learn(Elmborg, 2006, p. 195). Globalisation leads to people of many different nations and cultures work together on a daily basis. We must therefore rethink some of the learning and communication strategies that we have, seeing as people from different cultures learn in different ways. New technology also brings this into the light. The emergence of the Internet led to a change in what kind of (and amount of) information we expected to find. New technology has also changed the way we learn, as we now tend to start the production/ creation stage much earlier than before. This is further explored under Bloom`s taxonomy.

> Learning is not something that can be managed, predicted, and controlled; it must be nurtured and allowed to emerge and develop naturally. Now scholars push the theory even further, looking at knowledge as enactivists, emerging from context and activity as work and learning proceed, blurring the distinctions between knower and learner; learning is something emergent, self-organizing and self-renewing. In this context what the learner brings to the scene is critical. Where learning theory long focused on the content and the method, today the emphasis is on context; that is, the background and traits of the specific learner are essential ingredients in the formula of successful learning by the individual. (Marcum, 2002, p. 11)

Learning through dialogue and context is nothing new. It has been with us since Socrates. However, trying to see this in IL training represents something new. How can we teach students IL skills if knowledge is something that should "emerge and develop naturally"?

John Seely Brown and Richard J. Adler (2008)wrote about the difference between the "Catresian view of learning" (traditional scope where knowledge is transferred from the teacher to the learner) vs. the social view of learning. Brown and Adler are citing Richard J. Light`s study at Harvard University, where the results showed that the main factor for student success is their ability to form study groups and networks. The study showed that the students that participated in study groups, even if meetings took place only once a week, were more engaged in their studies, they were better prepared for classes and they learned faster than the students that worked solo. Brown and Adler`s main point was that in a "world of constant flux", the important thing is not what we learn, but how we learn(Brown & Adler, 2008).

4.2.1. Master and apprentice in the library setting

Etienne Wenger is well known for his studies on Communities of practice, but he has also studied master/apprentice relationships. Lave and Wenger`s (1991) theory on learning as a social practice has been picked up by amongst others, Kvale (1997) who discussed four key aspects of apprenticeship in academia:

- Participating in communities of practice
- Aquiring a professional identity
- Learning by doing
- Evaluation through practice

These aspects are seen as important to develop "complex intellectual skills". In a library setting these skills can e.g. be critical evaluation of sources, ethical use and literature searching. Learning in a social context can be rewarding for students on all levels. Torras and Sætre (2009) quotes a study by Samara, that show that study groups not only help student progress, but that they also increase the

students` motivation and self-confidence. Another benefit can be that the student is better integrated into his or her discipline. (p. 82)

Torras and Sætre(2009) briefly discuss whether this model can be used in a library setting. The authors state that library workshops, based on the group study model may have similar positive effects on the student. They found it plausible that the students, when organised into library workshops can learn from each other and that the librarian in such cases should act as a coach, rather than a teacher. The authors are of the opinion that the students in this way could experience a research process and that this would help them learning research processes. As the students advance, they can become coaches for others. (pp. 82-83) This is also a common model for how librarians learn. An experienced librarian knows infinitely more than a newly graduated one, and informal apprenticeships are common.

In my opinion, this model has many benefits, especially since it is possible to implement, at least to some degree, in the real world. The library workshops could be set up in a contextual setting, like in a bachelor project or when the students are working with a larger academic paper. I think Torras and Sætre(2009, p. 84) go a little far when they claim that this model could "help the student to gradually become a legitimate member of the research community, as well as preparing her for lifelong learning", but I do see the potential for the students to develop some research skills this way. The authors conclude that this kind of involvement from the academic librarian presupposes a close relationship between the students and academic supervisor[17]. "The academic supervisor and the academic librarian need to define how their tandem is to share the supervisory role in practice"(p. 93)

Brown and Adler (2008)wrote about the importance of the master/apprentice situated learning. They say that in the Cartesian view of learning, the students had to learn the explicit (learning about) first, before practicing, but when we study how we learn it looks like it more often happens the other way around. Learning the explicit is often the tip of the iceberg, Brown and Adler say, and in reality we often learn how to be (the tacit knowledge) before we learn the explicit. It is all about becoming a part of a profession or a practice.

4.2.2. Communities of practice

Etienne Wenger is a well-known advocate for Communities of practice (CoP). This model can be viewed as the opposite of the traditional model of teaching, where the teacher seeks to transfer his or her knowledge to the student either directly or by inspiring the students to read, interpret and create new knowledge by writing.

> Communities of practice are groups of people who share a concern, a problem or a passion for a field and want to elaborate and share their knowledge and expertise by meeting on a regular basis. [...] They share information, advice and experiences. They discuss ambitions, goals and needs. They test new ideas and develop a social network, build on common interest and understanding. (Wenger, McDermott, & Snyder, 2002, p. 4)

Although CoPs exists in many settings, Wenger is particularly concerned with the organisational and work place settings. The idea behind CoPs is that the organisation or business must organize the work place in such a way that the employees can learn, act and make decisions based on their own

[17] Meaning the student`s appointed supervisor (faculty staff)

competencies. The workers should be able to form different communities and share their knowledge in order to solve work related problems and work towards the organisation`s goals.

Kvale(1997) discussed alternative methods for learning, and claims that scientific research can be regarded as a craft and that we should look into e.g. apprenticeships and mentoring when educating researchers. He also discusses how communities of practice could be integrated as a way of contextualising knowledge. There is a dichotomy between the bureaucratic and the pragmatic approaches to education, Kvale says.

> The modern school is a bureaucratic organisation. Bureaucracy is characterised by standardized procedures and methods, often with quantification, regularity and simpleness, an emphasis on written communication and impersonal impartiality, with formal rules of decision. (Kvale, 1997, p. 189) [...] As an alternative to the formal view of science we may regard scientific research as a craft, which by eminent practitioners may become an art. It is an activity in context, it involves situated knowledge and intuitive expertise, which does not necessarily follow analytic and conscious rules. (p. 190)

Although Kvale refers to educating researchers, the apprenticeships and communities of practice he talks about could also work in undergraduate studies. In the Section for Radiography, where I have conducted my experiment, the students work in so-called basis groups from the first day of school. The thought behind this is that the students get to know each other well, that they should learn to work together in teams and solve problems and assignments together. The group constellation is reset once a year to make sure that the students get used to work with different people. Each basis group usually consists of six to eight members. This is probably one of the reasons why the radiography students appear as a very tightly knit unit. These basis groups could be the foundation of a more committed and extensive community of practice, for example consisting of students of all levels and maybe involving students from other health studies, like nurses and therapists in ergonomics as well as professional practitioners, already in the field. It would also be interesting from an innovation point of view as well. We already have some experience in connecting nursing students with engineering students[18], and the feedback was entirely positive.

Kvale does not say that apprenticeship generally is superior to schooling, “merely that apprenticeship is significant for learning at the most advanced levels in some important professions, for which learning at preceding levels may also have taken place in schools” (1997, p. 189)

4.2.3. Motivation as a critical factor

It is easy to understand why motivation is such an important factor. We have all experienced the difference between trying to learn something because we have to compared to learning something because we want to. Lin explored this:

> Motivation is highly valued because of its concequences: Motivation produces. It is therefore of concern to those in roles such as manager, teacher, religious leader, coach, health care provider, and parent that involve mobilizing to act. (2010, p. 7)

[1818] In 2010 GUC launced “Idélab 24”, an innovation project that put nursing students and engineering students together in groups with the intention of developing an idea or a product within 24 hours. This initiative will continue in 2011, and GUC just opened its own “Innovatorium”.

Lin also refers to Latham and Gross` study that showed that young people tend to overrate their information literacy competence. In other words, they believe that they know more than they do. How do we motivate these students to learn something that they believe they already know? Lin suggests that instead of trying to open their eyes and aligning their self-perceived competence to the librarians` assessment of them, we should try to make the instruction better by acknowledging the importance of people`s sense of competence on the quality of IL learning. We must not threaten their self-esteem or they will go in "protection mode"(Lin, 2010, p. 8)

4.2.4. Bloom`s taxonomy

Bloom`s taxonomy is a classification of learning objectives. It was introduced in 1956 by Benjamin Bloom and has been considered to be a significant and foundational contribution to how we perceive the cognitive processes of learning. There has been many revisions during the years, and Bloom himself said that the taxonomy was only meant as a starting point and that it should be adapted to each major field in the particular language, to fit that field`s needs. He felt that a more detailed taxonomy should reflect the field`s thinking and categories.

The terms in the taxonomy are as follows (revised by Anderson and Krathwohl):

Remembering: Retrieving, recognizing, and recalling relevant knowledge from long-term memory.

Understanding: Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.

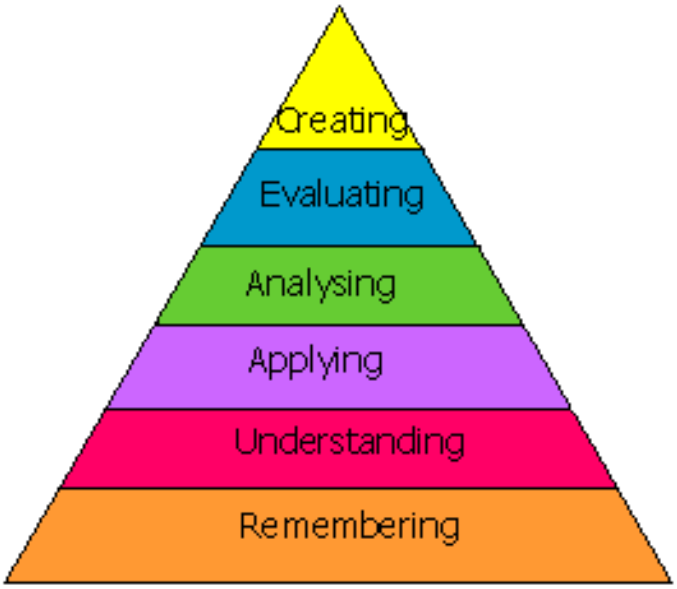
Applying: Carrying out or using a procedure through executing, or implementing.

Analyzing: Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.

Evaluating: Making judgments based on criteria and standards through checking and critiquing.

Creating: Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing. (Anderson & Krathwohl, 2001, pp. 67-68)

The levels go from low to high, and the higher education level, the higher level of cognitive skills is expected.



(Needleman, 2008)

Generally, the lowest orders, remembering and understanding, are required in high school. When entering an undergraduate study, applying and analysing skills are required. In postgraduate studies one is expected to be able to evaluate and create as well.

What is interesting about this, though, is that it seems to be changing with the digitalisation. Fourth graders may now be dealing with creating digital presentations. In the digital world we start producing things at a much earlier point. We "understand" through production. Blooms taxonomy was created in a paper based world.

However, as noted by Keene, Colvin and Sissons

> […] very few references have been found which directly link aspects or skills of information literacy to specific cognitive skills, or which identify the difficulties of employing these cognitive skills. Not only does the SCONUL[19] model not refer to cognitive skills, but the descriptors often emphasise or refer to activities that, from Bloom`s perspective, entail low level cognitive skills.(2010, p. 10)

4.2.5. The Keen-Colvin model

Keene, Colvin and Sissons (2010) has developed a model, called the Keene-Colvin model, that has a more holistic view that embeds information skills in the problem solving cycle and emphasises relevant cognitive skills connected to Bloom`s taxonomy. Their findings from various test suggests that learning is most effective when delivery is carried out by a team of subject expert, like teachers, and librarians. Information literacy must be learned in context. They also found that the delivery of activities that involve higher order thinking cognitive skills is most effective when there is a significant element of student centred learning activities that exploit the benefits of collaborative learning. (Keene, et al., 2010, p. 19)

[19] See also subchapter "Seven pillars" on page 47

4.2.6. What does this mean?

In the six years I have worked at GUC, the number of lectures and tutor sessions I hold yearly has multiplied. I have reason to believe that it will keep on increasing, year after year. If I am going to be teaching almost as much as faculty staff, it is important that I keep developing my courses; the techniques as well as the content. The models mentioned above are a part of the basis in pedagogy, and it is important for me as a teaching librarian to be aware of them. However, like many other models and pedagogical material, they remain theoretical issues detached from most teachers` daily routine.

It is easy to see that some of the models that I have described here have potential and that they point to relevant issues on learning. However, the problem with these models are the same as with the IL frameworks and models; how are librarians supposed to put them to use? Theoretically, I agree with Dreyfus and Dreyfus and the Keene-Colvin model, too, but I do not see that I can use them in a practical setting. I must therefore rely on making my own models, with elements from pedagogy and didactics in general and IL theory in particular.

5.0. What is information literacy?

It is time to look to what information literacy is and what the theoretical approach so far has been. I have tried to categorise some of the material and present it in a way that seems relevant and meaningful to me. The findings I present are of a diverse nature and the results tend to lead in different directions. Sadly, I found that much of the theory (that has been seen as the most relevant and most referred to) had little or no practical implications in my daily life as a teacher.

5.1. Information Literacy concepts

Once being accustomed to talking about IL as if a single concept, it`s hard to break the habit. Librarians talk about information literacy as if there is an "it". The problem is that the discourse surrounding IL is carried out on cloud nine. The world most librarians face when entering into teaching is very, very far from the theoretical approach of the academics in the field. This constitutes a real problem. Information literacy, as described in most articles, has no fixed essence. There is no single concept to fall back on and we are getting nowhere with such a discourse.

Behind the civil surface of most librarians, there are battlegrounds. What is a librarian supposed to do? What is our business, our trade? Where are we headed? There are conflicts and disagreements on all levels.

The real world consist, among others, of teachers requiring their students to answer exam questions, of librarians asking students and staff to search the databases and of employers demanding an evidence-based approach to a case study. This is more tangible. I therefore think it`s more useful to start at this point and explore Information literacies (in plural) from the bottom-up.

The real meaning of the terms will present itself in the context where they appear.

5.2. Definitions of information literacy

When exploring the different aspects of information literacy I came across many different definitions of the term. Generally, the definitions are parted in two opposite poles. There are those who think of information literacy as a set of generic and transferrable skills and those who think that information literacy is something that must be learned in context. There is no consensus.

5.2.1. Information literacy as generic skills

One of the most used is the definition made by the American Library Association (ALA) that state the following:

To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.(ALA, 1989)

This definition emphasizes the technological aspect of IL and suggests that IL, once learned, can be applied to any subject or situation. The definition is widely known and used, even today. It is plain and simple, but advocates the notion that information literacy is a set of skills that can be learnt in a generic sense.

Cameron, Wise and Lottridge explain information literacy as:

[…] a set of competencies that provides a foundation for academic coursework, effective job performance, active citizenship, and lifelong learning.(2007, p. 229)

Others emphasize the lifelong learning perspective even more. The Prague Declaration ("Prague Declaration: Towards an information literate society," 2003) clearly state this as one of the basic principles. The same Declaration also emphasizes the focus on information literacy as something that needs to be embedded into a context:

Information Literacy is a concern to all sectors of society and should be tailored by each to its specific needs and context. ("Prague Declaration: Towards an information literate society," 2003)

This is quite interesting. I wonder how the Prague Declaration would do this in real life. If something should "be tailored to its specific needs and context", how can they connect this to lifelong learning?

When the Waterford Institute of Technology (WIT) Libraries re-designed their Information Literacy courses it was based on the idea that students can develop

[...]a range of generic and transferable information literacy skills, including critical thinking, reflective and research skills [...] (Hegarty, 2009, p. 74)

The ALA definition is also used by The Norwegian Archive, Library and Museum Authority (ABM-utvikling) and Brinxmat is criticizing this in his blogpost:

The idea that it is possible to teach localization, evaluation and use of information without reference to a subject-specific set of skill is ridiculous; let me explain: within certain formal disciplines, intuition is a valid way of gathering data, while within others it is really not. Knowing your subject-specific ethics will help you evaluate the content you are looking at. Knowing which sources to look at will also depend heavily on the subject-specific approach you're taking: if you're researching language, you might be interested in grammars, but you might equally be interested in literature from medicine and neuroscience. Using information effectively is where the ABM-definition really hits ground: how can you use information effectively without understanding it? (Brinxmat, 2010)

5.2.2. Information literacy as contextual knowledge

Recent definitions of the term puts more emphasis on IL being a socio-cultural activity that is highly dependent on context and that the knowledge learned in one context not necessarily applies to another. This is closer to the definition set by Limberg et al.

[…]information literacy is viewed as a set of abilities to seek and use information in purposeful ways related to the task, situation and context in which information seeking practices are embedded. This implies that information literacy varies with the content and context in which it is situated. (L. Limberg, Mikael Alexandersson, Annika Lantz-Andersson, Lena Folkesson, 2008, p. 83)

Boon, Johnston and Webber use this definition:

[Information literacy is] the adoption of appropriate information behaviour to identify, through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in society.(Boon, Johnston, & Webber, 2007)

What strikes me about this definition is that it is no small task we give students if this is to be taken literally and serious. Can we really expect students to be able to master all sorts of channels and media and use it *wisely*? This definition, as many of the already mentioned definitions, seems to me to over-reach somewhat. Although a worthy and good goal, I have the strongest doubt whether it is possible, and this makes the definitions less realistic and useful.

According to Streatfield and Markless, the Society of College, National and University Libraries (SCONUL) Working Group's definition is as follows:

Information literacy encompasses library user education, information skills, training and education, and those areas of personal, transferable or "key" skills relation to the use and manipulation of information in the context of learning, teaching and research issues in higher education. (Streatfield, 2008, p. 102)

This definition is very comprehensive and wide-ranging. In a way it captures many aspects, thus "satisfying" more people, but it also makes it less useful.

Olof Sundin has explored the information literacy concept and say:

Despite the amount of publications that exist on the subject, there is no consensus on how to define the concept of information literacy and often both "skills" as well as "understanding" are incorporated. (Sundin, 2008, p. 28)

Sundin's focus is the social practices of information literacy. He sees a new theoretical framework emerge "which considers information literacy as well as information seeking as embedded in other social practices". (Sundin, 2008, p. 29)

Roar Pettersen wrote about the troubled issue with knowledge transfer:

Knowledge transfer is a sentral problem in educational settings. On one side we more or less assume that knowledge kan be transported into the individual`s head thus enabling the knowledge later can be put to use in a spectre of practical situations and contexts. On the other hand we are painfully aware that it does not work quite like that: We`re talking about the "practitioner`s shock". This is when students experiences of shock when faced with the fact that their knowledge is not enough in the real world[...] [my translation] (Pettersen, 2005, p. 71)

There are many problems connected with the language we use, and Lin(2010, p. 4) said, the problem by using information literacy as a term is that people that do not possess information skills are unwilling to be thought of as information *illiterate*. I have already mentioned a few other problems as well.

Exploring these definitions has made me more aware on my own platform, and I think that it was a necessary exercise for me, but I think it is fruitless for the main practitioner to start by going to the definitions for help and inspiration. Again, we need to start by looking at our own practice and try to find models that can improve that practice. Not the other way around.

5.3. My understanding of the terms used in this paper

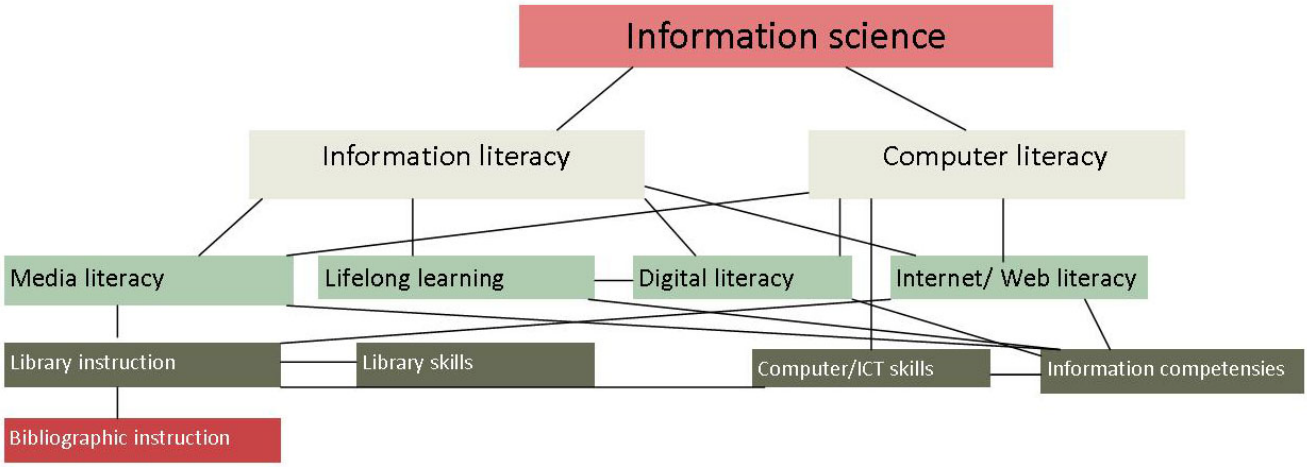
During my research for the theory chapter of this thesis, I encountered many different terms. I have been confused and puzzled as I have searched and read the literature and therefore decided to make my own small model of the different terms, simply in order to organize them.

The terms that I have most often encountered are:

- Information literacy
- Information science
- Digital literacy
- Media literacy
- Bibliographic instruction
- Library instruction
- ICT skills
- Computer skills
- Computer literacy

- Internet/Web literacy
- Lifelong learning
- Information competencies

I have tried to organize them into a chart that makes sense to me here.



The colours indicate terms that operate on the same level. The lines between the boxes indicate that the terms are related.

5.3.1. My definitions

Marcum (2002) discusses the term "literacy" thus:

> The term "literacy" refers to "letters". For a long time writing provided the only medium for preserving and transferring information beyond the face-to-face, oral tradition. To know letters meant to be literate, learned. In common usage literacy primarily still means the ability to read and write. This meaning might be described as a level one meaning of literacy. A second level of literacy means a new capacity to communicate using another language, code or technology. (Marcum, 2002, p. 13)

I define "literacy" as something more than skills. The term "computer literacy", to me, represents more than knowing where to "click" or how to update the anti-virus program. It requires not only the superficial knowledge, but also the deeper understanding of how the computer works and how the networks, businesses and companies interact. To be "literate", a person must have the skills, but also the metaskill required to place the skills and information into a larger setting.

"Skills" are more tangible. It is a set of the explicit "things you can do", like typing or sending an e-mail.

"Instruction" is also tangible. It is closely connected with skills in my model, as library instruction and bibliographic instruction usually is connected with teaching someone to search the library database and so on. It is very focused on skills, but "instruction" can be somewhat troubled because it emphasises the teacher more than the student.

The question that now comes to mind is: Is it really possible to teach "information literacy" or any "literacy" at all?

If we focus on skills, it makes more sense. The academic terms doesn‘t provide us with the tools we need on the practical level. The more practical “Skillslanguage” is emerging. Which skills and/or activities do we need the students to master? That, to me, makes more sense. Therefore, I have tried to use “information skills” more than “information literacy”. In my opinion, if librarians are set on continuing using “information literacy”, we should at least say “literacies”, in plural.

5.4. Information Literacy frameworks

5.4.1. Six frames

Bruce and Edwards(Bruce, 2007) discuss the different perceptions on IL and how these perceptions influence the approaches to learning and teaching as well as the interest of IL in different parts of the institution. They also ask how the different perceptions of IL influence the level of curriculum integration and the ways that we choose to assess the outcomes. The six frames they present in their paper see IL as:

1. Knowledge about the world of information (The content frame)
2. A set of competencies or skills (The competency frame)
3. A way of learning (The learning to learn frame)
4. Learned in context and is different for different people/groups (The personal relevance frame)
5. Important issues for society (The social impact frame)
6. A complex set of different ways of interacting with information (The relational frame)

Bruce and Edwards‘ main focus is the relational frame as this is the frame that is less familiar to the readers. The relational frame considers both the content (phenomena) and how the users experience the information. This way, learning is seen as coming to discern things in new or more complex ways. This way of learning is also called “variation theory”. The relational frame does not see the student and information literacy as separate entities, but as one.(2007, p. 43)

According to Bruce and Edwards(2007), Bruce has adapted a set of Ramsden‘s relational principles of learning and adopted them to IL education:

- Learning is about changes in conception – teachers need to assist students in developing new and more complex ways of experiencing information literacy
- Learning always has a content as well as a process – students need to learn about discipline content as they seek and use information.
- Learning is about relations between the learner and the subject matter – the focus is not on the student or the teacher or the information, but on the relation between these elements.
- Improving learning is about understanding the learner‘s perspective – teachers need to understand the variation in students‘ conceptions of information literacy (Bruce, 2007, p. 43)

This is seen as a way of implementing the relational frame into IL education. The question is if it is enough to make the changes we need. Bruce and Edwards say that the traditional library programs have referred to the matters of correct use of tools, the necessity for reading the instructions and searching techniques like Boolean operators, but that students ignore them because they are spoken about in abstract terms outside the context. Still, I do not see how the authors propose to implement the relational frame in IL education in a practical context.

The principles outlined above may have good intentions, but in my experience they are nothing but academic ramblings and therefore useless for the main practitioner. That`s why I have tried to develop something more practical.

Still, the frames can be used as an analytical took for understanding the different views on IL education and how it can be improved.

5.4.2. Big6

The Big6 is an information strategy developed by Mike Eisenberg and Bob Berkowitz. The number six refers to the stages of information seeking (task definition, information seeking strategies, location and access, use of information, synthesis and evaluation). Big6 is skills oriented and the slogan is "Information and Technology Skills for Student Achievement". (Big6, 2011)

The six stages supposedly helps the students define the information problem, selecting the best sources, locating the information, engaging with the sources and extracting relevant information, organising the content and presenting it, and judging the process and product(Wurster, 2011).

5.4.3. Seven Pillars

In 1999 SCONUL (SCONUL, 1999)presented their seven pillars of information literacy. The pillars were:

1. The ability to recognise a need for information
2. The ability to distinguish ways in which the information 'gap' may be addressed
3. The ability to construct strategies for locating information
4. The ability to locate and access information
5. The ability to compare and evaluate information obtained from different sources
6. The ability to organise, apply and communicate information to others in ways appropriate
7. The ability to synthesise and build upon existing information, contributing to the creation of new knowledge

However, in 2011, SCONUL announced that the pillars needed an update to better match the concepts. As they say: "In order for the model to be relevant to different user communities and ages, the **new model** is presented as a generic "core" model for Higher Education, to which a series of "lenses", representing the different groups of learners, can be applied."(SCONUL, 2011)

There are a multitude of frameworks. A simple Google search on "information literacy models" retrieved so many hits that it was impossible to mention them all. I chose to present only a few of the most well-known ones here.

5.5. Research layouts used in IL research

Information Literacy is a large area of research and there are many approaches to the material. I have briefly mentioned a few of the most significant epistemologies and how they have been used in IL research.

5.5.1. Constructivism

Constructivist theory focuses on the process of thinking that builds understanding by engaging students in stimulating encounters with information and ideas. Students learn by constructing their own understandings of these experiences and by building on what they already know to form a personal perspective of the world. The process of construction is an active ongoing process of learning that continues throughout life. (Kuhlthau, 2001)

According to constructivist theory, people do not just receive information. They actively process the information and try to integrate it in their knowledge structures. This way, information is never received the same way by all, but adopted by each in a different pattern.

Carol Kuhlthau has been a strong advocate within the library and information science field for this epistemology. Her studies on information search behaviour led to a model and some primary concepts. Her model is a series of seven stages in the search process. The seven stages are Initiating a research assignment, selecting a topic, exploring information, formulating a focus, collecting information, preparing to present and assessing the process. What makes it unique is that she has described each step with the search person's feelings and behaviour. It is an attempt of addressing a "holistic" view of information transfer. This makes the model more useful to those who need to understand user behaviour, like librarians.

Kuhlthau gave a keynote address at the 2001 IASL Conference in Auckland, New Zealand. In her address, she pointed at some primary concepts:

Children learn by being actively engaged and reflecting on that experience. (Dewey)

Children learn by building on what they already know. (Dewey)

Children develop higher-order thinking through guidance at critical points in the learning process. (Vygotsky)

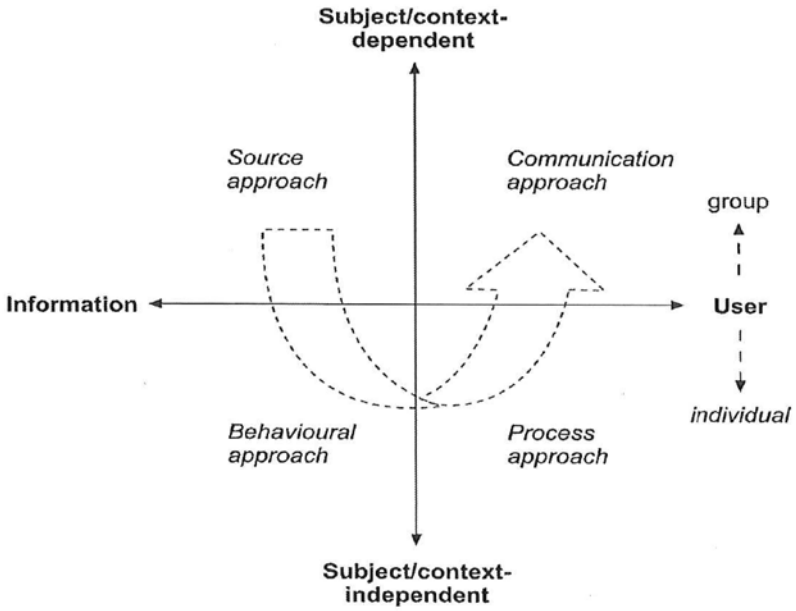
Children's development occurs in a sequence of stages. (Piaget)

Children have different ways of learning. (Gardner)

Children learn through social interaction with others
(Kuhlthau, 2001)

Kuhlthau was speaking about school libraries, but these principles also apply to students in higher education, teachers and librarians. This, of course, also applies to my own learning processes.

Constructivism is dominating the field of information literacy, and is has been for the last ten years, at least. It is closely linked to the cognitive sciences view of the human mind, where human perception is seen as fundamental to our experience of the world (Marcum, 2002, p. 7)



(Sundin, 2008, p. 38)

Sundin (2008) has drawn up a model of how the focus has changed from the information perspective towards the user perspective. He explains how we went from seeing information literacy as a generic skill to an approach where we see it as something entirely dependent on context for the individual user.

In a practical setting constructivism is closely related to active learning techniques. There are several ways of trying to improve the students learning outcomes with these kind of techniques, and some of them can be used by librarians who usually only have one session at their disposal, e.g. group work, peer teaching and discussion (Walsh & Inala, 2010, p. 6)

5.5.2. Phenomenography

Phenomenography itself is a research method adapted for mapping the qualitatively different ways in which people experience, conceptualise, perceive, and understand various aspects of, and phenomena in, the world around them.[...] The difference between phenomenography and phenomenology is that the former concentrates on discovering the subject's experience of the phenomenon and the latter concentrates on discovering the essence of the phenomenon itself. (Boon, et al., 2007, p. 209)

Phenomenography has been a popular methodology for qualitative research within the teaching and learning field. Christine Bruce is perhaps the best example of a researcher who has used this methodology within library and information science. Bruce carried out several phenomenographic studies including one study on information literacy of university staff, which resulted in her famous work, "Seven faces of information literacy". This book describes seven qualitatively different conceptions of information literacy and has become one of the most cited books in the field.

The seven faces that Bruce outlined are (as described by Boon et. al(2007, p. 212):

1. Information Technology Conception: using IT for information retrieval and communication
2. Information Sources Conception: concentrating on finding information

3. Information Process Conception: Information literacy seen as executing a process
4. Information Control Conception: with a focus on organising and storing information
5. Knowledge Construction Conception: building up a personal knowledge base
6. Knowledge Construction Conception: working with information so that novel insights are gained
7. Wisdom Conception: using information wisely and ethically for the benefit of others

When I compare these faces to Bloom`s taxonomy, I see some common denominators, like the hierarchy from using IT for retrieval to the wisdom conception. Bruce`s study is interesting because it, in a way previously not explored, revealed that there are many aspects to information literacy and that there is no one way of agreeing on the contents.

Both constructivism and phenomenography has good elements, but we need some good examples on practical implementation. We need practice-related knowledge.

5.5.3. Quality assessment in libraries

This is a time of turmoil and change for libraries worldwide. We are in a process of digitalisation and we are not sure where the road may take us and what librarians` role will consist of in the future. It is of vital importance that we find a way of assessing the quality of libraries and library services. If we are to survive in the future, we have to make sure that we fit the purpose we are set to have.

What is quality? How do we measure quality? It used to be all about economy, circulation numbers and number of visitors on the physical library site.

Libraries have traditionally held positions in society that no other institutions have had. They have been seen as unique institutions – a societal "good" – and this has lead to the belief that there has been no need to justify them (Munde & Marks, 2009, p. 19) This has, Munde and Marks says, has led to a culture where the librarians are believed to be the gate keepers of knowledge, a "we know what`s best for our patrons"[20] attitude that again has led to the culture of not consulting the patrons on their needs and expectations. Even in the cases where librarians have collected data, for instance for statistics that libraries are obligated to return, there has been an unwillingness to process the data further. The authors (ibid.) say that there are a number of reasons why self-assessment is not much emphasised in libraries: lacking leadership and knowledge about assessment, fear that the results from the evaluation may be held against the library, lack of control and old mental models are mentioned as possible reasons. Also, Munde and Marks say, librarians prefer the status quo. (p. 21)

If we are to measure quality, we have to have something to measure it against; a standard, some parameters. Whether or not that standard should be developed internally or externally, is a matter of discussion.

The library`s goals and service documents are often developed separately from the mother institution. In order to succeed, the library`s strategic plan must be a subset of the mother

[20] According to the authors there is a dichotomy in the IL literature between "empowering the students" and the need for "quality control"

institution`s plan. The library`s goals must match the institution`s goals. This way it will be easier to integrate the library into the institution. This, in time, is necessary to embed the information literacy courses into the curriculum and to gain acceptance and responsibility on more levels within the institution. This, in time, will determine how we measure quality.

At Gjøvik University College the library`s strategic plan is directly based on the institution`s overall plan. It is structured the same way and the institution`s goals form the foundation for the library`s goals. This obviously says something about what values the library has and what direction we have chosen. Still, I have not seen any improvement when it comes to integration of the library in the organisation based on this. It is, of course, important that the library moves in the same direction as the institution it serves, and that there is a common understanding of the roles the library should have, but I doubt that the strategic plan will be very helpful in the integration process. It is too general and generic to have that power. I do, however, believe that integration in the curricula could solve some of the "timing"- difficulties that many librarians are experiencing. We need to integrate something about IL in the course description templates. That is the right level.

5.6. Integrated Information Literacy courses

There seems to be a common understanding among librarians that IL courses that are integrated in faculty curricula and topics are better received by students and seem to have a better effect. Yet, there is little progress on the practical arena for this. Ekstrand and Seebass (2009) suggest that the reason may be that there is little understanding between the library world and the faculty world. The two worlds have separate traditions. While the librarians have been accustomed to sharing and collaborating, the faculty members have traditionally been more isolated and proprietary. Another reason may be that the only ones really interested in collaboration between librarians and faculty members seems to be librarians, and they write and publish their papers for other librarians in niche publications, thus isolating the matter within the library world.

According to McAdoo(2010, p. 4), the schools (universities and colleges alike) face harder demands on giving the students practical knowledge and vocational skills. There are growing expectations for accountability in higher education(p. 5). Universities and colleges in Norway is about to incorporate "Nasjonalt kvalifikasjonsrammeverk" (National accreditation standards) into all study programs and courses. These standards state are tools to describe learning outcomes on knowledge, skills and general competencies in three different cycles (bachelor, master and higher). This is part of trying to requiring greater accountability from schools that students are learning and acquiring the necessary competencies to make the transition into work life after graduation. Clearly, this would be an opportunity to integrate information skills into the curricula?

5.7. Communication between the faculty and library

Most of the authors that I have come across during my research emphasize the need for open communication channels between the librarians and academic staff. This is essential for the information literacy courses to be embedded into the faculty curricula.

Several libraries are using liaison[21] librarians as a link between the library and faculties. Breivik and McDermand (2004) describe campus partnerships and say that:

[21] The terms "contact librarians" or "outreach librarians" are also in use.

One of the primary goals of the outreach librarian is the further incorporation of information literacy into student outcomes in each discipline. The outreach librarian teams with the library liaisons on this goal because an essential ingredient in successfully integrating information competence into the curriculum is the quality of the relationships among the librarians and the classroom faculty. (Breivik & McDermand, 2004, p. 210)

And they conclude:

[…]the power of good library and classroom faculty relationships and the importance of supporting these relationships in practical ways […] fostering such relationships is too important to leave to chance. With the appointment of an outreach librarian, someone is responsible for continuously monitoring emerging opportunities for collaboration, taking the lead in laying the groundwork for the new initiatives, and providing support for the ongoing outreach efforts of librarians. The ultimate winners are our SJSU[22] students.(Breivik & McDermand, 2004, p. 215)

Ekstrand and Seebass (2009), however, claims that the faculty staff only use the liaison librarians as private bookholders that they contact whenever they need a copy of a journal article or another document. The liaison librarians are only seen as an entrance point to the library, and as a pure service provider, not as an information expert that they can collaborate with in an educational setting.

Boon, Johnston and Webber claim that the now recognized need to embed the IL courses into the curricula of other disciplines led to an increasing need of collaboration between librarians and academic staff, but that this remains a difficult subject as "librarians and academic staff find it hard to work with one another" (Boon, et al., 2007, p. 207) and they continue:

[…]found that academic do not necessarily value the contributions of librarians' to teaching and learning. […] identified that the attitudes adopted by librarians toward academics can be another barrier to effective collaboration. (p. 207)

To put it in another way, the academic staff doesn't value the librarians' expertise and the librarians think of academics as the barriers of collaboration. Obviously, this is not the best conditions to build effective relationships and consequently, getting the information literacy courses embedded into faculty curricula is a slow process. Ekstrand and Seebass (2009) has found that the two worlds (the library world and the faculty world) have such different traditions that any real collaboration must have its difficulties. Where one is concerned with sharing information and resources the other considers ownership and the individual contributions to be very important. The authors have also found that there is asymmetry in the relationship between these two worlds. They have seen that the library seems to know what goes on in the faculty world, but not the other way around. Even though the faculty members cherishes a good library and good library services, they know little of what the librarians do and what services the library can provide.

There are many advantages in a good collaboration. Torras and Sætre notes that:

Finally, despite the challenges, including the academic librarian in the supervision constellation will reward all its parties. Students will be supported better in their research process, and their acquisition of complex intellectual skills will be more comprehensive. In sharing supervision with the academic librarian, the academic supervisor will be partially or even totally relieved of some tasks. For instance, outsourcing citation or basic critical evaluation of information to the library will spare the academic staff some precious supervision and teaching time. In addition, it will clarify expectations in terms of student work quality. For the academic librarian, a more active participation in the faculty`s research activities through supervision will result in more

[22] San Jose State University

adequate user education and contact with users. The librarian will also gain more insight into collection development needs, as she will be more aware of the faculty`s research areas. Last, but not least, including the academic librarian in the supervision constellation will contribute to the professionalization of her educational role. (Torras & Sætre, 2009, p. 94)

It is easy to see here that being better integrated in the faculties is a win-win situation, but doing it in practice is harder to do.

Lura Sanborn(2005) wrote about the importance of faculty collaboration and the process of creating a library instruction session utilising faculty collaboration. She focused on the important role of the library for academic prosperity and described a program that St.Paul`s school in New Hampshire started to improve collaboration and the library`s IL sessions.

Successful completion of research is dependent upon successful library use and thereby closely linked to academic prosperity. The effectiveness of libraray instruction is often increased with librarian-faculty collaboration(Sanborn, 2005, p. 477) [...] teaching information literacy has been at the core of a school library media specialist`s role since school libraries have existed. Faculty collaboration provides an opportunity to create library instruction uniquely suited to individual class needs. [...] we cannot instruct in a vacuum. (p. 478)

Another problem might be that the teachers are afraid of asking for help because they feel that they should be able to manage this on their own. They are afraid of losing authority or lose face if they have to admit that they lack the skills.

Perhaps due to the lack of information skills and knowledge about information literacy, the teachers find it difficult to set good goals for the IL sessions and learning outcomes. This part is left to the librarian. Even though this, as Sanborn(2005, p. 479) notes, may sound ideal it really is not. Without faculty collaboration, the librarian will have difficulty knowing what assignments the students are working on, their previous library experiences etc. and contexualising becomes close to impossible.

The librarians often claim to be the foremost experts (and often seen as the *only* experts) on information literacy. Høivik (2010a) wrote about the troubled “information literacy” term in his blog post “Information and Swiss cheese”[23] He claims that the information literacy term has come to be equivalent to “life literacy”. If we define information literacy thus, the librarians can no longer claim to be the only experts in this area. Høivik also argues that the visions of information literacy have very little contact with reality. The visions are soaring high above the real life of librarians and users. They are therefore of little or no use to us. (Høivik, 2010a)

5.7.1. Problems and possible solutions

Gjøvik University College is a small University College and the communication is more personal than it would be in a larger University College or University. This has advantages as well as disadvantages, of course. In a way it makes the lines of communications shorter and better and the levels of bureaucracy fewer. But it also makes the communication more dependent on the persons filling the different positions and their level of interpersonal social skills.

I have been fortunate enough to have very good and open lines of communication with most of the academic staff at GUC. The problems that I have encountered are about the timing of the information literacy courses and the lack of integration with the academic discipline. Some teachers

[23] My translation.

tend to place my course wherever there is room on the students‘ itinerary and not necessarily where it would be a natural part of the module. I have also had teachers that call me and ask me to “do my thing” on very short notice because the teacher that were supposed to teach the class is ill or not able to teach at that period; they want to use me as a substitute teacher. This tells me that these teachers have little understanding of the field of information literacy and what I do. This may of course be regarded as the library‘s or my fault since we have failed to market these courses properly. It can also be that the teachers themselves have few information skills and therefore regard it as unimportant. Another possibility is that the students have reported to their teachers that the classes have little effect and should therefore be downgraded.

The cure for these problems will depend on the nature of the “disease”. If the reason for the ill timing of IL courses is that students don‘t want them, then the courses must be revised to meet the students expectation and needs. (As Sanborn quoted “Learning how to use the library doesn`t really impress most students until they need it for a particular course or a particular assignment”(2005, p. 478). If the reason is that the teachers have few information skills, then maybe the library‘s cure must be to try to improve them with training for the teachers. If the reason is that the students and teachers don‘t know what the IL courses can do for them or what they are about then we need to do a better PR job.

Whatever level, I do think that communication is key and that the library has to get as many access points as possible. Working closely with the dean of each faculty can make it easier to gain access to the academic staff and working with the academic staff on an individual level may make it easier to market the library‘s resources and courses. Working together toward a common goal is very important. The teachers know their students and their discipline well and working with the teachers is crucial to success.

> [...] the greatest influence on student acquisition of library skills was library instruction. With no partnership, few, if any, LI [library instruction, my note] opportunities exist. The notion that the faculty an librarians cannot form a working partnership is distressing at best, and at worst eminently harmful to the academic success of our patrons. (Sanborn, 2005, p. 478)

If the librarians can prove that the courses have a positive effect on students` writing, then they stand a better chance. Librarians must dare assume the role of the educator and have an opinion about didactic tools and assessment. It is also important to be “out there”, talking about new methods and results, and it is important to make the teachers themselves define IL through their course descriptions.

5.8. Information Literacy: new wine, old bottles?

Are information literacy courses very different from the courses the library held in bibliographic instruction? What are the components of IL courses?

A quick review of the online courses that are available tells us that much of the content is the same as it has been for years. There is emphasis on showing the students how to use the library‘s OPAC, search strategies (like the use of Boolean operators and truncation), searching databases and making bibliographies according to a certain style. In some cases there is also some emphasis on Copyright issues and how to use information ethically. Maybe there is a slight difference when it comes to lifelong learning. In bibliographic instruction there was no emphasis on this. Still, even if lifelong

learning is part of the scope of information literacy, there is little proof of it being part of the actual learning activities that takes place.

What consequences are there in changing the name? What is wrong with pouring new wine into old bottles? In my opinion, the problem occurs when there becomes an expectation of something new and no changes exist. Information literacy may sound better in course descriptions, but if we have no understanding of the term, it will only confuse us; teachers, librarians and students. That does not necessarily mean that I think "bibliographic instruction" is a good term, either. It is a "tribal" expression only known to librarians.

The bottom line is that the contents and teaching activities remain very much the same as before.

5.9. What does this mean? A short summary

It seems to me that one of the main problems is that there is little coherence between the theory and practice. Many of the texts I have read have presented good ideas and theories in themselves, but sadly, many of them can have no hope of survival in most academic libraries, and certainly not in a small academic library like the one I work in. Many of the ideas could only work in an ideal library/faculty/university setting and they have very little to do with the everyday life that I face when I go to work in the morning. Many of the frameworks presented could only be implemented in a college or a university where the students had no other subjects to learn or classes to go to. I am not saying that reading these texts have been a waste of time. I have learned much about the tensions that exist, not only between the library and the faculties, but also internally in the library sector.

The literature I have read shows some of the current shifts in the role of the librarians. Are librarians facing a massive role extension? Will the e-books be the end of the profession? Are librarians "equipped" to be teachers? Are librarians ready to work evidence-based? How do we assess our libraries?

There seems to be more questions than answers. In my opinion there can be no doubt that the library profession is facing some major issues in the near future and trying to hang on to old structures is not a sustainable course of action. This thesis is an effort to try to bring some new ideas to the way I teach. The theories I have read have helped me on my way, and even though I cannot directly transfer the ideas into a practical setting, I have tried to take some of the ideas with me up to the next level.

My experiment was based on action research ideals as a way of improving practice. Many of the IL frameworks, models and ideas I have encountered have a top-bottom approach, giving librarians models that cannot be implemented in practice. We are supposed to teach the students skills that foster lifelong learning, something that would fit in the higher levels of Bloom`s taxonomy and similar hierarchies. My data shows that the students are simply not "there". They need help with things that are usually on the lower levels. That either tells us that we must change the way we teach, or that the models are not relevant any more.

6.0. Discussion

I have carried out come discussions in the method, theory and results chapters already and commented in the text. This chapter is therefore dedicated to some issues that needed further discussion. The chapter is divided into three parts that are written as short essays.

6.1. The role expansion for librarians: are we teachers now?

Elbert Hubbard, the American writer, is supposed to have said: ”The teacher is the one who gets most out of the lessons, and the true teacher is the learner”.

Librarians have been very reluctant to enter into the world of pedagogy, and many remain very sceptical at entering into the world they see reserved for the teachers. I have met many librarians who have been opposed to the level of engagement I have done in my experiment. They see it as intruding on the teachers` turf. I can understand the argument, seeing as some teachers might find it intrusive if the librarians started to go into the students` texts, commenting on the students` argumentation, language, citation style and text structure. I also understand the librarians` hesitation to enter into this world as it would challenge the library profession and how we perceive the librarians' role in the academic sphere. Some librarians may also find that they do not have the necessary training or the academic background to do this well.

Still, if librarians see it as a *basic principle* never to enter into the teacher`s role, they should have some real arguments as a basis for their standing. I am surprised whenever librarians tell me that it is an unwritten rule at their library that the librarians should never get into the students` texts. I asked a few teaching librarians I know about why they were reluctant to get into the writing process with the students. Some were concerned with the amount of time and use of library resources while others had more idealistic objections, claiming that librarians are out of their field of expertise when trying to be mentors for the students. If librarians are supposed to teach information literacy, in the meaning empowering the students and making them able to search, find, evaluate and use information in any setting, even focusing on lifelong learning, how are librarians supposed to do that without really interacting with the students on their level?

When I asked the teachers involved in my experiment what they thought about me reading and commenting on the students` text, they said that they never felt that I was intruding on their turf. They were rather grateful that I addressed some of these issues as it saved them from spending precious lecture time on it. The only reservation they had was that there could be a chance of a situation if the librarian would teach the students something that, although might be correct in itself, would be in conflict with the goals for the assignment or work that the teachers had given the students. This could easily be remedied by including the librarians in the planning sessions, the teachers explained. Although the teachers involved in my experiment are very competent and probably could have taught the students what I taught them, they did not think of my behaviour as intrusive, and other teachers, perhaps especially those who come from corporate life straight into the academic world, may not be used to scientific methods and teaching academic processes and could have benefitted from my course.

When Sanborn(2005) wrote “We cannot instruct in a vacuum” (p.478) she was talking about faculty collaboration. If librarians want information literacy courses to have any effect on the learning

outcomes, we have to get serious about working with the faculty staff. I wanted the radiography students to feel more confident about searching the databases, and I wanted them to understand the research system better. I also wanted them to be able to use the PICO form to formulate a relevant and unambiguous research question and to follow author guidelines in a given journal (citation style and so on). I didn`t just want the students to learn this because *I* feel that it is important knowledge, but because the teachers had outlined goals that matched these in the course descriptions for the module I was involved in.

If librarians want to empower the students and make them able to shift for themselves, then we must make an effort to get a joint acceptance and understanding for the importance of learning these skills. The way to do that is to engage with the faculty staff and try to figure out a way to match the course descriptions the teachers have planned with the library`s plans. Such a merger of goals will certainly make it easier to create meaningful sessions at the right time for the students. I believe that if librarians show a greater interest in pedagogy and try to include themselves in the teachers` arena this will help the teachers to interact with the librarians. If a librarian acts like a teacher, it is easier to get a common understanding. I am not "just" a librarian. I am a teacher, whose subject specialisation is library and information sciences.

I experienced few problems in working with the faculty staff. GUC is a small university college and I have known some of the teachers for years. The section for Radiography has devoted teachers and most of them are interested in new technology. They work in a field of great changes with technology focus, and I have always found them to be more interested in database searches and keeping updated than many others within the health sector. I therefore think that it was no coincidence that I got a class at this section. I also believe that this is why I faced few problems when I presented the idea of the experiment to them. In retrospect, I wish I had tried to include them even more into the experiment. I wish that I had attended more of their classes and that I had encouraged them more to come to my classes. I think that if I had a better overview of the work the students were facing this module and if the teachers had observed what I was trying to teach the students, the results would have been even better.

A friend of mine, who is a nurse, tried to explain what I do to some mutual acquaintances (also nurses), and she said, half joking: "She is the one teaching all the boring stuff". I had to agree. When the courses, often initiated by teachers with an opening on the lecture plan, are given without context to any assignment, unconnected with the goals for the learning outcomes, it feels pointless and boring for both the students and me. As Walsh and Inala (2010)explained:

> Some of the main challenges to library staff are planning, creating and delivering sessions that can hold the attention of the users. In the past, it has been noted by many that library inductions (and orientation) and library instruction have elicited more than a few yawns from users on numerous occations. The view from the users` perspective is that these sessions will be boring, uninteresting and disengaging, and therefore little is gained by them(p. 2).

The question is then: How do we, not only become teachers, but active and engaging teachers? There are of course several pathways to explore. LIS education must be realigned to fit the real world and provide proper courses in pedagogy and didactics. LIS community must also try to actively recruit a wider set of students with an interest in teaching. Teaching librarians must try to include themselves in the faculties and form well-functioning communities of practice with the teachers and

other teaching librarians. Mentorships should also be taken into account. A theoretical approach to dancing never made anyone a ballerina. Practice must be carried out in real situations. That is why I believe that simulation could be a powerful tool in LIS education.

While I do not believe that one tool or a set of tools can solve every problem of disengaging information literacy courses, there are some interesting tools to be tested. The University Library in Oslo tested so-called "clickers", a kind of polling system that the teacher uses in class. There are web solutions that do the same things now, so there is little or no expense in purchasing. Trying to engage students in the lecture setting seems like a good idea, provided that the teacher is able to keep the focus on the content and use the feedback he or she gets from the students during the lecture in a productive way. Gamification[24] could also be looked into.

6.2. The technical vs. the process approach

What should we teach? Librarians seem to have stuck with the principles of "bibliographic instruction" and kept teaching how to use Boolean expressions and truncation signs. Head and Eisenberg concluded (Head, 2010) that it is time to move in a more process-oriented direction. Their survey showed that what librarians see as "the core" of information literacy courses, like searching for information, is far from the top priority for students. Students find it hard to get started on a new project and they are not likely to ask a librarian for help (Head, 2010, p. 35).

The students in my experiment answered many of the technical questions right, like when to use the Boolean operators and what the truncation signs do. But the students had very little understanding of where to look for scientific results and how to find fulltexts of articles they had located through searching reference databases as well as citing correctly.

Many students that I have encountered also lack the ability to structure an academic text. They struggle to build their arguments and "get lost" along the way. When I introduce the well-known IMRAD structure, they sigh with relief that there actually exist something that makes the process easier. Giving the students the tools that they crave can actually help them focus on more important things, like the content of their assignments.

As Wilder (2005) noted, segregating information skills from the disciplinary knowledge that the students are learning, only marginalises academic librarianship. It is of no use trying to make students become librarians, Wilder says, because focusing on the mechanical skills of searching will have no long-term effect. Instead of trying to teach them the complexity of searching for journal articles, Wilder suggest that we try to simplify matters. Although I do not see just how Wilder think this should be done, I agree with many of his arguments. I think that we cannot expect students to think of information skills as anything else than a means to reach their goals "here and now". I do not think that the lifelong learning aspect is very important at all, seeing as many of the students that we educate, at least at GUC, will ever spend much time searching databases after their exams are over. Most of them will probably feel that they manage fine with Google. In some cases, though, with

[24] Gamification is the use of so called "funware". It is a way of using games to make students engage with technology and to make things they would normally consider boring as fun and entertaining. There are many ways of doing it, but it usually consist of tasks and rewards for doing the task.

some of the students in health related professions, like radiographers and nurses, I have found that it is important to try to encourage them to use sources that they know they will have access to when they enter into work life, eg. Helsebiblioteket[25], making it more relevant.

I do believe in a process-oriented approach when teaching information skills. Some mechanical skills will necessarily be included, but as a whole I think it would benefit both librarians and students to teach the students something about how the scholarly system works and how they can learn as they write. If that, in a practical setting, means that we have to dig deeper into the students` texts and learning systems, then that is what we need to do.

6.3. Libraries and the Internet: what is next?

Internet as we know it today has its roots in the 1960`s, and that was when libraries started automating their catalogues, but it was not until 1989, when Tim Berners-Lee and others at CERN proposed a new protocol for distributing information that revolutionary hyperlinks appeared. The protocol became known as the World Wide Web in 1991, and when the first graphical browser was developed in 1993, the general public suddenly had easier access to the contents. (Howe, 2010)

The Internet was initially funded by governmental bodies, and therefore limited to research, educational and government uses(Howe, 2010). In the early 1990`s, the web was mainly a repository of documents that were hyperlinked. In the mid 1990`s, the Internet opened for commercial purposes. The more recent additions to the web, e.g. various social media platforms, have yet again, changed the way we use the Internet and what we expect to find. The Internet changed personal communication, business, politics and the academic world forever. It changed the entire structure of the academic system, from the way we study, and find information to the publication system.

Brown and Adler (2008)said that Internet and the new digital environment have enabled us to revive the humanistic spirit of collaboration and sharing and “playful” learning. This is, in my view, right as far as intention goes. It gives us these opportunities, but I think the majority of students remain consumers and not contributors.

What about libraries and librarians in the Internet era? Have they embraced the Internet or simply adapted to it? In a way, librarians in the field have managed to use some of the opportunities the Internet provided, like online catalogues and other Internet based services, and some librarians were interested, even eager, to test social media platforms to empower the users. Sadly though, LIS education, at least in Norway, is still “analogue- oriented”. When I started college in 1999, we were taught how to use a card catalogue and how to write catalogue cards in ISBD format. We were writing MARC codes by hand. I think most librarians who have worked in a library will agree that this makes no sense. I have reason to believe that this has changed somewhat the last few years, but the LIS education is still falling behind, educating librarians that are no where near prepared for work in a library in “the real world”.

[25] Helsebiblioteket.no is a web portal to scholarly and evidence-based information made freely available for all Norwegian IP addresses.

The Internet has an anarchist nature. Servers are localised all over the world. No one person is in charge of it and anyone can produce content to it. There is no central control, no cataloguing rules and no classification. Most librarians do not cherish a search process based on serendipity.

The students needed librarians in the paper-based world. When the Internet emerged within the academic sphere, the students became more self-reliant and librarians tried to answer this challenge claiming to be the only true information experts. The strategy failed, according to Wilder (2005). The students do not welcome the librarians` expertise because they see no need for it. As Wilder says:

> The typical freshman assumes that she is already an expert user of the Internet, and her daily experience leads her to believe that she can get what she wants online without having to undergo a training program (Wilder 2005)

Munde (Munde & Marks, 2009) quotes IFLA saying: "Quality in this sense, is fitness to purpose, that is to say, a service or a product should supply or perform as it is intended to. The "purpose" of a service or a product is defined by the customers. Quality in this sense is neither an isolated standard nor the highest standard; it is defined by the needs of the clientele of the individual institution" (Munde & Marks, 2009, p. 1). But how do we measure quality if we cannot agree on what the purpose should be?

Some librarians are concerned that our mandate as librarians disappears when we no longer will store printed books and materials in the library. In their view, the mandate is closely linked to the physical space and the physical collection. Some librarians have tried to position themselves within the organisation by taking on new roles, eg. as conference hosts, using the library as the venue.

The library at Copenhagen Business School is a potent example of libraries that are doing something completely different. They are clearing out and moving books out of the library. The library has one main facility and two branches. At the main library, the patrons have access to printed and electronic materials as well as study facilities like reading rooms and computer rooms. The library branches hold study rooms, reading rooms and computer rooms with access to all electronic sources, but no printed documents. (ref Steffensen)

What about our roles as teachers if the physical library no longer exists? Are we still to teach how to search library catalogues or will not only the form, but also the content of these courses change?

The digital natives

"Beloved child has many names" is a Scandinavian idiom. It seems that this applies to the generation of young adults now. Young men and women, born from the mid 1970`s/early 1980`s and later are often referred to as "The Net Generation", "Generation next", "Millenials", "Gen Y" and sometimes even "The Peter Pan generation". This generation is usually marked by their familiarity with media and technology, hence the term "digital natives".

Robinson (2008) citing Prensky describing the characteristics of the digital natives thus:

> They have been conditioned by the digital technological environment to expect immediate responses to information inquires. They prefer random (or non-linear) access to information, have a preference for image over text based content and are comfortable engaged in several tasks at once. They are impatient with slower and more structured means of acquiring information and knowledge, expecting instant response and instant

satisfaction with the technology they use, and are highly adaptive, able to utilize a range of technologies to network with their peers. The approach to learning that the digital student brings from secondary to tertiary education is also more collaborative, problem solving and task based. (Robinson, 2008, p. 68)

How do we build a library service to fit the needs of these users? Teaching them how the research processes and system could bring them closer to the academic tradition, but it is not enough. A library service for these users must include a variety of entry points to information, a varied set of media platforms that match the users expectations, engaging and easy accessible library websites and relevant training. To achieve this, frequent and meaningful assessment is required. There are several things that I want to test: gamification in the courses (to make them more engaging), academic blogging and annoted bibliographies as a mandatory part of a paper or portfolio, and creating a couple of test groups consisting of both junior and senior students to see if they learn from each other.

If there is one thing the Internet and the digital natives have taught us, it is that availability and access to information only makes half the equation. Access does not mean knowledge. The digital natives are just as dependent upon proper training and being exposed to situations where they experience and learn by them selves or together as the previous generations.

What will the future bring?

The leader of the Norwegian Librarians union, Monica Deildok, wrote an editorial in the union`s magazine about the changing roles of librarians(Deildok, 2011). Deildok claimed that librarians, instead of acting as conference hosts and doing other tasks that we are not trained for, librarians should find their way back to the (quote) “core competencies”. Deildok said that this would be a good way of uniting librarians across the traditional boundaries of school, public and academic libraries. Deildok does not explain what these “core competencies” should be, but I do not see how that could be done and why that is something we should even strive for. I think that we in the future will see librarians of all backgrounds and interests. My prediction is that we will see more subject specialists focussing in finding and managing information within a specific subject field, probably eventually even employed by the faculty or institute, rather than by a central library/university administration.

It is difficult to predict the future. A quick Google search revealed a number of documents that has tried, like “Visions: The academic library in 2012” (Marcum, 2003). It was written in 2003, and it was an attempt to look to the future and see what it could bring. The article emphasises how library services will include visualised searching and multimedia resources, and librarians working globally in a matrix. Naturally, now being in 2011, we can see that things have progressed in a rather different direction. Still, it can be a useful exercise to envision the future. It can help us being more creative as to where we want to be. Instead of always working from day to day, one year to another, it can be interesting to lift one`s gaze and set some long-term goals or visions. Where do we want to be in five to ten years? What do we want to teach then, and how do we want to teach in the future? Which models do we believe in? When that is done, we can start working on solid ideas on how to implement and operationalize the vision.

Libraries are caught between the analogue and the digital worlds, trying to satisfy users of all ages, cultures and preferences. Librarians have been moderately successful trying to manage the new

digital existence. Librarians have accepted new tasks and responsibilities, like institutional repositories, archives and bibliometrics. Still, many students that I have encountered, particularly undergraduate students, struggle to understand how to use the library services, and many have a traditional opinion on what a library should be: a quiet room with books and a reading room.

Some librarians have predicted that we will be more involved in bibliometrics in the future, while others place their bets on data curation. Tim Berners-Lee, already mentioned as one of the founders of the World Wide Web, is now involved in the development of the semantic web and maybe librarians will be important organisers; trying to knit the Internet tighter together.

I think that librarians in the future will be better integrated in each faculty. I think it very plausible that the next generation of librarians will be subject specialists, more than purebred librarians. In a digital environment where the printed materials will play a less prominent role, it makes more sense to have a subject specialist that also has the necessary information skills.

Gjøvik University College will probably merge with Lillehammer University College and Hedmark University College next year. Together, the three schools will apply for full University status within a couple of years. The libraries have already started talking about what the merged library should be, and one of the issues that are being discussed, are the way we teach. Teaching librarians from all the schools will be meeting later this year to talk about what we should be teaching and how. The goal behind these negotiations is to find a common platform and to set some parameters. It is impossible to say now what the merged University College Libraries will do in this field, but at least we are trying to make a new, common platform. I would like to see that we could form working communities of practice consisting of librarians, students and faculty staff; learning from each other and assessing out courses together. I would also like to see a master/apprenticeship situation between junior and senior students, forming groups that were “self-taught” on information skills. One possible way to initiate this at GUC would be to assign groups of new students with a “study buddy” or “student advisor” that could be a sort of teachers assistants to the teaching librarians.

Wherever the road leads, I hope that librarians will embrace the opportunity to change. That way, we could at least be a part of the development and maybe be allowed to influence the processes. Sticking one`s head in the sand will not do. We cannot face the future if we have our backs turned.

7.0. Conclusions

The library at Gjøvik University College (GUC) has been giving information literacy courses for years, but without ever trying to measure the learning outcomes. The number of classes and sessions the library teaches increases every year. The objective of this thesis has been to test a new method of teaching, and at the same time trying to measure the learning outcomes and the students` experiences.

While the sample tested in my experiment was too small to generalise, the background for this thesis was based on my experience as a teaching librarian. The empirical data I got from my experiment was linked to my own experiences and compared to the theories in the field.

Findings from this study includes:

- Many of the students fail many of the tests that represent what librarians see as "core competencies", like knowing when to cite, how to find the fulltext of an article by using the library OPAC and what actions to take when limiting the number of retrieved documents in a search
- The students do not understand research processes and are often insecure about how much literature they need and how to search for it
- The students want less time spent on lectures and more time solving contextual assignments with the librarian as tutor
- Information skills must be learned in context, e.g. when the students are in the middle of writing a thesis or a paper. Timing is everything
- A well-functioning collaboration between the library and the faculties are crucial to the embedding of information literacy courses
- The librarian must dare to go into the students` texts and get involved in the writing process
- We should focus more on the research and writing processes and less on the technical talk about where to click in the different databases

I could not detect major differences between the test group and the control group in the post-test I conducted. This may be due to the students working very closely together on other projects on the same time and that the students in my test group may have transferred some of their knowledge to the students in the control group. It may also be that the experiment did not have the desired effect. A follow up, including monitoring actual search behaviour, would have been necessary to get a clearer picture of this situation.

7.1. Further work: Where do we go next?

There is no such thing as "one size fits all" when it comes to designing information literacy courses. Tailored solutions for each set of students are the only way of making the courses relevant, interesting and useful. In order for this to work, librarians must read the course descriptions and work with the faculty staff to make sure we are working towards the same goal. The students must be met at their level and predispositions and the course must be contextualised to fit the assignments/course work the students find themselves struggling with.

A similar experiment will take place in the autumn semester of 2011, although on a slightly smaller scale. I have already started to test this model with other groups. For instance, this spring I gave a joint lecture for students in the "Palliative care" course at GUC. After the lecture, they all sent me working titles and research questions for a group exam they were taking and we used this as a basis for tutoring sessions. I have also done something similar for radiography students in their second year this spring. There are many varieties within my model, and further testing is needed.

Even though the library at GUC does not have the resources to follow each class through seven weeks, like I did in my experiment, there are lessons to be learned. The most important thing I learned and that I will bring on to other groups of students at GUC is that an embedded course through several weeks feels more relevant for both me as a librarian and teacher, and for the students. Learning the information skills within their subjects feels more relevant to the students and give better results in the long term, especially where the students` self-confidence is concerned.

The timing is crucial and a well-functioning collaboration with the faculty staff is therefore of the utmost importance. I would very much like to see that information skills were mentioned more in the frameworks, like the National Accreditation Standards (Kvalitetsrammeverket) and the course description templates that the teachers use when designing their courses. I would also like to see that these courses could be better integrated in the academic setting, where they matter, and not just where there is a free space in the students` schedule. This work will, no doubt, continue for a long time at GUC and most other colleges and universities.

There is a need for better compliance between the theory and practice in this field. Much could be gained by sewing the two better together, and first and foremost, it would be a relief for teaching librarians to have a practical approach to teaching. I still believe in a bottom-up approach and mentoring.

Teaching librarians must start to question the term "information literacy" and ask what the term should mean and what we could gain by using it. We need to be more critical to the terms we use and give practical examples when we talk about them. Otherwise they will remain useless academic ramblings.

We are probably heading for a paradigm shift in the library sector, and it is time to realise that librarians have some new tasks ahead. Librarians have been teaching for years, and I think it is time we started to consider ourselves teachers in our special area. We need to dare to go further into the students` writing processes and focus on giving them the tools that they need.

Finally, we need better assessment tools and we need to use them efficiently in order to deliver the content and services that are relevant to our institution and patrons.

Information literacy is not something that the library can teach the students through one or two sessions. It is not a quick library fix, but rather a set of skills that can only be developed and nursed through an educational context.

8.0. References

. About TRAILS: About the assessment. (2010) Retrieved 26.03.10, 2010, from http://www.trails-9.org/

ALA. (1989). Presidential Committee on Information Literacy: Final Report Retrieved 22.01.10, 2010, from http://www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/presidential.cfm

ALA. (2006). Information Literacy Competency Standards for Higher Education Retrieved 26.03.10, from http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm

Anderson, L. W., & Krathwohl, D. R. (2001). *A Taxonomy for learning, teaching, and assessing: a revision of Bloom's Taxonomy of educational objectives*. New York: Longman.

Beile, P. M. (2005). *Development and Validation of the Beile Test of Information Literacy for Education (B-TILED)*. Orlando, Fl.: College of Education, University of Central Florida.

Big6. (2011). The Big6 Retrieved 25.04.11, from http://www.big6.com/

Boon, S., Johnston, B., & Webber, S. (2007). A phenomenographic study of English faculty's conceptions of information literacy. *Journal of Documentation, 63*(2), 204 - 228.

Breivik, P. S., & McDermand, R. (2004). Campus partnerships building on success. *College & Research Libraries News, 65*(4), 210-215.

Brinxmat. (2010). Information literacy: it`s over and out. *Infonatives* Retrieved 12.03.10, 2010, from http://infonatives.wordpress.com/2010/01/18/information-literacy-its-over-and-out/

Brookfield, S. D. (1995). *Becoming a critically reflective teacher*. San Francisco: Jossey-Bass.

Brown, J. S., & Adler, R. P. (2008). Minds on Fire: Open Education, the Long Tail, and Learning 2.0. *EDUCAUSE Review, 43*(1), 16-32.

Bruce, C., Edwards, Sylvia. (2007). Six frames for information literacy education: a conceptual framework for interpreting the relationships between theory and practice. In S. Andretta (Ed.), *Change and Challenge: Information literacy for the 21st century* (pp. 37-58). Adelaide: Auslib press.

Cameron, L., Wise, S. L., & Lottridge, S. M. (2007). The Development and Validation of the Information Literacy Test. *College & Research Libraries, 68*(3), 229-237.

Deildok, M. (2011). Lederen har ordet. *Bibliotekaren: Tidsskrift for Bibliotekarforbundet*(5), 3.

Dreyfus, S. E., Dreyfus, H.L. (1980). A five-stage model of the mental activities involved in directed skill acquisition Retrieved 03.03.2011, from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA084551&Location=U2&doc=GetTRDoc.pdf

Ekstrand, B., Seebass, G. (2009). Integrativ informationskompetens: Diskursöverbryggande samarbete mellan akademi och bibliotek. In B. Hansson, A. Lyngfeldt (Ed.), *Pedagogiskt arbete i teori och praktik* (pp. 83-101). Lund: BTJ Förlag.

Eldredge, J. (2007). Introduction: evidence-based librarianship - current trends. In E. Connor (Ed.), *Evidence-based librarianship: case studies and active learning exercises* (pp. xxi-xxxviii). Oxford: Chandos.

Eldredge, J. (2009). Keynote abstract: Bridging the Gaps: Linking Our EBLIP Questions to Our Decisions. *EBLIP5* Retrieved 21.04.2010, from http://blogs.kib.ki.se/eblip5/keynote-abstracts.html

Elmborg, J. (2006). Critical Information Literacy: Implications for Instructional Practice. *Journal of Academic Librarianship, 32*(2), 192-199.

Griffiths, J. R., Brophy, P. (2005). Student searching behaviour and the Web: use of academic resources and Google. *Library Trends, 58*(4), 539-554.

Head, A. J., Eisenberg, M.B. (2010). *Truth be told: How College Students Evaluate and Use Information in the Digital Age*. Washington: The Information School, University of Washington.

Hegarty, N., Carbery, Alan, Hurley, Tina. (2009). Learning by doing: Re-designing the First Year Information Literacy Programme at Waterford Institute of Technology (WIT) Libraries. *Journal of Information Literacy, 3*(2), 73-90.

Houtman, E. (2010). "Trying to figure it out": Academic librarians talk about learning to teach. *Library and Information Research, 34*(107), 18-40.

Howe, W. (2010). A Brief History of the Internet: an anecdotal history of the people and the communities that brought about the Internet and the web Retrieved 16.05.11, from http://www.walthowe.com/navnet/history.html

Høgskolen i Oslo. (2010). Studieplan for bachelorstudium i Bibliotek- og informasjonsvitenskap 2010-2011 Retrieved 13.01.2010, from http://www.hio.no/content/download/340365/2164973/version/1/file/Studieplan+for+bachelorstudium+i+Bibliotek-+og+informasjonsvitenskap+2010-2011.pdf

Høivik, T. (2010a). Post 27/10: Informasjon og sveitserost. *Plinius* Retrieved 11.03.10, 2010, from http://plinius.wordpress.com/2010/02/02/p-2710/

Høivik, T. (2010b). Post 120/10: Skumle debatter. *Plinius* Retrieved 12.01.2011, from http://plinius.wordpress.com/2010/08/18/p-12010/

Keene, J., Colvin, J., & Sissons, J. (2010). Mapping Student Information Literacy Activity against Bloom`s Taxonomy of Cognitive Skills. *Journal of Information literacy, 4*(1), 6-20.

Kuhlthau, C. (2001). Rethinking Libraries for the Information Age School: Vital Roles in Inquiry Learning. *The 2001 IASL Conference* Retrieved 18.05.2010, from http://www.iasl-online.org/events/conf/keynote-kuhlthau2001.html

Kuhlthau, C. (2004). *Seeking meaning: a process approach to library and information services*. Westport, Conn.: Libraries Unltd.

Kvale, S. (1997). Research apprenticeship. *Nordisk pedagogik, 17*(3), 186-194.

Lave, J., & Wenger, E. (1991). *Situated learning: legitimate peripheral participation*. Cambridge: Cambridge University Press.

Limberg, L. (2010). Biosketch: Louise Limberg Retrieved 06.06.11, from http://www.lincs.gu.se/members/louise_limberg/

Limberg, L., Mikael Alexandersson, Annika Lantz-Andersson, Lena Folkesson. (2008). What matters? Shaping meaningful Learning through Teaching Information Literacy [1]. *Libri, 58*(2), 82-91.

Lin, P. (2010). Information literacy barriers: language use and social structure. [DOI: 10.1108/07378831011096222]. *Library Hi Tech, 28*(4), 548-568.

Marcum, J. W. (2002). Rethinking information literacy. *The Library Quarterly, 72*(1), 1-26.

Marcum, J. W. (2003). Visions: The Academic Library in 2012. *D-Lib Magazine, 9*(5).

McAdoo, M. L. (2010). *Building bridges: connecting faculty, students, and the college library*. Chicago: American Library Association.

Munde, G., & Marks, K. (2009). *Surviving the future: academic libraries, quality and assessment*. Oxford: Chandos Publishing.

Needleman, M. (2008). Why integrate video production in the classroom? Retrieved 05.10.10, from http://www.videointheclassroom.com/about/index.html

Newton, A. (2007). Reaching out to research students: information literacy in context. In E. Connor (Ed.), *Evidence-based librarianship: case studies and active learning excersises*. Oxford: Chandos.

Pettersen, R. C. (2005). *Kvalitetslæring i høgere utdanning: innføring i problem- og praksisbasert didaktikk*. Oslo: Universitetsforl.

Pfeffer, J., & Sutton, R. I. (2006). *Hard facts, dangerous half-truths, and total nonsense: profiting from evidence-based management*. Boston, Mass.: Harvard Business School Press.

Pharo, N., & Järvelin, K. (2006). “Irrational” searchers and IR-rational researchers. *Journal of the American Society for Information Science and Technology, 57*(2), 222-232. doi: 10.1002/asi.20272

. Prague Declaration: Towards an information literate society. (2003) Retrieved 22.02.10, 2010, from http://portal.unesco.org/ci/en/files/19636/11228863531PragueDeclaration.pdf/PragueDeclaration.pdf

Radcliff, C. J. (2007). *A Practical guide to information literacy assessment for academic librarians*. Westport, Conn.: Libraries Unlimited.

Robinson, M. (2008). Digital nature and digital nurture: libraries, learning and the digital native. *Library Management, 29*(1/2), 67-76. doi: 10.1108/01435120810844658

Sanborn, L. (2005). Perspectives on... Improving Library Instruction: Faculty Collaboration. *The Journal of Academic Librarianship, 31*(5), 477-481. doi: DOI: 10.1016/j.acalib.2005.05.010

SCONUL. (1999). Information Skills in Higher Education: a SCONUL Position Paper Retrieved 25.04.11, from http://www.sconul.ac.uk/groups/information_literacy/papers/Seven_pillars.html

SCONUL. (2011). The Seven Pillars of Information Literacy Retrieved 25.04.11, from http://www.sconul.ac.uk/groups/information_literacy/seven_pillars.html

Streatfield, D., Sharon Markless. (2008). Evaluating the Impact of Information Literacy in Higher Education: Progress and Prospects. *Libri, 58*(2), 102-109.

Sundin, O. (2008). Negotiations on information-seeking expertise: A study of web-based tutorials for information literacy. *Journal of Documentation, 64*(1), 24 - 44.

Sundin, O. (2010). Biosketch: Professor Olof Sundin Retrieved 06.06.11, from http://www.lincs.gu.se/members/olof_sundin/

Tompkins, E. K. (2009). A Reflective Teaching Journal: An Instructional Improvement Tool for Academic Librarians. *College & Undergraduate Libraries, 16*(4), 221 - 238.

Torras, M.-C., & Sætre, T. P. (2009). *Information literacy education: a process approach : professionalising the pedagogical role of academic libraries*. Oxford: Chandos.

Vezzosi, M. (2007). Action research and information literacy: a case study at the University of Parma. In E. Connor (Ed.), *Evidence-based librarianship: case studies and active learning exercises* (pp. 19-40). Oxford: Chandos.

Walsh, A., & Inala, P. (2010). *Active learning techniques for librarians: practical examples*. Oxford: Chandos Publ.

Wenger, E., McDermott, R., & Snyder, W. M. (2002). *Cultivating communities of practice: a guide to managing knowledge*. Boston: Harvard Business School Press.

Wilder, S. (2005). Information literacy makes all the wrong assumtions. *The Chronical of Higher Education, 51*(18, January 7), B13.

Wurster, S. (2011). About: What is the Big6? Retrieved 18.05.11, from http://www.big6.com/about/

surveygizmo

Online Surveys, Data Collection and Integration
www.SurveyGizmo.com

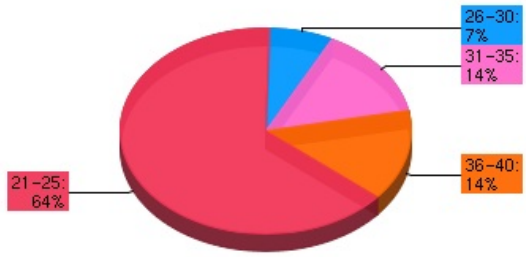
Summary Report - Mar 21, 2011

Survey: Test for radiografer

Kjønn

Value	Count	Percent %
Kvinne	11	78.6%
Mann	3	21.4%

Statistics	
Total Responses	14



Alder

Value	Count	Percent %
21-25	9	64.3%
26-30	1	7.1%
31-35	2	14.3%
36-40	2	14.3%

Statistics	
Total Responses	14
Sum	349.0
Average	24.9
StdDev	5.73
Max	36.0

Hvordan vil du beskrive din evne til å søke i databaser (for å finne informasjon), generelt sett?

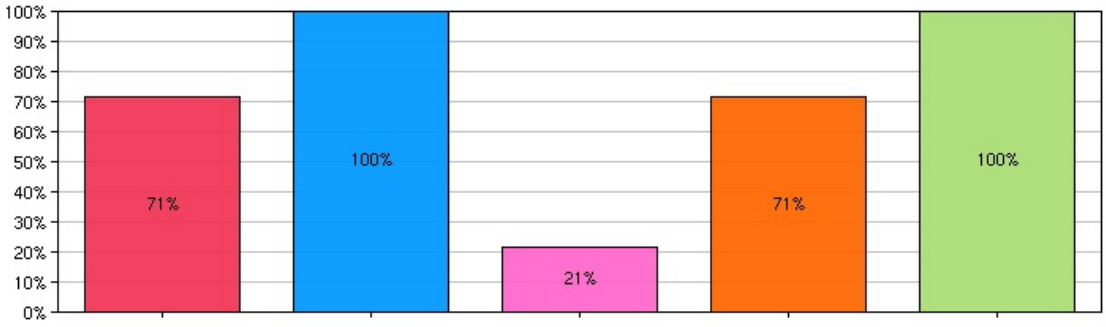
Value	Count	Percent %
Utmerket	1	7.1%
Middels	12	85.7%
Dårlig	1	7.1%

Statistics	
Total Responses	14

Hvordan vil du beskrive din evne til å søke etter informasjon på Internett, generelt sett?

Value	Count	Percent %
Utmerket	1	7.1%
God	7	50%
Middels	6	42.9%

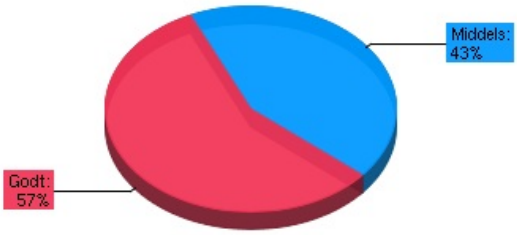
Statistics	
Total Responses	14



Merk av for følgende du har gjort etter at du begynte på Høgskolen i Gjøvik. Du kan merke av for flere alternativer.

Value	Count	Percent %
Vært med på en rundtur/omvisning i biblioteket	10	71.4%
Vært med på en eller flere av bibliotekets undervisningstimer/ informasjonskompetansekurs i et klasserom eller datalab	14	100%
Sett på en av bibliotekets veiledninger/veiledningsvideoer (f.eks. en av HiG-bibliotekets videoer på YouTube)	3	21.4%
Tatt kontakt med en bibliotekar via e-post, telefon eller personlig	10	71.4%
Brukt bibliotekets hjemmeside for å finne informasjon om databaser	13	92.9%
Brukt bibliotekets hjemmeside for å finne informasjon om oppgaveskriving	14	100%

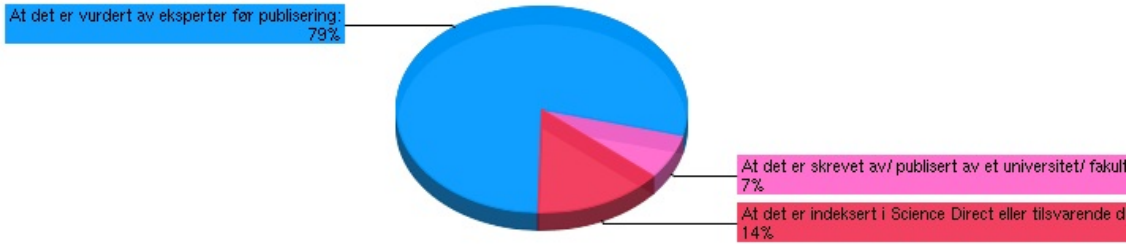
Statistics	
Total Responses	14



Hvor godt behersker du engesk, generelt sett?

Value	Count	Percent %
Godt	8	57.1%
Middels	6	42.9%

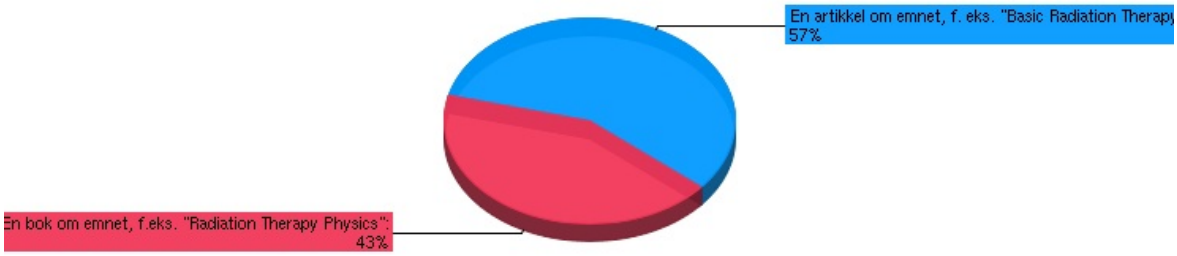
Statistics	
Total Responses	14



Hvilke av de følgende utsagn beskriver best hva som regnes for vitenskapelig forskning?

Value	Count	Percent %
At det er indeksert i Science Direct eller tilsvarende database	2	14.3%
At det er vurdert av eksperter før publisering	11	78.6%
At det er skrevet av/ publisert av et universitet/ fakultet	1	7.1%

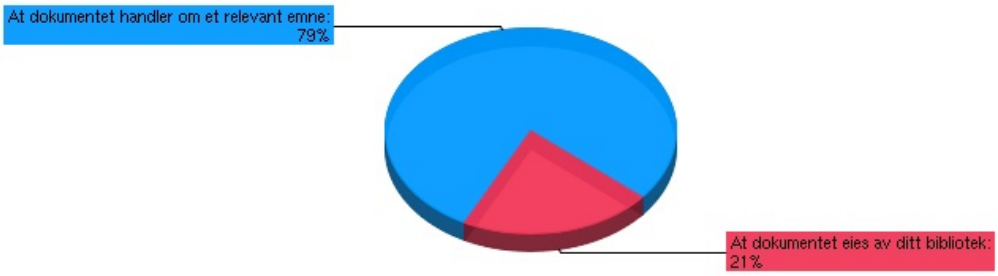
Statistics	
Total Responses	14



Læreren din har gitt deg en oppgave i stråleterapi. Du kjenner ikke temaet/ området så godt, så du bestemmer deg for å lese en kort historisk oversikt og sammendrag om det. Hvilken av følgende kilder vil være den beste?

Value	Count	Percent %
En bok om emnet, f.eks. "Radiation Therapy Physics"	6	42.9%
En artikkel om emnet, f. eks. "Basic Radiation Therapy: a radiographer`s perspective"	8	57.1%

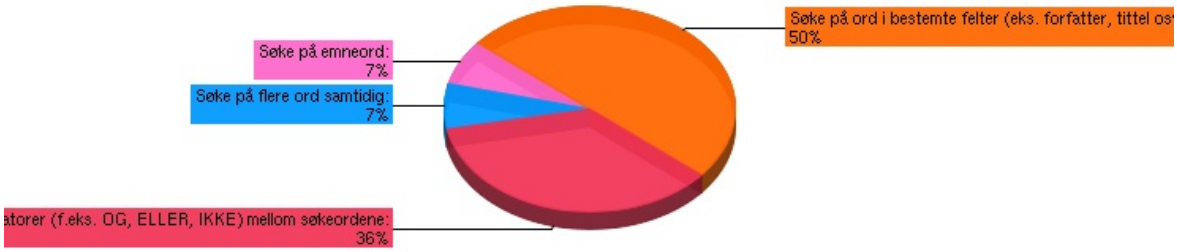
Statistics	
Total Responses	14



Tdsskriftdatabaser er designet for å inkludere dokumenter basert på hvilket av de følgende criteria?

Value	Count	Percent %
At dokumentet eies av ditt bibliotek	3	21.4%
At dokumentet handler om et relevant emne	11	78.6%

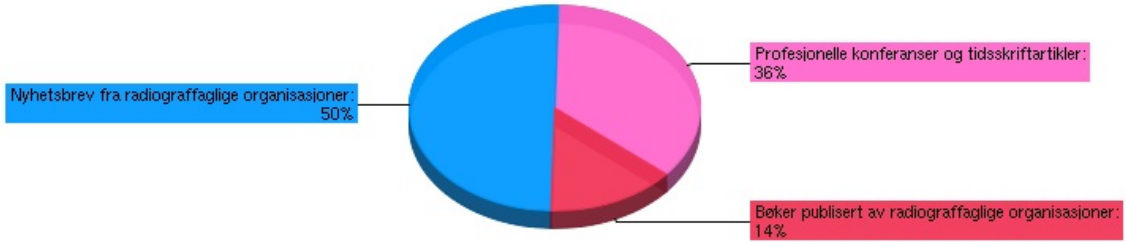
Statistics	
Total Responses	14



De fleste tidsskriftdatabaser har enkelt søk og avansert søk som søkemulighet. Hvilke av de følgende, kan du BARE gjøre i avansert søkevindu?

Value	Count	Percent %
Legge til Boolske operatorer (f.eks. OG, ELLER, IKKE) mellom søkeordene	5	35.7%
Søke på flere ord samtidig	1	7.1%
Søke på emneord	1	7.1%
Søke på ord i bestemte felter (eks. forfatter, tittel osv)	7	50%

Statistics	
Total Responses	14

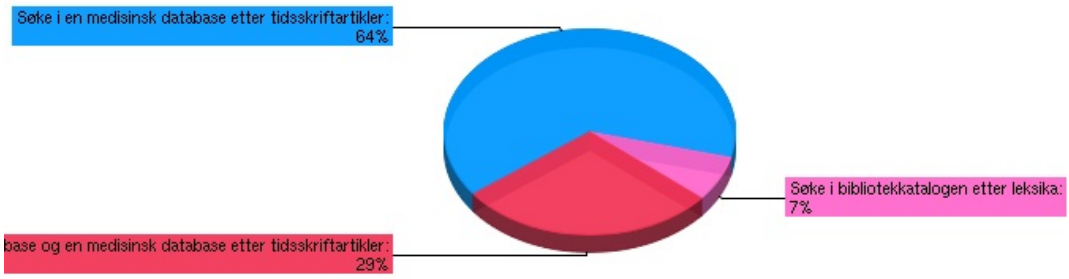


Vitenskapelige tekster innen radiografi er som regel først publisert i/som:

Value	Count	Percent %
Bøker publisert av radiograffaglige organisasjoner	2	14.3%
Nyhetsbrev fra radiograffaglige organisasjoner	7	50%

Statistics	
Total Responses	14

Profesjonelle konferanser og tidsskriftartikler	5	35.7%



Du skal skrive en kort oppgave om posisjonering av en pasient som skal ta MR av thorax (overkroppen) Læreren din har indikert at tre relevante, nyere vitenskapelige kilder burde være tilstrekkelig som kilde. Hvilken strategi er best når du skal finne disse kildene?

Value	Count	Percent %
Søke i en generell, akademisk database og en medisinsk database etter tidsskriftartikler	4	28.6%
Søke i en medisinsk database etter tidsskriftartikler	9	64.3%
Søke i bibliotekkatalogen etter leksika	1	7.1%

Statistics	
Total Responses	14

Velg det settet av søkeord som best representerer hovedkonseptene i følgende utsagn: Hvilke psykiske problemer kan en pasient som skal behandles med stråleterapi oppleve?

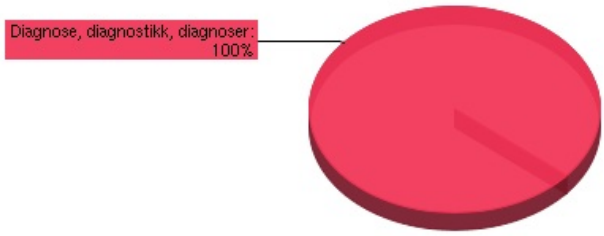
Value	Count	Percent %
Psykiatri, pasient, stråleterapi	10	71.4%
Angst, pasient, stråleterapi	4	28.6%

Statistics	
Total Responses	14

Velg det settet av søkeord som best representerer synonymer og relaterte ord for "studenter i høgere utdanning"

Value	Count	Percent %
Høgskoler, universiteter, studenter	13	92.9%
Generasjon Y, studenter, lavere grads studenter	1	7.1%

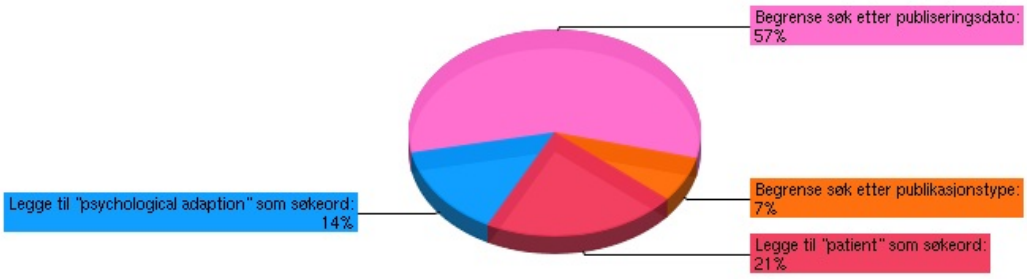
Statistics	
Total Responses	14



Du bruker en database som benytter asterisk (*) som trunkeringstegn. Når du skriver inn diagnos*, vil du få treff på hvilke følgende ord?

Value	Count	Percent %
Diagnose, diagnostikk, diagnoser	13	92.9%

Statistics	
Total Responses	13



Du har fått i oppgave å undersøke hvordan kreftpasienter som gjennomgår stråleterapi mestrer dette. Et søk i Medline på "Cancer and radiation therapy resulterte i mer enn 550 dokumenter". For å begrense antall treff, hvilke av de følgende tiltakene ville du ta nå?

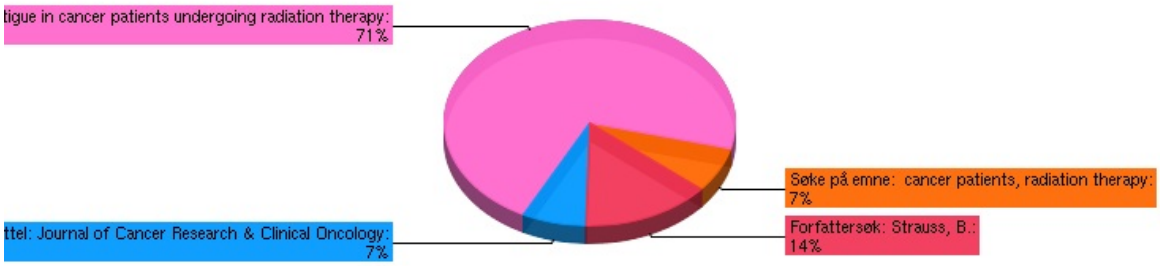
Value	Count	Percent %
Legge til "patient" som søkeord	3	21.4%
Legge til "psychological adaption" som søkeord	2	14.3%
Begrense søk etter publiseringsdato	8	57.1%
Begrense søk etter publikasjonstype	1	7.1%

Statistics	
Total Responses	14

Hva er det den følgende referansen henviser til?: Aasgaard, T. (2005) Song creations by children with cancer - process and meaning In: Aldridge, D. [ed.] (2005) Case study designs in music therapy. London: Jessica Kingsley publishers.

Value	Count	Percent %
En bok	8	57.1%
En tidsskriftartikkel	5	35.7%
En hjemmeside	1	7.1%

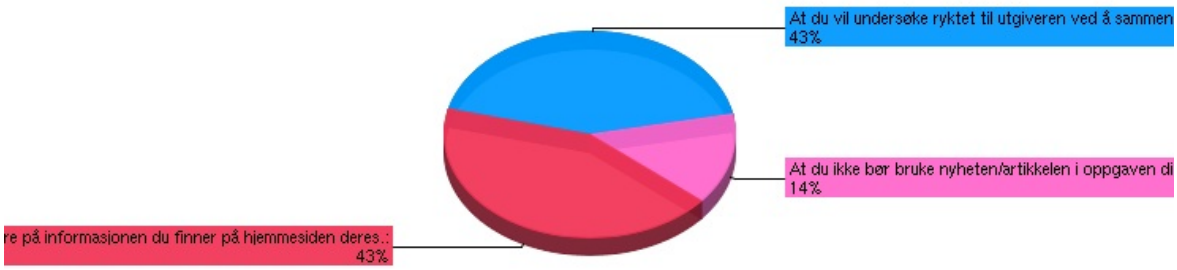
Statistics	
Total Responses	14



Læreren din foreslo at du skulle lese en bestemt artikkel g gav deg følgende referanse: Strauss B. [et al.] (2007) The influence of resilience on fatigue in cancer patients undergoing radiation therapy. In: Journal of Cancer Research & Clinical Oncology. 133(8):511-8, 2007 Aug.Hva burde du søke på i bibliotekkatalogen for å finne den aktuelle artikkelen?

Value	Count	Percent %
Forfattersøk: Strauss, B.	2	14.3%
Søke på tidsskrifttittel: Journal of Cancer Research & Clinical Oncology	1	7.1%
Søke på artikkeltittel: The influence of resilience on fatigue in cancer patients undergoing radiation therapy	10	71.4%
Søke på emne: cancer patients, radiation therapy	1	7.1%

Statistics	
Total Responses	14

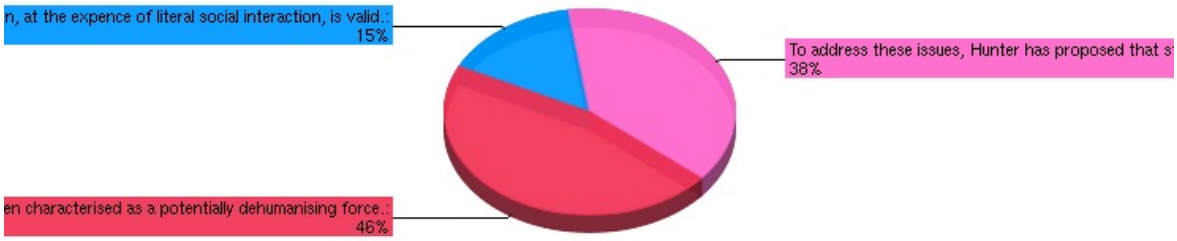


Du skriver en oppgave om stråleterapi og kommer over denne nyheten på Internett: Intensitetsmodulert stråleterapi (IMRT) på Norsk Helseinformatikk. Se denne siden for bilde: http://www.ansatt.hig.no/kareno/bildeavhjemmeside.htmlAv informasjonen du finner på bildet bestemmer du deg for:

Value	Count	Percent %
At du bør sjekke ryktet til utgiveren først ved å se nøyere på informasjonen du finner på hjemmesiden deres.	6	42.9%
At du vil undersøke ryktet til utgiveren ved å sammenligne med det du finner på andre hjemmesider	6	42.9%

Statistics	
Total Responses	14

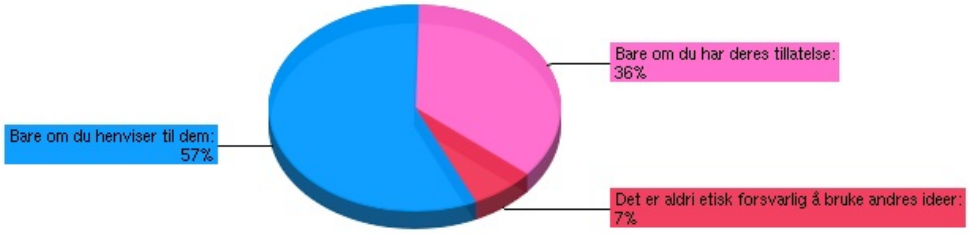
At du ikke bør bruke nyheten/artikkelen i oppgaven din fordi du fant den på Internett, og denne typen informasjon ikke alltid er til å stole på	2	14.3%



Enkelte typer informasjon skal siteres/henvises til i oppgavene du skriver. Hvilket av følgende utsagn skal siteres?

Value	Count	Percent %
Technology use in the schools is often characterised as a potentially dehumanising force.	6	42.9%
Perhaps the fear that the virtual world may lead to passivity and isolation, at the expence of literal social interaction, is valid.	2	14.3%
To address these issues, Hunter has proposed that students work in groups with the computer peripheral to the group and the teacher acting as facilitator.	5	35.7%

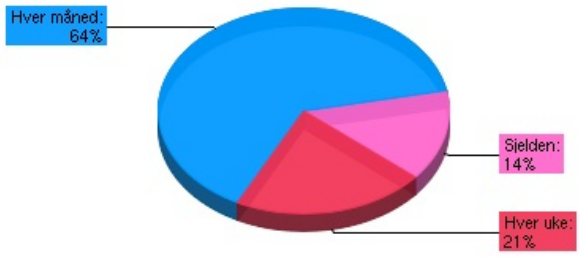
Statistics	
Total Responses	13



Når er det etisk forsvarlig å bruke andres ideer i dine oppgaver?

Value	Count	Percent %
Det er aldri etisk forsvarlig å bruke andres ideer	1	7.1%
Bare om du henviser til dem	8	57.1%
Bare om du har deres tillatelse	5	35.7%

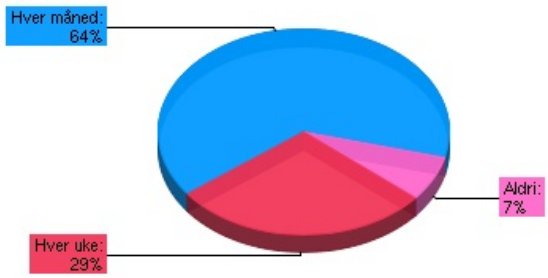
Statistics	
Total Responses	14



Hvor ofte gjennom siste studieår arbeidet du med en oppgave eller prosjekt hvor du måtte bruke informasjon fra forskjellige kilder?

Value	Count	Percent %
Hver uke	3	21.4%
Hver måned	9	64.3%
Sjelden	2	14.3%

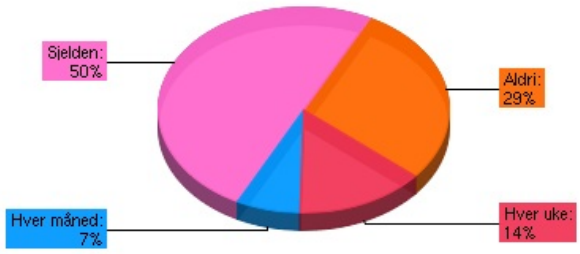
Statistics	
Total Responses	14



Hvor ofte gjennom sist studieår har du brukt e-post, SMS eller Fronter for å dele ressurser eller kommunisere med en lærer eller medstudenter(gjennomsnittlig)?

Value	Count	Percent %
Hver uke	4	28.6%
Hver måned	9	64.3%
Aldri	1	7.1%

Statistics	
Total Responses	14



Hvor ofte gjennom sist studieår har du brukt sosiale medier (som f.eks. Facebook, Twitter, Flickr, YouTube, Delicious eller andre) for å dele ressurser eller kommunisere med en lærer eller medstudenter (gjennomsnittlig)?

Value	Count	Percent %
Hver uke	2	14.3%

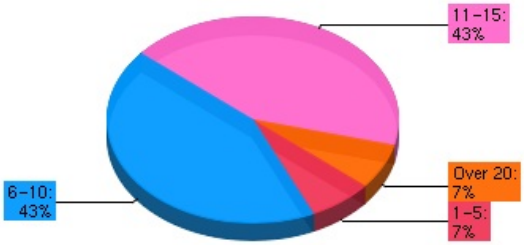
Statistics	
Total Responses	14

Hver måned	1	7.1%
Sjelden	7	50%
Aldri	4	28.6%

Hvor ofte i løpet av sist studieår brukte du bibliotekets ressurser (f.eks. databaser, bøker eller andre dokumenter) for å fullføre en oppgave (gjennomsnittlig)?

Value	Count	Percent %
Hver uke	1	7.1%
Hver måned	12	85.7%
Sjelden	1	7.1%

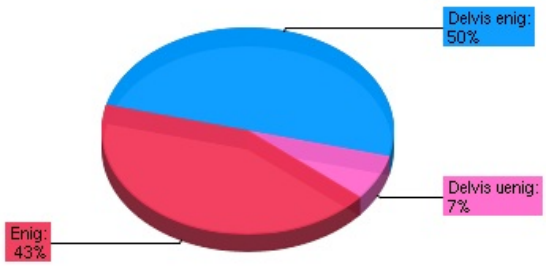
Statistics	
Total Responses	14



Hvor mange timer brukte du i gjennomsnitt på skolearbeid (lese, løse oppgaver, lekser, analyse av data, skrive tekster osv) i uka siste studieår?

Value	Count	Percent %
1-5	1	7.1%
6-10	6	42.9%
11-15	6	42.9%
Over 20	1	7.1%

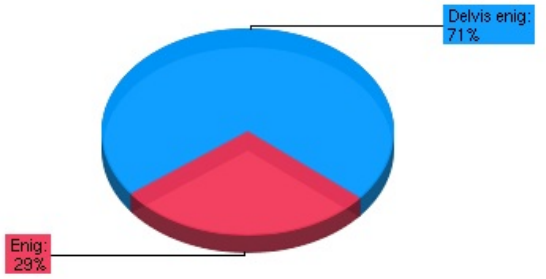
Statistics	
Total Responses	14
Sum	103.0
Average	7.9
StdDev	3.12
Max	11.0



Spørsmålene i denne testen reflekterer aktiviteter jeg har gjort på skolen, jobben eller hjemme.

Value	Count	Percent %
Enig	6	42.9%
Delvis enig	7	50%
Delvis uenig	1	7.1%

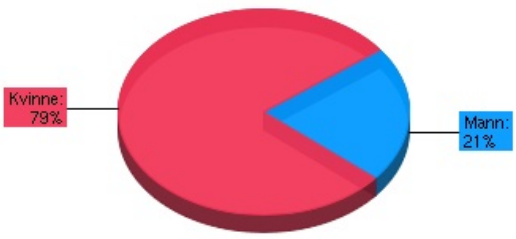
Statistics	
Total Responses	14



Utfallet av denne testen viser et korrekt bilde av min evne til å finne, kritisk evaluere og bruke informasjon.

Value	Count	Percent %
Enig	4	28.6%
Delvis enig	10	71.4%

Statistics	
Total Responses	14



Kjønn

Value	Count	Percent %
Kvinne	11	78.6%
Mann	3	21.4%

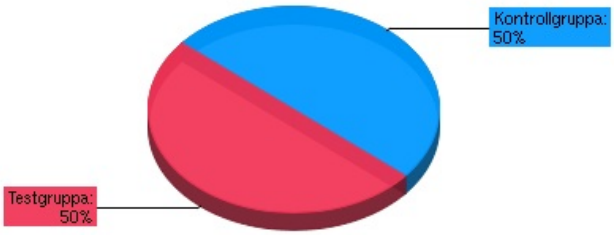
Statistics	
Total Responses	14

surveygizmo

Online Surveys, Data Collection and Integration
www.SurveyGizmo.com

Summary Report - Mar 21, 2011

Survey: Test for radiografer: del 2



Deltok du i testgruppa eller kontrollgruppa i informasjonskompetanseeksperimentet som foregikk i høst?

Value	Count	Percent %
Testgruppa	6	50%
Kontrollgruppa	6	50%

Statistics	
Total Responses	12

Hvis du deltok i testgruppa: Hvor godt fornøyd var du med opplegget?

Value	Count	Percent %
Godt fornøyd	5	41.7%
Middels fornøyd	1	8.3%

Statistics	
Total Responses	6

Hva synes du kunne vært gjort for å forbedre opplegget?

Count	Response
1	Det blitt for lite tid per time, kunne hatt flere møter.
1	Mer effektivt! Dele opp timene, bruke mer effektiv tid på hver gruppe
1	Mere tid, mere fokus på studentenes ønsker.
1	Vært rettet mer mot oppgavene med en gang. Tatt timene gruppevis, ettersom den tiden da den andre gruppen fikk hjelp ble litt dødtid for den ene gruppa.

Kjønn

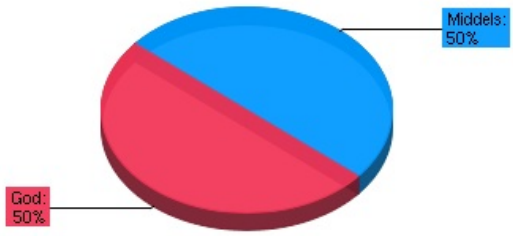
Value	Count	Percent %
Kvinne	10	83.3%
Mann	2	16.7%

Statistics	
Total Responses	12

Alder

Value	Count	Percent %
21-25	9	75%
31-35	2	16.7%
36-40	1	8.3%

Statistics	
Total Responses	12
Sum	287.0
Average	23.9
StdDev	5.19
Max	36.0



Hvordan vil du beskrive din evne til å søke i databaser (for å finne informasjon), generelt sett?

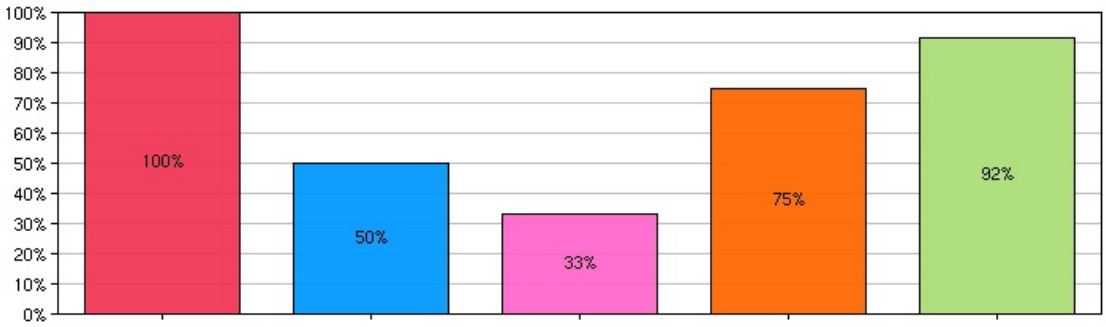
Value	Count	Percent %
God	6	50%
Middels	6	50%

Statistics	
Total Responses	12

Hvordan vil du beskrive din evne til å søke etter informasjon på Internett, generelt sett?

Value	Count	Percent %
God	11	91.7%
Middels	1	8.3%

Statistics	
Total Responses	12



Merk av for følgende du har gjort etter at du begynte på Høgskolen i Gjøvik. Du kan merke av for flere alternativer.

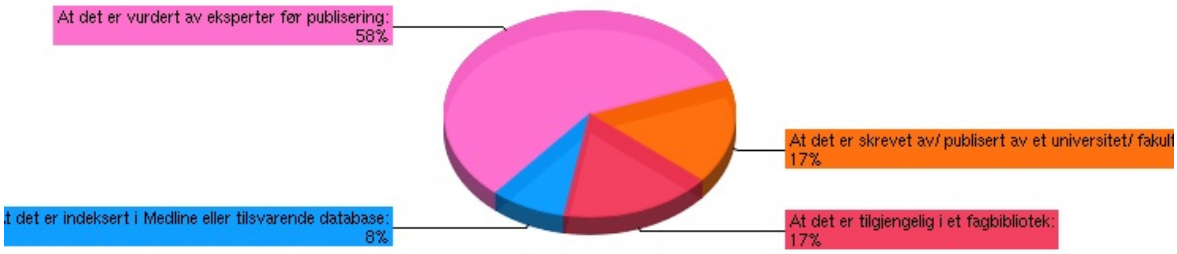
Value	Count	Percent %
Vært med på en rundtur/omvisning i biblioteket	9	75%
Vært med på en eller flere av bibliotekets undervisningstimer/ informasjonskompetansekurs i et klasserom eller datalab	12	100%
Hatt veiledning med en bibliotekar, enten alene eller med din basisgruppe	6	50%
Sett på en av bibliotekets veiledninger/veiledningsvideoer (f.eks. en av HiG-bibliotekets videoer på YouTube)	4	33.3%
Tatt kontakt med en bibliotekar via e-post, telefon eller personlig	9	75%
Brukt bibliotekets hjemmeside for å finne informasjon om databaser	8	66.7%
Brukt bibliotekets hjemmeside for å finne informasjon om oppgaveskriving	11	91.7%

Statistics	
Total Responses	12

Hvor godt behersker du engesk, generelt sett?

Value	Count	Percent %
Utmerket	2	16.7%
Godt	8	66.7%
Middels	2	16.7%

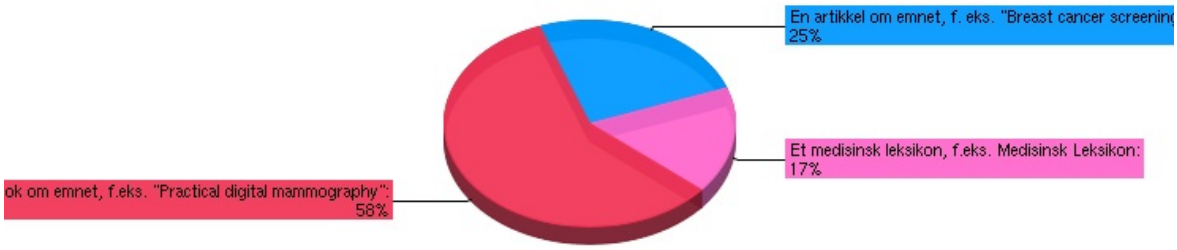
Statistics	
Total Responses	12



Hvilke av de følgende utsagn beskriver best hva som regnes for vitenskapelig forskning?

Value	Count	Percent %
At det er tilgjengelig i et fagbibliotek	2	16.7%
At det er indeksert i Medline eller tilsvarende database	1	8.3%
At det er vurdert av eksperter før publisering	7	58.3%
At det er skrevet av/ publisert av et universitet/ fakultet	2	16.7%

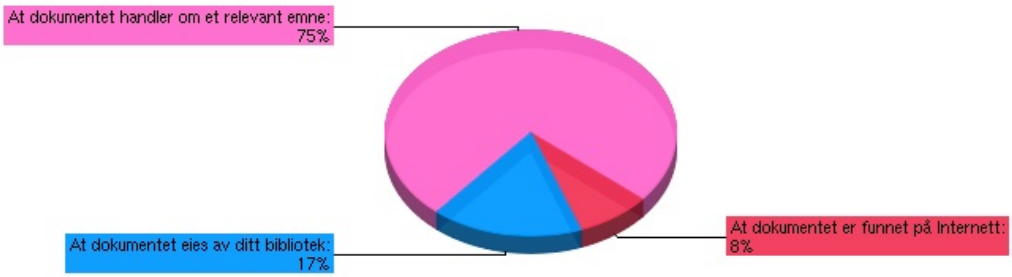
Statistics	
Total Responses	12



Læreren din har gitt deg en oppgave i mammografi. Du kjenner ikke temaet/ området så godt, så du bestemmer deg for å lese en kort historisk oversikt og sammendrag om det. Hvilken av følgende kilder vil være den beste?

Value	Count	Percent %
En bok om emnet, f.eks. "Practical digital mammography"	7	58.3%
En artikkel om emnet, f. eks. "Breast cancer screening with mammography: a metaanalysis"	3	25%
Et medisinsk leksikon, f.eks. Medisinsk Leksikon	2	16.7%

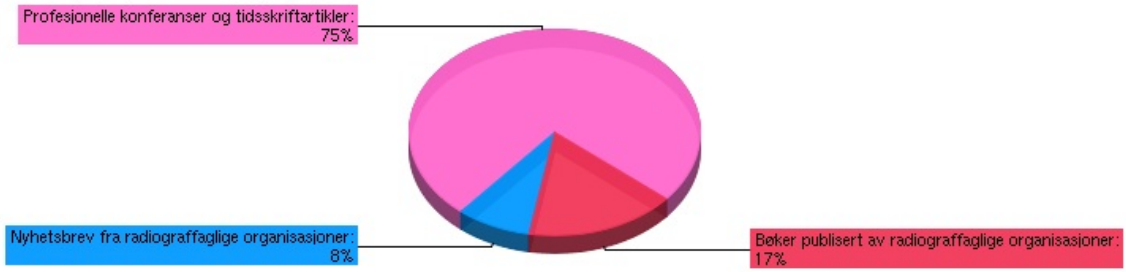
Statistics	
Total Responses	12



Tidsskriftdatabaser er designet for å inkludere dokumenter ut ifra hvilket av disse kriteriene?

Value	Count	Percent %
At dokumentet er funnet på Internett	1	8.3%
At dokumentet eies av ditt bibliotek	2	16.7%
At dokumentet handler om et relevant emne	9	75%

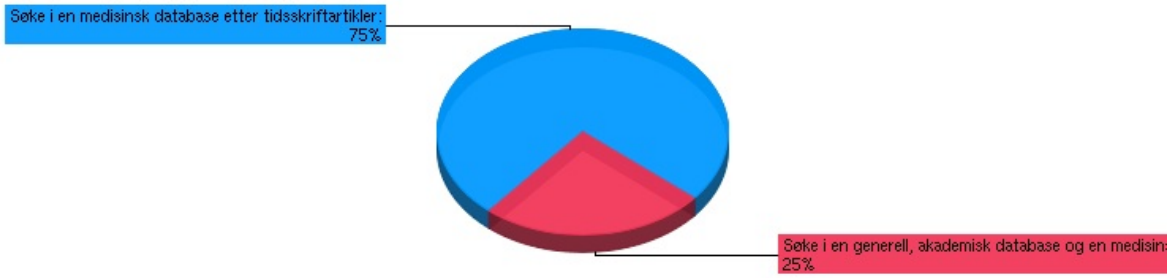
Statistics	
Total Responses	12



Vitenskapelige tekster innen radiografi er som regel først publisert i/som:

Value	Count	Percent %
Bøker publisert av radiograffaglige organisasjoner	2	16.7%
Nyhetsbrev fra radiograffaglige organisasjoner	1	8.3%
Profesjonelle konferanser og tidsskriftartikler	9	75%

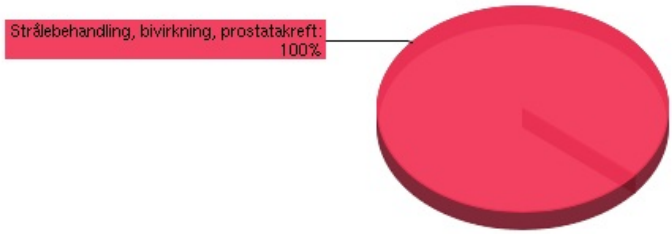
Statistics	
Total Responses	12



Du skal skrive en kort oppgave om mulige bivirkninger av strålebehandling av cancer prostata. Læreren din har indikert at tre relevante, nyere vitenskapelige kilder burde være tilstrekkelig som kilde. Hvilken strategi er best når du skal finne disse kildene?

Value	Count	Percent %
Søke i en generell, akademisk database og en medisinsk database etter tidsskriftartikler	3	25%
Søke i en medisinsk database etter tidsskriftartikler	9	75%

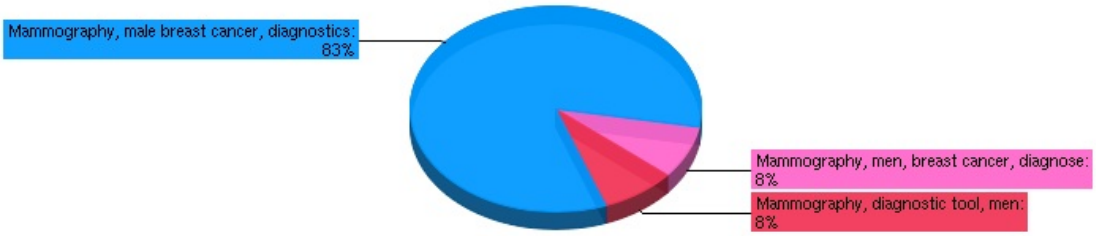
Statistics	
Total Responses	12



Velg det settet av søkeord som best representerer hovedkonseptene i følgende utsagn: Hvilke bivirkninger kan en pasient med cancer prostata oppleve ved strålebehandling?

Value	Count	Percent %
Strålebehandling, bivirkning, prostatakreft	12	100%

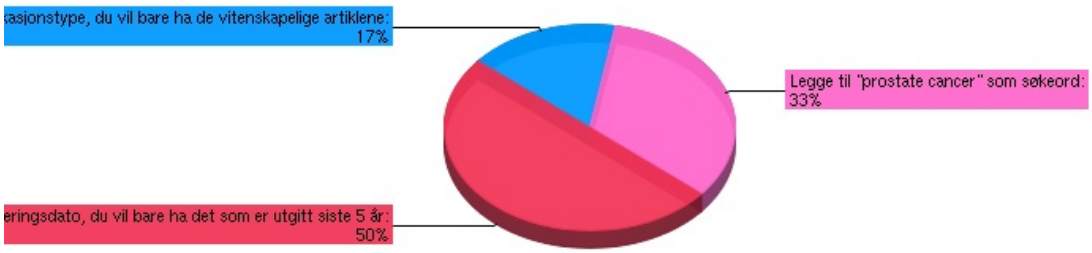
Statistics	
Total Responses	12



Velg det settet av søkeord som best representerer synonymer og relaterte ord for "mammografiens betydning i diagnostisering av mannlig brystkreft"

Value	Count	Percent %
Mammography, diagnostic tool, men	1	8.3%
Mammography, male breast cancer, diagnostics	10	83.3%
Mammography, men, breast cancer, diagnose	1	8.3%

Statistics	
Total Responses	12

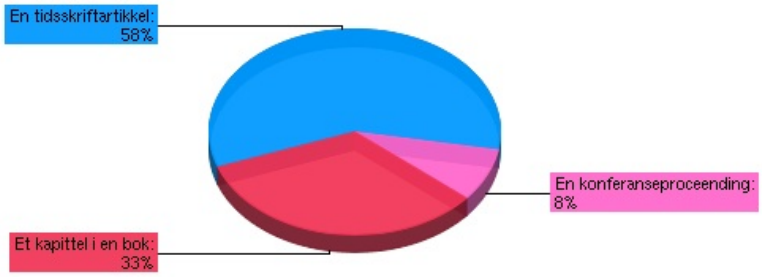


Din pasient, Per Ivar Olsen, skal behandles for prostatakreft. Det er bestemt at han skal behandles med brachyterapi. Du vil vite mer om bivirkninger slik at du kan informere pasienten. Et søk i ScienceDirect på "side-effects AND brachytherapy" resulterte i mer enn 7000 dokumenter. For å begrense antall treff, hva vil du gjøre nå?

Value	Count	Percent %
Begrense søk etter publiseringsdato, du vil bare ha det som er utgitt	6	50%

Statistics	
Total Responses	12

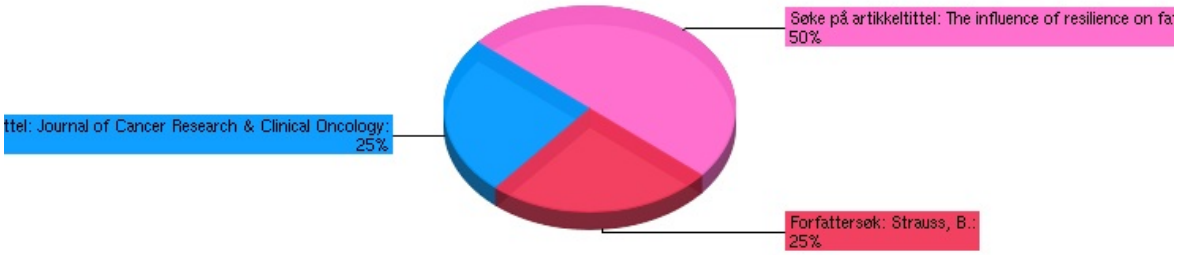
siste 5 år		
Begrense søk etter publikasjonstype, du vil bare ha de vitenskapelige artiklene	2	16.7%
Legge til "prostate cancer" som søkeord	4	33.3%



Hva er det den følgende referansen henviser til?: Stock, R.G. and N.N. Stone (2010). Current Topics in the Treatment of Prostate Cancer with Low-Dose-Rate-Brachytherapy In: Urologic Clinics of North America, 37(1), p. 83-96

Value	Count	Percent %
Et kapittel i en bok	4	33.3%
En tidsskriftartikkel	7	58.3%
En konferanseproceending	1	8.3%

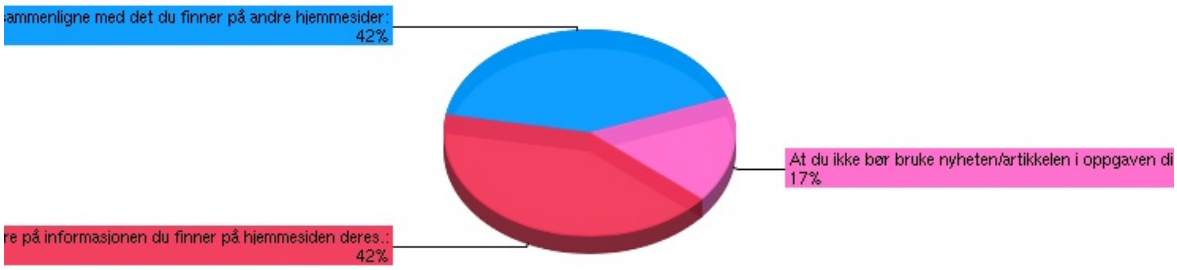
Statistics	
Total Responses	12



Læreren din foreslo at du skulle lese en bestemt artikkel og gav deg følgende referanse: Strauss B. [et al.] (2007) The influence of resilience on fatigue in cancer patients undergoing radiation therapy. In: Journal of Cancer Research & Clinical Oncology. 133(8):511-8, 2007 Aug.Hva burde du søke på i bibliotekkatalogen for å finne den aktuelle artikkelen?

Value	Count	Percent %
Forfattersøk: Strauss, B.	3	25%
Søke på tidsskrifttittel: Journal of Cancer Research & Clinical Oncology	3	25%
Søke på artikkeltittel: The influence of resilience on fatigue in cancer patients undergoing radiation therapy	6	50%

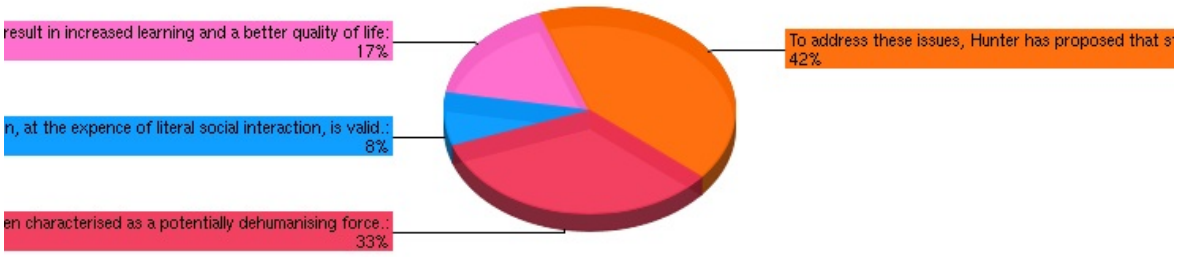
Statistics	
Total Responses	12



Du skriver en oppgave om stråleterapi og kommer over denne nyheten på Internett: Intensitetsmodulert stråleterapi (IMRT) på Norsk Helseinformatikk. Se denne siden for bilde: http://www.ansatt.hig.no/kareno/bildeavhjemmeside.htmlAv informasjonen du finner på bildet bestemmer du deg for:

Value	Count	Percent %
At du bør sjekke ryktet til utgiveren først ved å se nøyere på informasjonen du finner på hjemmesiden deres.	5	41.7%
At du vil undersøke ryktet til utgiveren ved å sammenligne med det du finner på andre hjemmesider	5	41.7%
At du ikke bør bruke nyheten/artikkelen i oppgaven din fordi du fant den på Internett, og denne typen informasjon ikke alltid er til å stole på	2	16.7%

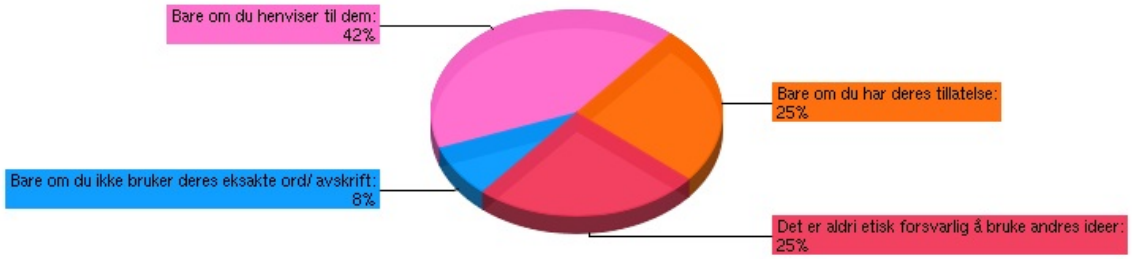
Statistics	
Total Responses	12



Enkelte typer informasjon skal siteres/henvises til i oppgavene du skriver. Hvilket av følgende utsagn skal siteres?

Value	Count	Percent %
Technology use in the schools is often characterised as a potentially dehumanising force.	4	33.3%
Perhaps the fear that the virtual world may lead to passivity and isolation, at the expence of literal social interaction, is valid.	1	8.3%
Certainly, educators must ask which uses of technology result in increased learning and a better quality of life	2	16.7%
To address these issues, Hunter has proposed that students work in groups with the computer peripheral to the group and the teacher acting as facilitator.	5	41.7%

Statistics	
Total Responses	12



Når er det etisk forsvarlig å bruke andres ideer i dine oppgaver?

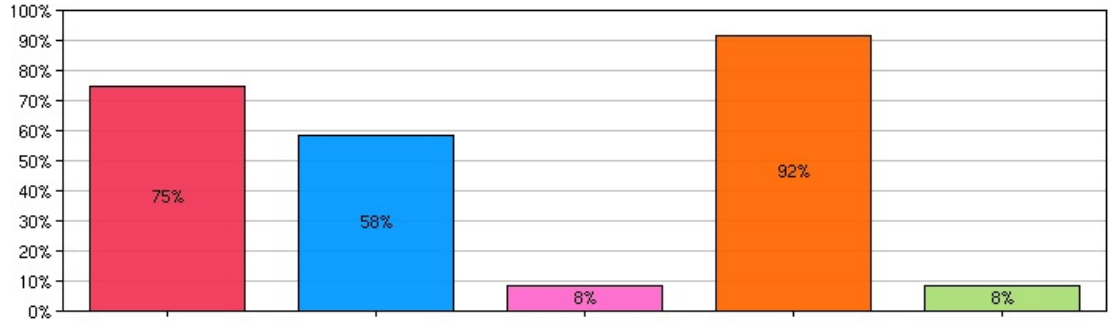
Value	Count	Percent %
Det er aldri etisk forsvarlig å bruke andres ideer	3	25%
Bare om du ikke bruker deres eksakte ord/ avskrift	1	8.3%
Bare om du henviser til dem	5	41.7%
Bare om du har deres tillatelse	3	25%

Statistics	
Total Responses	12

Et litteraturstudium er:

Value	Count	Percent %
En granskning og tolkning av litteratur om et bestemt emne	11	91.7%
En liste over litteratur utgitt om et bestemt emne	1	8.3%

Statistics	
Total Responses	12

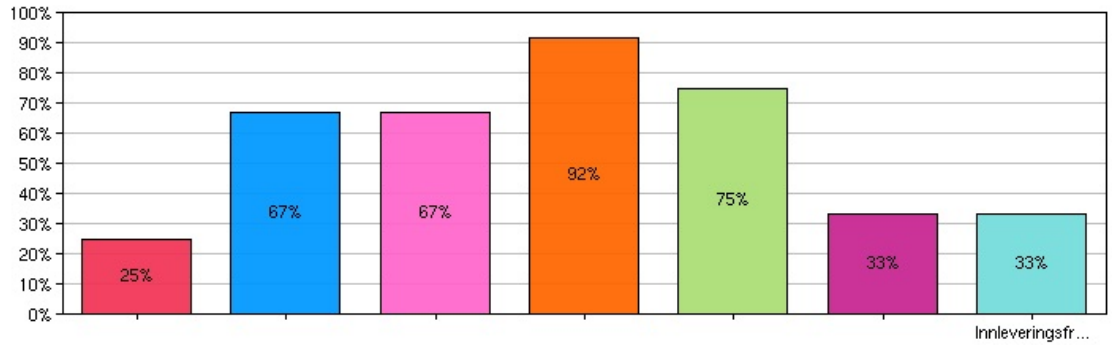


Metodedelen i en artikkel/oppgave skal (kryss av så mange du vil):

Value	Count	Percent %
Si noe om hvordan forfatteren har kommet frem til resultatene som presenteres	9	75%
Beskrive fordelene/ulempene med metoden som er brukt	7	58.3%
Gi tips til hvordan man kan søke i databasene	1	8.3%
Være en oppskrift som leseren kan følge for å finne samme resultater som forfatteren	11	91.7%

Statistics	
Total Responses	12

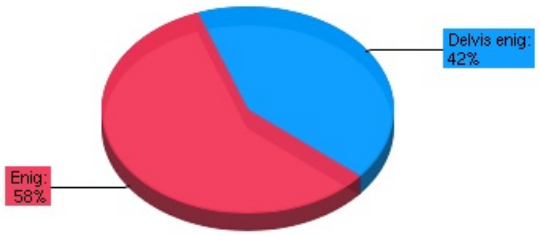
Gi en innføring i vitenskapsteori	1	8.3%



De fleste tidsskrifter har forfatterveiledninger. Disse inneholder som regel bl.a. (flere kryss mulig):

Value	Count	Percent %
En oppskrift for hvordan statistikk skal gjengis i artikkelen	3	25%
Informasjon om hvilke metoder som tillates brukt	8	66.7%
En mal for henvisninger (henvisningsstil)	8	66.7%
Formatteringsoppskrift (skriftstørrelse, fonttype osv)	11	91.7%
Sjanger (eks. originalartikkel eller oversiktsartikkel)	9	75%
Informasjon om forskningsetikk	4	33.3%
Innleveringsfrister	4	33.3%

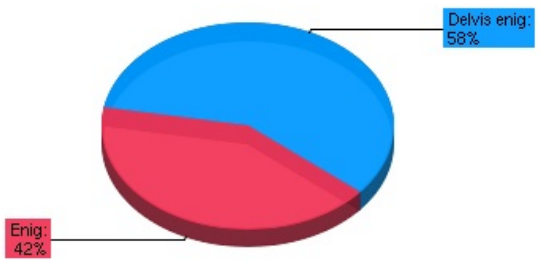
Statistics	
Total Responses	12



Spørsmålene i denne testen reflekterer aktiviteter jeg har gjort på skolen, jobben eller hjemme.

Value	Count	Percent %
Enig	7	58.3%
Delvis enig	5	41.7%

Statistics	
Total Responses	12



Utfallet av denne testen viser et korrekt bilde av min evne til å finne, kritisk evaluere og bruke

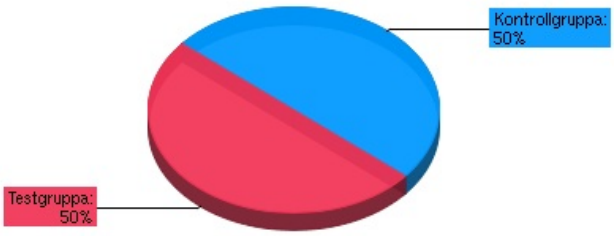
informasjon.

Value	Count	Percent %
Enig	5	41.7%
Delvis enig	7	58.3%

Statistics	
Total Responses	12

URL Variable: crc

URL Variable: id



Deltok du i testgruppa eller kontrollgruppa i informasjonskompetanseeksperimentet som foregikk i høst?

Value	Count	Percent %
Testgruppa	6	50%
Kontrollgruppa	6	50%

Statistics	
Total Responses	12

Hvis du deltok i testgruppa: Hvor godt fornøyd var du med opplegget?

Value	Count	Percent %
Godt fornøyd	5	41.7%
Middels fornøyd	1	8.3%

Statistics	
Total Responses	6

Hva synes du kunne vært gjort for å forbedre opplegget?

Count	Response
1	Det blitt for lite tid per time, kunne hatt flere møter.
1	Mer effektivt! Dele opp timene, bruke mer effektiv tid på hver gruppe
1	Mere tid, mere fokus på studentenes ønsker.

Appendix 3

Summary from CIQ forms October 12, 2010

1. At what moment in the class this week did you feel most engaged with what was happening?
2. At what moment in the class this week did you feel most distanced from what was happening?
3. What action that anyone (teacher or student) took in class this week did you find most affirming and helpful?
4. What action that anyone (teacher or student) took in class this week did you find most puzzling or confusing?
5. What about the class this week surprised you the most? (This could be something about your own reactions to what went on, or something that someone did, or anything else that occurs to you.)

Q1.

Responses varied a little. Some said that they felt most engaged in the middle of the session, when we were talking about the assignments and were interacting and exchanging ideas for subjects. Others said that they felt most engaged when we were talking about the PICO form and I introduced them to how they can use it to structure ideas into research questions. Others were less specific about what they felt most engaged about, but rather when during class they felt most engaged, like “at the beginning and at the very end”.

Q2.

It`s clear that the students found different things to be engaging/disengaging. Some said that they felt most disengaged when we were searching the databases because they didn`t know how to link the subject of the assignments into search terms and/or didn`t know what they were looking for. Others stated that they felt disengaged when we talked about PICO, because they were confused about how they could use it. Some said that they “disconnected” a while in the middle of the session and some said that they felt most disengaged when we were talking about the assignments, because the students hadn`t been divided into their final groups, and there was therefore hard to decide firmly on a subject for the assignments.

Q3.

I think I need to explain the CIQ forms a little better before the next session, because the students seem confused about what to say here. Some say here that they liked that the teacher intervened when they were stuck on ideas for the assignments and that they found it helpful that someone tried to get them started again. Some said that the introduction to PICO was very useful and one said that she liked that she was allowed to ask questions.

Q4.

Same here. Some state that they were a little confused about PICO in the beginning. Some said that they were a little confused during the rapid exchange of ideas – they found it hard to follow the flow.

Q5.

This question was easier to understand, judging by the answers from the students. Some say that nothing was surprising, while others answered that they were surprised about the level of guidance given from the teacher, some stated that they found it hard to come up with good ideas for subjects for the assignment and how to give them the right angle. One stated that he/she was surprised about the use of databases and the lack of Norwegian results and one said that this experiment will be exciting.

Summary of CIQ forms October 20, 2010

Q1.

Most of the students were united about being most engaged during the EndNote introduction. Some also answered that they felt engaged during the summary of last week`s CIQ answers and when we were talking about the difference between writing a literature study and a regular academic paper. One student said that he/she felt most engaged when we were talking about the assignment.

Q2.

Two students answered that they felt more distanced at the start of the lesson. That was when I was busy installing EndNote on some of the students` laptops. (Half the class had to wait while I helped installing the program.) One student answered that he/she felt most distanced when we were exporting data from the databases into EndNote and that this bit was done a bit to fast. “Stressed” was the word used. The rest of the students said that they at no point felt distanced of what was going on.

Q3.

One student said that the action taken that felt most affirming and helpful was when one student asked about the difference between a literature study and other academic papers. The rest are pretty much unanimous about the most helpful action was learning about EndNote. One student responded that it was great that the lessons are run strictly after the students` needs, and he/she found it very helpful that they get quick response to their questions in class.

Q4.

Two students found it confusing that they couldn`t get Word and EndNote to work together (software problems). Two students responded that parts of the EndNote introduction was given to fast and that they felt a little stressed during the part when I showed them how to export data. One student said that he/she felt a little lost at a point during the EndNote introduction when “everyone was asking questions at the same time”. One student said that he/she found it confusing learning about how to manually add web pages in EndNote and the remaining students responded that they found nothing puzzling or confusing.

Q5.

One student answered that he/she was surprised at how good an instrument like EndNote is and that he/she had never used any tool like it before. One student responded that he/she was surprised at how complicated and at the same time how simple things can be and how fast the time we have at our disposal flies by. One student was surprised when I read out loud the summary from last week`s CIQ and found it very interesting how much information I had gotten from 7 people`s answers. One student said that we got too little time to search the databases, but found it positive that I offered to give extra, optional guidance on this the coming week. The remaining students left this space open.

Summary from CIQ forms October 29, 2010

Q1.

All the students responded that they felt most engaged during the conversation we had about the assignments. One student also responded that s/he felt engaged when we talked about how to fill out the search/results form.

Q2.

One student responded that s/he felt distanced during the start of the class, when I was talking about the plan for the session. One student said that s/he felt distanced at the end of the class (but didn`t specify what was going on at that time). One student responded that s/he felt most distanced during the summary of last week`s CIQ forms and one student said that s/he felt most distanced when I was with the other group. The remaining students left this field open.

Q3.

All the students responded that they felt that my going through their assignments and answering questions about language, structure and methodology was most helpful and affirming. Some of the students stressed that they felt that this kind of feedback was very important. Two of the students also mentioned the search/results form and tips on which databases to use was helpful.

Q4.

All the students were unanimous about there being nothing puzzling or confusing this session.

Q5.

Most of the students said that they were surprised (in a positive way) at the extent of the feedback on their assignments. One student added that s/he was surprised at how important this feedback was and that s/he isn`t taking advantage of it often enough because s/he finds it hard to formulate good questions for the supervisor.

Summary of CIQ forms November 4, 2010

Q1.

All the students responded that they felt most engaged when we were discussing their assignments in groups. One student also added that s/he felt engaged while talking about the next assignment (starting next week). One student felt engaged during the entire session.

Q2.

One student responded that s/he felt distanced during our discussion on the difference between a literature study and a so-called “theory-based paper” (as they call it in the assignment text) and state that she lost touch with what was happening when we had this discussion. One student said that s/he felt pressured for time and stressed about his/her school work, but that it was not related to our sessions. The rest of the students left this option open.

Q3.

Two students reported that the action taken that was most affirming or helpful was when we talked about the necessary cuts in the text. The students said that it was very helpful when I gave them advice on where they could cut and how to improve their texts. Two other students also gave positive feedback on advice I had given them on how to improve their texts. One student said that the action most affirming or helpful was when I talked about how we can proceed with the next assignment.

Q4.

One student responded that s/he felt most distanced when the groups were discussing what they were going to write about in assignment #6. The rest of the students left this option blank.

Q5.

One student responded that s/he is still surprised at how well this close follow-up and guidance concerning the assignments are working. One student said that it is possible to learn new things, but that it takes time to absorb it all. One student said that s/he was surprised at how finding “one brilliant” sentence solved much of the frustration about the assignment in their group. One said that s/he was surprised at finding the whole session engaging and one student left this blank.

Results from CIQ forms November 17, 2010

Q1.

Four of the six students present said that they felt most engaged when we were talking about their assignments (Assigment 6). They stated that they found it very useful when we were talking about the structure of their texts and when I commented on other text issues. One student said that s/he felt engaged when we were searching the databases to find good articles for their assignment. One student said that s/he didn`t feel engaged at all this session.

Q2.

Three students answered that they felt most distanced when I was tutoring the other group. One student left this blank and two students felt most distant when we were searching the databases. One of these students said that s/he felt frustrated about searching because s/he found it hard to find good search terms and because of this s/he finds it hard to discover anything new.

Q3.

Most of the students agreed that what felt most affirming and helpful was when I tried to help them search the databases and where to apply the results in their assignments (which part they needed to strengthen with research results). One of the students that reported this as most helpful said that even though s/he felt that it was positive that I tried to help them search for information, s/he still couldn`t find what s/he was looking for. The rest of the students answered that they felt that the thing that felt most affirming and helpful was when I sat down and commented on their work.

Q4.

Most of the students left this space open. One stated that s/he didn`t pay attention and one reported that everything went fine and that there was nothing confusing about the session.

Q5.

One student said that s/he felt very frustrated about the technical equipment (computers in the lab) and that it took hours of every week just to get logged on and off on the school`s computers. One student said that s/he felt that it is very positive that I take the time in between sessions to read their texts and give them feedback in class. One student answered “that it was nice searching the databases” and the rest of the students left this space open.

Appendix 4: Six frames for IL education (Bruce and Edwards 2007)

Frame orientation **Below: Characteristics**	**Content frame**	**Competency frame**	**Learning to learn frame**	**Personal relevance frame**	**Social impact frame**	**Relational frame**
View of information	Information exists apart from user; can be transmitted	Information contributes to the performance of the relevant capability	Information is subjective – internalised and constructed by learners	Valuable information is useful to the learners	Information is viewed within social contexts	Information may be experienced as objective, subjective or transformational
Curriculum focus	What should learners know about the subject and IL?	What should learners be able to do?	What does it mean to think like an (IL) professional in the relevant field?	What good is IL to me?	How does IL impact society?	What are the critical ways of seeing IL?
View of teaching	Teacher is expert – transmits knowledge	Teachers analyse tasks into knowledge and skills	Teachers facilitate collaborative learning	Teaching focuses on helping learners find motivation	Teachers role is to challenge status quo	Teachers bring about particular ways of seeing specific phenomena
View of learning	Learning is a change in how much is known	Learners achieve competence by following predetermined pathways	Learners develop conceptual structure and ways of thinking and reasoning	Learning is about personal relevance and meaning	Learning is about adopting perspectives that will encourage social change	Learning is coming to see the world differently
View of content	What needs to be known has primacy. All relevant content must be covered	Content derived from observation of skilful practitioners	Concept chosen for mastering important concepts and fostering reflective practice	Problems, cases, scenarios selected by learners to reveal relevance and meaning	Reveals how IL can inform widespread or important social issues or problems	Examples selected to help students discover new ways of seeing. Critical phenomena for learning must be identified
View of assessment	Assessment is objective. Measures how much has been learned; ranks student via exams	Assessment determines what level of skills has been achieved	Complex, contextual problems are proposed. Self or peer assessment is encouraged	Typical portfolio based. Learners self assess	Designed to encourage experience of the impact of IL	Designed to reveal ways of experiencing
View of IL	IL is knowledge about the world of information	IL is a set of competencies or skills	IL is a way of learning	IL is learned in context and different for different people/groups	IL issues are important to society	IL is a complex of different ways of interacting with information

Blue cells represent my personal views of IL