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Enabling the student to write a good thesis - Combining information retrieval with the writing process

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Introduction

Through the project "Digital literacy through flexible learning: Information searching and use of information sources in thesis writing"¹ we are developing a web based learning system called “Søk & Skriv” (Search and Write), which is specifically designed for distance learning students at postgraduate level.

There are several courses on the web dealing with library use and how to collect and retrieve information. There is also a fair amount of literature about the students’ writing process and how to improve their writing skills. To our knowledge none of these courses or books cover both the searching process and the writing process. We regard these two processes as of great importance since the key feature for getting access to the academic community is closely connected with the skills of writing and information retrieval as instruments for creating own research. All learning processes are situated in communities. Creating meaning through dialogue or presenting research results are social interactive elements of the academic community.

In this paper we focus on the students’ writing process in combination with the search process. We shall first shed light upon the information retrieval process as presented by Kuhlthau. Then we will use Bean to illustrate the writing process. At the starting point for creating a text you need to know what information will be of help during the project, and writing while searching will clear the thoughts as we are about to show.

We shall also look at online writing tools, for example blogs, and discuss their purposes in the writing process. Presenting own ideas and getting feedback in a confident environment is a main issue.

Finally we discuss the librarian’s role in a holistic learning community and give some examples of teaching information literacy in integrated faculty courses.

Seeking meaning

In *Seeking Meaning* Kuhlthau (2004) presents a model of the Information Search Process (Table 1) where the writing process starts as the search seems to be closed. This model serves as a very good tool for seeking information and selecting useful information. She highlights the librarian’s role as mediators throughout the search process, but the main activity that the student needs to complete her task, the writing process, is not the target of her

¹ <http://www.ub.uib.no/prosj/DK/english.htm>

investigation. Starting writing is the ending point of her model and hence not further investigated.

But if we do a more profound reading of Kuhlthau's model we find that writing is indeed a part of the search process as well, and not only a technical activity like writing as craftsmanship, starting when the search and learning process is finished. In her study of the information search process she bases her model on a case study where students are asked to describe their feelings, choices, and focus on a given assignment where the search for information is the essential theme. From their answers she finds that there are six stages on the search process.

We will in our presentation focus on the aspects of feelings and strategies in the model as they are closely connected to the writing process.

When students are asked to describe the feeling they get when given a task, they tell that they feel upset, anxious, insecure and uncertain. They even fear the unknown that lies ahead. These are feelings that can arise when students are unsure about their theme. But as we are to discover, as the searching is in progress their motivations for finding information grows stronger, and they feel more secure.

In the first stage, the task initiation, the student feels uncertain and is thinking about which subject to choose. According to Kuhlthau, a good strategy is to brainstorm, to discuss with co-students, teachers and librarians. The student also needs to accept her uncertainty as this forms part of the task initiation.

The second stage is selecting a topic. The students still feel confused, but also elated when they have selected a topic. One strategic move Kuhlthau presents, is to discuss possible topics and predict the outcome of the choices the students make.

On the third stage Kuhlthau mentions the prefocus exploration. Here the students - still feeling somewhat confused and uncertain, are instructed to read to become informed and to take notes on facts and ideas. At this stage the students often find that the information they search does not fit in neatly with what they presume, they have to formulate a focus to get a clearer view of the information they actually need.

The fourth stage, focus formulation: The student is supposed to formulate a focus from the information encountered. Here the students select a specific focus, and discard others. They feel more optimistic and confident. A focus formulation helps the students to keep writing during the process and to elaborate on main ideas and key themes. An important point from Kuhlthau is that when students have chosen a focus and research question, this functions as a guiding torch during their search².

The fifth stage is the information collection stage. Here the students realize they have work that must be done and they feel an increased interest for the task. They will also make comprehensive searches based on their focus formulation. This last stage is the search closure. The students feel relief; they are satisfied or disappointed depending on the result of the searches. And the students start writing.

² Kuhlthau also reports that students that are not able to formulate a focus formulation experience writers blocks as the lack of focus gives a lack of understanding of what to center on, and what to search for (Kuhlthau, 2004).

Søk & Skriv builds on Kuhlthau's theory as described above and illustrated in the lower part of Table 1. We elaborate on the final stage called Closure by focusing on completing the task. Controlling findings and presenting results form important parts of the learning process. Evaluating the process is emphasized since awareness of gained skills contribute to master future tasks. To complete the process Søk & Skriv includes Bean's view on writing as it forms an important part of the learning process. The resulting writing actions as worked out in Søk & Skriv are shown at the bottom of the table.

The search process as we regard it is based on the task, and is motivated by the assignment. The task is to find information that is of relevance for the research. But as we also have seen, *writing* is a strategy for learning and being able to complete the task. The students brainstorm, they contemplate on possible topics, they discuss possible topics, they take notes on facts and ideas, they make a survey of notes, they organize information in notes, they also write detailed notes with bibliographic citations. All these activities encourage the students to grab the pen or the keyboard. Through a piece of paper or on a screen they write down their ideas. During the search process they clarify their focus formulation. It seems that the search process triggers the writing and thus the learning process.

		Process					
Information seeking		Task Initiation	Topic Selection	Prefocus Exploration	Focus Formulation	Information Collection	Search Closure (Start writing)
Writing		Starting point →		Exploration →	Incubation ↓ Writing the first draft		
				Reformulation or revision →	Editing Writing as craftsmanship		Quality control
Feelings		Uncertainty Apprehension of work a head Elation after topic selection		Confusion Doubt	Optimism Confidence	Increased interest	Sense of relief
Søk & Skriv	Learning objects	Starting (Oppgavestart)	Get an overview (Få oversikt)	Find and combine keywords (Finn og kombiner nøkkelord)	Searching, evaluating, collecting, writing (Søk og skriv)		Closure Take perspective, quality control, presenting, assessing the process (Avrunding)
	Writing actions	Brainstorming Mind mapping Thinking texts	Annotated bibliography Tentative outlines Project statement	Listing and structuring keywords	Draft writing Presentation writing		Conclusion writing Editing Writing as craftsmanship Quality check Preparing oral presentation
		Writing to self	Writing to self	Discovering understanding as one writes along	Dialogue with others leading to improvement of text		Final publication of text aiming to reach an audience

Table 1: Process in information seeking and feelings involved as described by Kuhlthau (2004). Process in writing as described by (Bean, 1996). Learning objects and writing actions as embedded in Søk & Skriv.

Creating meaning through writing

The student often feels left alone when she is about to conduct her own research. The writing process might be overwhelming. She has to choose a subject, she must be able to write something clever, and she must use the most recent and most relevant information on the subject she has chosen. The shift from reading academic literature to writing ones own essay or thesis is a shift from creating your own thoughts through reading, to creating your own thoughts through writing. The pen, the pencil or the keyboard is the main instrument at hand during the writing process.

To illustrate that the writing process is a blurred process also for professors let us cite Bean: “Expert writers feel an uncertainty, doubt a theory, note a piece of unexplained data, puzzle over an observation, confront a view that seems mistaken, or otherwise articulate a question or problem” (Bean, 1996). The scientist’s or researcher’s starting point is uncertainty. To explore the field they talk to others, and they write tentative outlines.

After the starting point and exploration Bean says that the expert writer also has a period of incubation where the ideas are left alone in the subconscious while the writer is occupied with other tasks.

As the expert is to write her first draft Bean points out that “To avoid writer’s block expert writers lower expectations.” They write to themselves. This is a creative period where the importance lies in engaging ideas and opening the mind. After the first draft(s) revision and reformulation take place. Ideas are reconsidered, focus is getting clearer and the author starts considering an audience. Finally the text has to be edited. As Bean argues, craftsmanship takes over from initial creativity. At this point we see Kuhlthau’s ‘Start writing’ to take over in the final stage.

Where Kuhlthau’s students elaborate on searches for reaching a formulation of a focus, many expert writers also discover their focus of theme while writing. The student and the expert writer alike, both discover new aspects as they are searching for information.

Our overall aim is to make students access information intellectually by using it critically, creatively, and ethically, and make them construct meaning through writing.

Creating meaning through dialogue

Dysthe (1997) says that according to Bakhtin human beings do not communicate with the self as a point of reference, but with society. To reach an understanding we build systems of meaning. We understand ourselves from a ”we”-perspective. It is in the meeting with others we create and develop communities of meaning. Through others we define ourselves: I must communicate with others to get to know what I am saying and how what I am saying is understood. Only then I can understand what I have said.

In *Søk & Skriv*, as in our classroom courses at the library, we tell the students to brainstorm, and to present research questions and focus formulations to co-students:

When teaching the students how to search for information, we first ask them to formulate a research question.³ Then we tell them to write all the words they connect with their theme. This proves very useful for the students. Their ideas are “forced “out and they write them on a piece of paper, or on their computer.

When presenting a theme, fellow students often suggest keywords the student can use as search words. They also suggest relevant methods the student can use in her project. This has at least two advantages: The student get to tell co-students about her work that lies ahead. She also gets to share her thoughts with others. In explaining she has to clear her thoughts and what she cannot explain she now knows that she needs to elaborate on. In sharing research questions she also gets input from fellow students and from the librarian. This gives an opportunity to broaden or to narrow the research question (Figure 1).

Hvordan takle usikkerheten ***Snakk med andre***

Snakk om ideene og oppgaven din med andre. Å velge et tema er ikke alltid enkelt. Luft ideene dine med

- Medstudenter
- Faglærere
- [Bibliotekarere](#)
- Venner, naboer, familie

Figure 1: From *Søk & Skriv*: How to cope with uncertainty, talk to others. Talk about your ideas and your assignment with others. Choosing a theme is not always that simple. Share your ideas with co-students, teachers, librarians, friends, neighbours, family⁴

In all this lies a craving for putting thoughts into *perspective*. The students need to put their own research into perspective, and the co-students and the librarian need to form an idea of what the student who presents a research question has in mind. They must take the perspective of the student who is presenting her theme. According to Vaage (2001) it is through the meeting with others learning is created. Through social interactions you must consider and adopt the perspectives of others and rearrange or reorganize your own. By giving others as librarians, co-students and supervisors an opportunity to read and comment on a written text, the student gets a chance to reconstruct and improve the text. This opens up for worlds of possibilities in the text. From the students own experiences she reaches the conclusions on what to elaborate on, and which comments that are worth the efforts.

³ The section that follows builds on previous experiences in teaching information literacy to master students at the Arts library.

⁴ <http://sokogskriv/norsk/avansert/1start/index.html> (to be published by 2007)

Creating knowledge through Søk & Skriv

An important issue in Søk & Skriv, and in Bean's approach to writing, is that text production is creative work. What lies behind is a process of thinking, writing, rewriting, and getting feedback from others. All this has improved the final text that the student reads.

Søk & Skriv encourages the students to use their uncertainty as a motivating force during their research.

Students are presented with concrete writing assignments during their information retrieval. An assignment we give our students in Søk & Skriv is to brainstorm or to write a thinking text, and to afterward systemize their thoughts by mind mapping (Figure 2).



Oppgave

- Få en oversikt over ideer ved hjelp av idémyldring eller tenketekst.
- Systematiser tankene dine ved hjelp av tankekart.

Figure 2: Exercise from Søk & Skriv: Get an overview of your ideas by brainstorming or thinking text. Systemize your thoughts by mind mapping.⁵

The point in brainstorming or writing a thinking text is to engage ideas and to open up minds using associative writing methods. This lowers the threshold for starting to write. 'Thinking text' is a term we have borrowed from Dysthe & Kjeldsen (1999). As in brainstorming the clue is to make your ideas flourish. A thinking text is a creative text the student writes to trigger thoughts and to discover opportunities without the critical view from others or one self.

In Søk & Skriv we also encourage the students to create writing groups⁶. The aim of the writing group is to trigger the writing process and to keep writing. Presenting a text for fellow students has several advantages. In presenting the text in a student group, online, or face to face, the student will keep easier pace with the essay. Another important issue is that the learning outcome will be better. In a writing group you give and you get criticism, which is of great importance in the academic community. The students do not only learn to present their own texts, but also to read and point out difficulties and incoherence, as well as possibilities a fellow student can elaborate on in his text (Dysthe & Lied, 1999). A writing group that meets every second or third week lays a mild pressure on its students to keep writing. This will function for distance learning students as well as for students on campus.

⁵ <http://sokogskriv/norsk/avansert/1start/index.html> (Prosjekt for digital kompetanse, 2007)

⁶ <http://sokogskriv/norsk/ordliste/skrivegrupper.html> (Prosjekt for digital kompetanse, 2007)

Online writing tools in the teaching community

Søk & Skriv encourages the students to work with their own assignments by using different online tools, as the institution's learning management system, online writing tools, blog tools, website editors or e-mail programmes. How eventually Web 2.0⁷ will influence the information seeking process by accommodating searches to individual profiles, is not discussed in this paper, but obviously this is going to influence the information flow in the future.

Establishing a confident environment is a premise to make learning by communication work. Data security is a problem one should be aware of. Safe frameworks and good routines for referencing can compensate for that disadvantage and avoid plagiarism.

The mentioned online tools are designed for different purposes:

The learning management system may both serve as a surveying tool, but also act as a communication tool between the various parties of the university community, including the library. The system is closed for unauthorised persons.

For online writing tools the purpose lies on making possible joint writing across institutional borders. In connection to the ongoing project, Writely⁸ was tested and found easy and safe to use. The authors decide themselves whether they want to leave the page open or closed for public.

A blog is a website designed for discussing subject specific items. The literary genre is informal and the threshold for participating low. The blog can also be used by supervisors for surveying the students' work. The embedded comment-function is appealing, and makes backtracking clear. Either authorised members or the whole community may participate on the discussion.

E-mailing is a traditional way for online communication and for sending documents online. Backtracking is however a problem. E-mails may easily get lost in folders. To navigate on an organized webpage is more lucid.

These tools gain more and more popularity. Particularly distance learning students, dependent on online communication, take benefit of them. Online communication tools are suitable for, and promote the writing and seeking information process, by forcing the students to formulate their thoughts both for themselves and a receiver. In this way they meet the ideas argued in the section above; learning takes place by dialogue.

⁷ "The term Web 2.0 refers to a second generation of services available on the World Wide Web that lets people collaborate and share information online. In contrast to the first generation, Web 2.0 gives users an experience closer to desktop applications than the traditional static Web pages." Retrieved 20 June 2006 from http://en.wikipedia.org/wiki/Web_2

⁸ "Writely is a web-based word processor [...] It can be used as a collaborative text editing suite, and features access controls. Writely's user interface is a WYSIWYG word processor that appears within a web browser. Menus, keyboard shortcuts, and dialogue boxes show up in a way similar to what you would expect on a GUI-driven word processor, such as Microsoft Word or OpenOffice.org." Retrieved 20 June 2006 from <http://en.wikipedia.org/wiki/Writely>

Online tools facilitate communication and may even ease supervising the students' work. However, it is still unclear how the different parties of the teaching community are interacting. To include librarians in the process is untraditional, unless courses have been organized with all parties involved. Still this happens more frequently after the Norwegian Reform of Higher Education (Ministry of Education and Research, 2001), where focus is put on the students' writing and seeking information skills, but awareness of these changed conditions is not profound. This calls for collaboration between academic staff, librarians and students.

Joint library and faculty teaching

With Søk & Skriv, as the library's teaching tool, librarians get involved in the students' work when seeking information. Consequently they contribute to their writing process when responding to students' requests⁹. With a changing information world, digital competence has gained importance. Librarians as information managers and super-users of online tools intervene naturally in the students' learning process. They get involved in the constructive process and enable the students in the accomplishment of their tasks. They help formulating a problem, putting focus to it and evaluating sources and consideration of their use. As an independent party, a librarian offers a student a confident situation for collaboration¹⁰.

Another important issue is that to be able to supervise and guide the student, the librarian must take the perspective of the student and gain an understanding of the work that lies ahead. By taking the student's perspective the librarian will easier be able to point out directions and possible worlds the text the student is about to produce may open, as shown in the section Creating meaning through dialogue above.

Obviously the roles of library professionals are changing, and sharp borders between different professions are weakened. A holistic view of learning presumes good communication and an open attitude between all parties involved. These are important conditions for collaboration, which improve the learning outcome for the students.

Søk & Skriv's learning objects are established in cooperation with the faculty teaching staff to ensure academic quality, to adjust content and anchor it into the learning context. It aims a situated learning model specially designed for distance learning students at postgraduate level. Two pilot studies were initiated: One in cooperation with midwifery studies (Bergen University College, the other with studies on health promotion (University of Bergen). These two studies use problem based learning as a method of teaching and fit well into our concept. To make the students recognize the learning objectives, and identify with their own situation we added Oda's diary. Oda is a fictitious student writing a research paper on a midwifery subject. She acts as an example for how to gain intellectual access to information, how to use information critically, creatively and ethically, and how to complete the research paper. With Søk & Skriv we aim to empower the student to access the academic community.

⁹ Academic librarians have traditionally filled that role at the university libraries in Norway.

¹⁰ See also Kuhlthau (2004) and her elaborations on librarians' zones of intervention.

Experience with teaching in integrated courses

Søk & Skriv is still under development and not used in a real teaching situation yet. Strategies for embedding library courses to curricula are argued by the previous project team (University of Bergen Library. Prosjekt for videre utbygging av læringsentre ved UB, 2005). In this section we refer to an experience of the use of the existing information literacy course (Informasjonskompetanse - Gode informasjonssøk til oppgaveskriving¹¹) at the University Library which also builds on Kuhlthau's theory and which mainly focuses on teaching undergraduate students.

When planning a new course for science students, in which writing an assignment, formulating own focus and seeking appropriate information were main objectives, the library was contacted to contribute both in the planning and teaching process. To make communication easier, all information is gathered in the University's learning management system, where students as well as teachers and others involved can find updates.

The library part of the course lasts about two hours and is held when students are given their assignments. Learning objects are using library sources related to the assignments, citing techniques and citing ethics to avoid plagiarism. During this course the students work with their own problems and get time for training search and citing skills.

As a consequence of this course, the students use the library on daily basis during the writing process, and ask frequently for advices at the front desk. E-mail requests as discussed above are not usual in this case.

The course is evaluated every year, and small changes are implemented continuously. The overall impression is that it is working well.

Concluding remarks

With Søk & Skriv we emphasize that the information retrieval and writing processes are tightly connected, and the aim of our course is to reveal this for the students. When this connection is articulated the students will improve their skills in retrieving information that will prove useful during their writing.

As we regard it; enabling the student to write a good thesis is deeply connected to empowering the student to communicate what she has found through her research. That is; the student needs to communicate her findings through dialogue and present her research in oral presentations or through writings.

With Søk & Skriv we encourage the students to write as they enter the virtual or the real classroom by asking them to formulate ideas; through brainstorming, mind mapping, thinking texts, first drafts, and tentative outlines. These are all based on information retrieval connected to a focus formulation where the research question functions as a guiding torch.

With Søk & Skriv we aim to empower the students to become a part of the academic community: By accessing information intellectually, by using information critically, creatively and ethically, and thereby helping to complete the research paper.

¹¹ <http://www.ub.uib.no/felles/IK/index.htm>

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