

Enabling the student to write a good thesis – combining information retrieval with the writing process

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Working from the information retrieval model of Carol Kuhlthau (2004), and the pedagogical approach to writing of Bean (1996) and Dysthe (1999), we put their theories into practice. Through the project "Digital literacy through flexible learning: Information search and use of information sources in writing theses", we are developing a web-based learning system called "Søk & Skriv" (Search and Write)', which is especially designed for distance learning students at postgraduate level. The focus of this paper is on the students' writing process. We regard this process as of major importance, since access to the academic community lies in the skills of writing and using information retrieval as an instrument to present one's own research.

We are developing a web based learning system called "Søk & Skriv" (Search and Write) with the project "Digital literacy through flexible learning: information searching and use of information sources in thesis writing"². This programme 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 having great importance since gaining access to the academic community is closely connected with the skills of writing and information retrieval as instruments for creating one's own research. All learning processes are community-based. 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. To begin creating a text, you need to know what information will be of help during the project, and writing while searching will clarify one's thoughts.

We also look at online writing tools, for example, blogs, and discuss their purposes in

the writing process. Presenting one's own ideas and getting feedback in a confident environment is crucial.

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 completed. This model serves as a very good tool for seeking information and selecting useful information.

She highlights the librarian's role as mediator throughout the search process, but the main activity that students must do to complete their task, the writing process, is not the target of her investigation. Starting to write is the end point of her model, and hence not further examined.

But if we do a more profound reading of Kuhlthau's model, we find that writing is indeed a part of the search process, and not just a technical activity considered as craftsmanship, which starts 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 of their thesis, in an assignment where the search for information is essential. From their answers she finds that there are six stages on the search process.

We will look upon the aspects of feelings and strategies in the model, and how they are closely connected to the writing process. When students are asked to describe the feelings they have when given a task, they say 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 motivation for finding information grows stronger, and they feel more secure.

In the first stage, the Task Initiation, students feel uncertain and think 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 uncertainty, as this forms part of getting started.

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

The third stage is 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 had seen as their topic; they have to define a focus to get a clearer view of the information they actually need.

The fourth stage is Focus Formulation. The students are supposed to identify and define a focus for their thesis from the information they have found. Here the students select a specific focus and discard others. They feel more optimistic and confident. Formulating a focus 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 identified and defined a focus and research questions, this functions as a guiding light during their search³.

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 newly defined focus.

The last stage is the Search Closure. The students have found enough information for their assignment. They feel relief; they are satisfied or disappointed depending on the results of their search. And the students start writing.

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 constitute important parts of the learning process. Evaluating the process is emphasized, since awareness of gained skills

helps 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 reflect on possible topics, they discuss possible topics, they take notes on

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	Quality control
			Reformulation or revision →	Editing Writing as craftsmanship		
Feelings	Uncertainty Apprehension of work ahead Elation after topic selection	Confusion Doubt	Optimism Confidence	Increased interest	Sense of relief	
SØK & SKRIV						
Components	Starting	Get an overview	Find and combine keywords	Searching, evaluating, collecting, writing	Closure Take perspective, quality control, presenting, assessing the process	
Writing actions	Brainstorming Mind mapping Think 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). Components and writing actions as embedded in Søk & Skriv.

facts and ideas, they make a survey of the notes, they organize information in notes, they write detailed annotations with bibliographic citations. All these activities encourage the students to grab the pen or the keyboard. They write down their ideas on a piece of paper or on a screen. During the search process they clarify their focus. The search process triggers the writing and thus the learning process.

Creating meaning through writing

The students often feel left alone when about to conduct their own research. The writing process might be overwhelming. They must choose a subject, be able to write something clever, and use the most recent and most relevant information they have on the chosen subject. The shift from reading academic literature to writing one's 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 for professors as well, 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.

Bean points out that "To avoid writer's block expert writers lower expectations" when they write the first draft. 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, the focus is getting sharper 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' taking over in the final stage.

Where Kuhlthau's students build their writing on their search to focus on a theme, many expert writers also discover the focus of their theme while writing. Students and expert writers 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 understanding we build systems of meaning. We understand ourselves from a "we" perspective. It is in contact with others that 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 definitions to co-students:

When teaching the students how to search for information,⁴ we first ask them to formulate a research question. 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 topic, fellow students often suggest keywords the student can use as search words. They also suggest relevant methods the student can use in the project. This has at least two advantages: The student gets to tell co-students about the work that lies ahead. To share one's thoughts with others, to explain one's ideas helps to clear one's mind, and the student realizes that work must be done on what one cannot explain. In sharing research questions the student also gets input from fellow students and from the librarian. This is the 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, family⁵

In all this lies a need to put 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 the theme. According to Vaage (2001) it is through the meeting with others that learning is created. Through social interactions you must consider and adapt to the perspectives of others, and rearrange or reorganize your own. By giving 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 worlds of possibilities. From the students' own experience they reach conclusions regarding what to develop, and which comments are worth pursuit.

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 improves 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 phase. An assignment we give our students in *Søk & Skriv* is to brainstorm or to write a "think text", and afterwards to 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 think text. Systemize your thoughts by mind mapping.⁶

The point in brainstorming or writing a think text is to engage ideas and to open up minds using associative writing methods. This lowers the threshold for starting to write. 'Think text' is a term we have borrowed from Dysthe & Kjeldsen (1999). As in brainstorming the clue is to make your ideas flourish. A think text

is a creative text the student writes to trigger thoughts and to discover opportunities without a critical view from others or one's self.

In *Søk & Skriv* we also encourage the students to create writing groups⁷. The aim of the writing group is to trigger the writing process and to keep on 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 pace with the essay more easily. 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 not only learn to present their own texts, but also to read and point out difficulties and incoherences, and possibilities that fellow students can develop in their texts (Dysthe & Lied, 1999). A writing group that meets every second or third week puts pressure on its students to keep writing. This will function for distance learning students as well as for students on campus.

Online writing tools in the teaching community

Søk & Skriv encourages the students to work with their assignments by using different online tools, such as the institution's learning management system, online writing tools, blog tools, website editors or e-mail programmes. How eventually Web 2.0⁸ 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 basic to making 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.

Online tools are designed for different purposes:

The learning management system may serve both teachers and students with course administration and functions as a communication tool between the various parts of the university community, including the library. The system is closed for unauthorised persons.

For online writing tools, the purpose is to allow joint writing across institutional borders. In connection to the ongoing project, *Writely*⁹ was tested and found easy and safe to use. The authors must decide for themselves whether they want to leave the page open or closed for the 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 in 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. Navigating on an organized webpage is more lucid.

These tools are gaining more and more popularity. They are of particular benefit to distance learning students, who are dependent on online communication. 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. These tools implement the ideas argued in the section above: learning takes place by dialogue.

Online tools facilitate communication and may even make supervising the students' work lighter. 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. This happens more frequently since the Norwegian Reform of Higher Education (Ministry of Education and Research, 2001), where emphasis is put on the students' writing and seeking information skills, but awareness of these changed conditions is not yet widespread. 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' requests¹⁰. 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 fulfilling their tasks. They help formulating a problem, putting focus on it, evaluating sources and considering their use. As an independent party, a librarian offers a student a confident climate for collaboration¹¹.

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 be able to point out directions and possible worlds that the text the student is about to produce may open, as shown in the above section "Creating meaning through dialogue".

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 objectives 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 model¹², especially 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 of how to gain intellectual access to information, how to use information critically, creatively and ethically, and how to complete her research paper. With Søk & Skriv we aim to enable students to access the academic community.

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 into curricula are argued by the previous project team (University of Bergen Library. Prosjekt for videre utbygging av læringscentre ved UB, 2005). In this section we refer to an experience of the use of the existing information literacy course (Informasjonskompetanse - Gode informasjonsøk til oppgaveskriving¹³) 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, for-

mulating one's 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 objectives are examined, 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 search training and reference skills.

As a consequence of this course, the students use the library on daily basis during the writing process, and ask frequently for advice at the front desk. E-mail requests as discussed above are not common 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 explain this to 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 students to write a good thesis is deeply connected to empowering students to communicate what they have found through their research. That is; students need to communicate their findings through dialogue and present their research orally or through writing.

With Søk & Skriv we encourage students to write as they enter the virtual or the real classroom by asking them to formulate ideas,

through brainstorming, mind mapping, think texts, first drafts, and tentative outlines. These are all based on information retrieval connected to identifying and defining a thesis focus, where research questions function as a guiding light.

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

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Noter

- 1 Søk & Skriv is a joint project of three libraries of higher education institutions in Bergen: the University of Bergen Library, the Bergen University College Library and the Norwegian School of Economics and Business Administration Library.
- 2 <http://www.ub.uib.no/prosj/DK/english.htm>
- 3 Kuhlthau also reports that students who are not able to formulate a focus experience writer's block, as the lack of focus blurs understanding of what to concentrate on, and what to search for (Kuhlthau, 2004).
- 4 The section that follows builds on previous experiences in teaching information literacy to master students at the Arts library.
- 5 <http://sokogskriv/norsk/avansert/1start/index.html> (to be published by 2007)
- 6 <http://sokogskriv/norsk/avansert/1start/index.html> (to be published by 2007)
- 7 <http://sokogskriv/norsk/ordliste/skrivegrupper.html> (to be published by 2007)
- 8 "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
- 9 "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>
- 10 Academic librarians have traditionally filled that role at university libraries in Norway.
- 11 See also Kuhlthau (2004) and her study on librarians' zones of intervention.
- 12 Situated learning suggests that all learning is contextualised and embedded in a social and physical environment.
- 13 <http://www.ub.uib.no/felles/IK/index.htm>

Kära kollega!

Som redaktör för föreningens tidskrift bevakar jag forskning och teorier men även projekt och nyheter inom yrkesvardagen för den breda verksamhet som är informationspecialistens. Syftet är att förmedla intressanta artiklar som ligger rätt i tiden.

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