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It's Not About the Library, It's About What the Students Need!

supportive roles and systems in students' interaction with information

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It's not about the library, it's about the student!
- Supportive roles and systems in students' interaction with information

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Introduction

In the context of higher education, the role of the research library is changing markedly in response to the changes in the society. Changes in demand for (highly educated) academic staff, and changes in their working conditions, are reflected in the ways universities change the organisation of educational programmes and explore the possibilities for creating tailor made education that both suits the individual in her work settings and career ambitions, as well as match the needs of the organisation which actually demands her labour. The way this change in the landscape of higher education is reflected in research libraries is coined in Rosenstand's article (2006, 2007) *The Hyper Library*. This is a condition for the library which derived from the fact that when students design their own master programmes they often study in groups of students from different disciplines. Their situation is then characterised by uncertainty regarding the choice of method, problem and discipline and this situation is called innovation. It matches an innovative pedagogical model where the student has to choose, combine and give priority to their different disciplines (Rosenstand, 2006).

The library needs to change the scope of the services provided to the students in order to match the change in the landscape of learning.[1] The development of services has changed in many ways along with the general change in library services towards the virtual library. Along the lines of (Dempsey, 2004), it is necessary to move the services towards the users i.e. the students who are the target group of the library services in this case study. In the more traditional mindset it is assumed (by library staff as well as students) that the library services are provided by the library at the physical library. It is technologically possible to move away from this model of provision, so we need to move the mindset in a new direction. The main task is to be open-minded, creative and innovative in the development of new services which can offer information services in more dimensions than merely at the physical library. It means that we move from a "just in case" to a "just for me" provision. That we move from the traditional library courses, where the students come to the physical library at one point in time often not related to a specific project or a specific phase in a project, towards a new way of providing counselling in the virtual learning environment where the student is working. In this way the student can

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[1] In this paper we will focus on the needs of the students, but similar conditions could very well be argued for the researchers who are in the middle of this changing landscape.

engage with a counsellor at relevant times throughout the project period. In this way, the library reaches out to the students in time and space as opposed to the situation in which the student goes to the physical library at one isolated point in time. There is a move towards a more holistic model of library counselling based on Kuhlthau's *roles of mediators* (Kuhlthau, 2004), and this role needs to be developed and supported by human resource development in pedagogical methods and didactics. At the same time technological opportunities i.e. new library services in the virtual learning environment can support this holistic approach. In the following, we will present the development concept behind the products we have introduced.

Applying a student centred approach

The development concept behind the web-based interactive multimedia programmes we apply in our teaching is based on the mantra that we depart in the users' needs. The point of departure is not what the library can offer, as was the case in the traditional bibliographic paradigm in library instruction (Kuhlthau, 2004). On the contrary, we turn the point of departure to a situation which is far more familiar to the student – i.e. the academic writing process. There are different information needs in the different phases of the academic writing process. To motivate and engage the students in the learning process, we focus on their work process and the underlying uncertainty regarding information needs. We have designed our user education so that the student can recognize situations from the writing process and relate them to both prior experiences with information seeking and suggested methods of coping with the information need in these situations. These methods are based on suggested strategies in information seeking which derives from Kuhlthau (2004) and Heinström (2002).

Our aim is to empower the student so that she can navigate in the sea of information (Skagen, Torras, Blaabjerg, & Hansen, 2006). Therefore, we have designed and implemented an information literacy user education programme. It may seem that the student's main problem when encountering the library is to choose from the abundance of relevant information resources on the library's website. However, underlying this initial confusion there seems to be a need for generic methods and knowledge about how to work with information in the process of constructing knowledge.

We have focused on the provision of information literacy education for a long time. In the process, it has been essential to focus on the pedagogical elements, because we have been driven by the ambition that we wanted to create pedagogical innovation in the library's student education programme. In the process, everything has been tossed and turned resulting in the development of new content, reformulated purpose, and redesigned courses. The integration of our own e-learning programme has resulted in the development of a blended learning concept. Furthermore, the implementation of this strategy has been followed up by human resource development of the library's information specialist team - i.e. library assistants, librarians and subject librarians - in order to change the teaching concept from a teacher-led instruction based model to a student-centred dialogue based model (Blaabjerg, 2005).

Development concepts in our e-learning products

We have developed e-learning products since 1999. We released the first interactive web-based streaming video product in 2002 called Streaming Web-based Information Modules (SWIM). The first version of SWIM is in Danish (SWIM1). International distribution of Danish language products has been difficult, but yet on the level of the concept it has received much international attention at conferences, seminars, articles etc.[2] The Danish Electronic Research Library has granted project funding for the further development of SWIM1, and our current production is in English (SWIM2). This gives us the immediate opportunity to distribute to a significantly larger audience than the original Danish version. In the following, we will present the development concepts in SWIM2 (Streaming Web-based Information Modules) and the latest product FLOW (Flexible Learning Objects Web).

The SWIM2 concept – A video-based role-playing game/social simulator

The purpose of SWIM2

The overall purpose of SWIM2 is to facilitate the student's (user of the programme) development of information literacy that can be utilised independent of specific situations, information resources, time, and place. In addition, this increased level of information competence can be used to support their lifelong learning process.

SWIM2 is designed to make its user experience a clear connection between learning and information seeking, and is intended to make its user reflect upon previous, current, and future information search processes.

SWIM2 is intended to communicate an *appropriate* strategy for seeking information that is *generally applicable*. Also, to communicate information seeking techniques to its users that are easily understood and can be utilised when searching for information in connection with studies, projects, essays, assignments, etc.

In order to create a high degree of motivation, SWIM2 describes the study process in an easily recognisable manner that is intended to appear as realistic as possible in relation to the user's perception of herself.

This takes place via a video-based role-playing game in six acts, in which the user acts as the fourth member of a study group. Acts 1-5 each contains a conflict that requires the user's decision, whereas act 6 is an exam in which the user receives constructive criticism from the project advisor and the external examiner. The role-playing game is organised as a learning process focusing on reflection, consideration and critical thinking.

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[2] The first version of SWIM is in Danish. We have made a version with English subtitles, which has served the purpose of creating interest in the concept more than being used as an elearning program in courses. This was the basis for the collaboration with Carol Kuhlthau and Jannica Heinström.

SWIM2 should be regarded as a contribution to the development of information literacy and not merely as a tutorial in information seeking. SWIM2 should also be regarded as the development of a tool/learning object that supports a constructivist view of learning in accordance with the transition that is taking place within library science at present away from a bibliographic paradigm and towards a process and learning oriented paradigm[3].

Information literacy

In order to grasp the purpose of SWIM2, and its pedagogical vision, it is important to consider the term information literacy. SWIM2 is not constructed on the basis of a particular information literacy standard, like the ones that have been formulated and applied in certain parts of the U.S., Australia and New Zealand, but is closely related to the constructivist understanding of learning and action in the information search process that have been described by Kuhlthau. Still, the perception of information literacy in SWIM2 draws on a number of elements that are included in the standard definitions.

We perceive information literacy as the ability to evaluate, select and/or act in a situation where you need to find or use that which makes a difference in solving an information problem. Information literacy is the individual's ability to move between levels of action and reflection (meta-level) in the understanding and handling of his/her information need, and the ability to use the result in the process that lies ahead. What one person considers being information may not necessarily be information in the eyes of somebody else - i.e. information is interpreted data. Whatever meaning is being created eventually depends on the individual's construction of knowledge.

Ideally, the development of information literacy takes place in the interplay between educational institution, library and the individual user. Thus, the development of information literacy is not bound up with a particular scientific discipline or viewed as something that belongs exclusively to the libraries.

Target audience

SWIM2's primary target group is first and second year students in higher education. However, experiences with SWIM1 have shown that the programme also can be used at a later stage in study programmes, as well as at grammar-school/high school level and in distance learning (Master students).

Secondary target groups are the groups of staff that are of importance to the students' academic development, such as teachers, project advisors and information specialists/librarians.

Content: A description of SWIM2

The SWIM2 role-playing game is based on video sequences that form part of a multimedia programme. In order for SWIM2 to keep the attention of its user, the role-playing is constructed partly as a game, and partly as a story about a group of students writing a project. The user of the programme becomes the fourth member of the project group and has the say-so in the group's discussions.

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[3] Kuhlthau (1993, 2004) characterises the bibliographic paradigm as a source oriented teaching paradigm that primarily focuses on physical access to information and information retrieval.

It is the user's working process that is in focus – not the resources of the library! Matters are viewed through the eyes of the student. We present different situations of the project-writing process that involve different information requirements. In each situation, the user must make choices that depend on how far she is in the project process.

We attempt to generate within the user an expectation that the conclusion will be exciting, if she chooses to complete the course of the multimedia narrative.

The structure and narrative elements in SWIM2

Like SWIM1, SWIM2 is constructed as a role-playing game in which the user must use his/her present information literacy skills to rise to a higher level of information literacy. The original idea has been to develop a programme based on the information problems that students experience in connection with writing research papers, and to let the story take place in a study group – a common form of studying which offers certain dramaturgical possibilities.

The programme's point of departure is the student's work process, and the narrative is structured around the phases that typically characterise the progress of individual research paper work. In SWIM2, the research paper is a project report. The work process of the study group is intended to be as realistic as possible. Thus, the narrative is influenced by each group member's personality, behaviour, priorities, study approach, and attitude towards life in general.

For the sake of progress and action, the narrative of SWIM2 is structured around five main conflicts that occur in a linear sequence of events portraying the phases of research paper work from beginning to end. The linear sequence of events consists of five acts followed by a concluding exam act.

The structure of the role-playing game

SWIM2 begins with an introduction to the role-playing game and an optional presentation of the three other members of the study group: David, Sarah and Jacob. Afterwards, the user(s) is ready to begin the game[4].

- Each act opens with a video sequence that briefly introduces the present situation.
- Then David, Sarah and Jacob discuss their different strategies for solving a conflict in connection with their information search.
- The user (the fourth member of the group) must then decide which strategy to support.
- Then follows a number of sequences in which the group considers the situation.
- The user must then decide whether he/she will hold on to his/her original choice or change strategy.
- Then follows a number of sequences in which the group considers the situation.

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[4] At Aalborg University Library we usually let the students play SWIM2 in groups of 2-3 persons. Together the group constitutes the fourth member of the study group in SWIM2.

- Finally, the user must decide whether he/she will hold on to his/her first and/or second choice or change strategy.
- The final choice of each act will influence the user's final score in the game. In each act one of the characters represent what is considered to be the most appropriate strategy in the given phase of the work process.

The accumulated score forms the basis of the final act, the exam. Each of the five main conflicts deals with the question of how to solve the group's present need for information. In acts 1, 4 and 5 the user is informed of the need in question, whereas acts 2 and 3 contain an extra conflict, in which the user must decide/identify the nature of the present need before moving on to the main conflict. This extra conflict is of no consequence to the user's final score, but serves the purpose of introducing the formal mediators: the information specialist in act 2 and the project advisor in act 3.

In the exam act, the group receives their grade (A, B or D) along with constructive criticism from the project advisor and the external examiner. After the exam, the user leaves the game. When the FLOW product is launched, the user will be introduced to a number of options for moving into new learning contexts.

The theoretical foundations of SWIM2

The development of SWIM2, and Flexible Learning Objects Web as a whole, is based on our perception and consideration of concepts such as learning, information literacy, information search process, learning styles and personality. The project is theoretically founded on the following theorists, whose work has been a major source of inspiration:

o Carol C. Kuhlthau's descriptions of learning as a process, the information search process, the uncertainty principle, roles of mediators and zones of intervention (Kuhlthau, 2004).
o Jannica Heinström's descriptions of personality, learning styles, fast surfer, broad scanner and deep diver (Heinström, 2002).
o Lars Qvortrup's description of different forms of knowledge and learning (Qvortrup, 2001).
o Claus Rosenstand's extension of Qvortrup's categories (Rosenstand, 2002).
o Chris Argyris and Donald Schön's constructivist learning theory on "single- and double-loop learning" (Argyris & Schön, 1993).
o Lotte Rienecker and Peter Stray Jørgensen's description of the academic writing process and work on problem definitions (Rienecker, 2005).

Information search process and writing process

Kuhlthau's description of the information search process forms the basis of our phase oriented recommendations. The key point is Kuhlthau's emphasis on the information search process as part of an overall constructivist learning process that develops at both an intellectual and an emotional level.

In SWIM2 the information search process is presented as being closely intertwined with the academic writing process. This is partly to emphasise that both processes constitute important parts of the overall learning process, and partly to relate information search to everyday student life. In *Den gode opgave*, Rienecker and Stray Jørgensen describe a writing process in which broad literature search and reading constitute one phase in the process, whereas targeted literature search constitutes a later phase (p. 85).

Uncertainty principle – roles of mediators – zones of intervention

"Uncertainty" is a cognitive state of mind that often characterises the early phases of the information search process, where the student does not know what to search for, or where and how to search. That is, he/she lacks clarity. This will be expressed emotionally through e.g. frustration regarding "has anyone written anything about this subject?", "how do I proceed?", and lack of overview. Thus, Kuhlthau's "uncertainty principle" is an important key to the progress of the information search process, because the student is seeking certainty, seeking meaning (p. 89 ff).

In SWIM2, the movement away from "uncertainty" and towards "clarity", and thus a larger degree of "certainty", is used dramaturgically to make the story progress, and as the basis of the counselling sessions that the study group in the game has with the library's information specialist, and their own project advisor, in certain phases of the information search process. Hereby, the programme illustrates the connection between Kuhlthau's concepts of "uncertainty principle", "roles of mediators" and "zones of intervention".

Kuhlthau divides mediators into two groups; formal and informal. Among the formal mediators are professors/teachers and information specialists/librarians, whereas informal mediators are e.g. family, friends, colleagues and subject experts. There are two formal mediators in SWIM2 – a library information specialist and a university teacher (project advisor). The parts they play in the programme are based on Kuhlthau's description of the formal mediator as "counsellor" (p. 107 ff). This adds emphasis to the process and learning oriented paradigm that SWIM2 represents.

The counsellor is aware of the uncertainty principle. Information search is considered to be more of a creative process of construction than a search for the right answers. Ideally, the student will be coached through the dynamic process of seeking meaning. Throughout the process there is a continuous evaluation of sources, in terms of type of material and degree of difficulty, based on the student's experience and knowledge at a given time. The problem/subject may be of a general nature, but the student adds his/her individual perspective. Thus, the counselling process itself becomes individual and unique. Student and counsellor work out a strategy that gradually develops as the student learns and acquires more knowledge.

There is not one "right" path to follow. The path of information search is determined by the student's information needs.

"Zones of intervention" concerns *when* and *how* the mediator should intervene (p. 127 ff). The process oriented paradigm is based on the "uncertainty principle" that requires an overall view of searching and use of information determined by the student's needs. The "uncertainty principle" involves new approaches to intervention. Kuhlthau defines "zones of intervention" as:

"*That area in which an information user can do with advice and assistance what he or she cannot do alone or can do only with great difficulty*". (p. 129).

With regard to the role of the mediator, Kuhlthau divides the interventions into five different zones – Z1 to Z5. The information specialist and the project advisor in SWIM2 are both examples of a Z5 intervention. I.e. a process oriented intervention at counsellor level (p. 131).

Learning

The possibility of identification with the characters, situations and problems in SWIM2 is important in our constructivist approach to learning, which describes learning as an active individual process constructed on the basis of the individual's knowledge and experience. (Kuhlthau, 2004, p. 15). Identification will motivate the student's reflection, challenge his/her existing knowledge, and form the basis of the construction of new knowledge and development of existing information literacy skills.

The narrative of SWIM2 seeks to establish a sphere of learning by focusing on the student's work process instead of on the library's resources – i.e. focusing on different parts of the individual research process and thus also on the information search process. In this sphere of learning, the student will reflect on the problems experienced in connection with writing papers and searching for information, and relate them to the information search strategies represented by the three characters in the narrative.

Through the three fellow students in the study group, whom in a Qvortrupian sense represent different forms of learning – i.e. learning of the 1st, 2nd, and 3rd order - (Qvortrup, 2001, p. 135), we wish to influence the user's construction of knowledge in relation to information seeking. This will take place when the user considers, and eventually acts upon, the different choices in the course of the role-playing game, including the final exam act where the three fellow students explain what they have learned. Furthermore, once the user has completed the game, he/she will be directed to other sources of helpful information in Flexible Learning Objects Web.

Through the choices that the user has to consider in the course of the game, and the final exam round-up, we wish to create room for reflection that appeals to what Argyris and Schön describe as "double-loop learning" – i.e. metareflection. Metareflection constitutes an important element in our perception of information literacy.

Pedagogical concept in library courses

SWIM2 is flexible and can be applied in a variety of ways. It can be used as a single-user e-learning programme. We provide access to it on the library web site and it is freely available.

We also use SWIM2 in library courses in a blended learning environment. Basically, we have two scenarios. In the first scenario, our librarians or subject specialists offer courses to our university's various study programmes. Our preferred model is a mixture of student led activities, dialogue based elaboration of problems and concepts in the information seeking process integrated in the learning process, and finally hands-on exercises. The starting point is the user led activities, where users are placed two or three persons together playing the role-playing game and discussing the different situations and possible choices, hence forcing them to reflect upon these issues. This provides the basis for the following dialogues and hands-on exercises.

In the second scenario, SWIM2 is integrated in a course in methodology and information seeking for distance learners. This model is different in the sense that teaching and counselling is a collaboration between faculty staff and library staff, and also that the integration and employment of SWIM2 is spread over a longer period of time. This scenario incorporates the concept applied in the first blended learning scenario. This is possible because the distance learners meet at weekend seminars, where we occasionally have had the opportunity to make courses for them.

Flexible Learning Objects Web - FLOW

The second part of our development project is Flexible Learning Objects Web (FLOW). FLOW is an ultra flexible web application that in many ways resembles an LMS. The application is based on a concept which is a direct continuation of the pedagogical innovation represented in SWIM2. However, whereas SWIM2 more often than not is used in an isolated course context, FLOW will be available to students throughout their studies. This will place information literacy education in the context of the learning process, and our new product will be a virtual facilitator that hopefully will change students' habits and attitudes towards information seeking, as well as provide for a general perception and understanding of information seeking processes as an integral part of learning.

The FLOW product will be released by the end of the 2007. It is intended as a tool that may accommodate and support different needs and purposes that may arise in the student's academic work process. The student will be able to use the application in different ways, and the library will be able to implement the application in different ways. FLOW aims at stretching the reach of the services provided by the library in both time and space. It will be implemented in the students' virtual learning environment, thereby bringing the library to the user and not the other way around.

The application contains the framework for handling both learning objects provided by the library and/or the study programme. It will serve as the students' own project management tool, as well as a reflection tool which is being developed along the lines of the concept of portfolios. The overall structure is a designed work space where the student defines the content and will be able to use the site for collaboration with fellow students, either in group work settings or maybe in settings where the student invites other students to be sparring partners in their network of peers.

From the outset, the application will contain a number of learning objects developed by the library. These learning objects are meant to be small helpful programmes designed to help the student proceed with the situation at hand. The learning objects are based on the same process approach to writing and

information seeking as SWIM2. However, they will typically contain short "get-started" exercises or tips, and they can be used independently or skipped if considered unnecessary without disrupting the surface.

FLOW will be a flexible tool in more than one respect. Depending on the role of each of the involved parties (target groups) there are different views on the way this application can be used in the teaching and learning process. Students regard the application as a tool for project management lite, collaboration and visualisation of the process in the learning process. The counsellor, on the other hand, may shift the focus from working on a feedback basis to a more proactive counselling based on feed forward and actively giving input to the process, as well as the subject matters of the assignment. The library staff may view this application as a tool with which they can help emphasise the way students can interact with, and make use of, information in the writing process. This is a tool which will allow for a pedagogical approach that aims at supporting the students in their assignments and in their efforts to make use of information (Markless & Streatfield, 2007).

Summary

When the library settings are changing we need to respond if we are to continue to deliver new services that match the needs of our users. In our development projects we work proactively with the users in order to create innovative products and concepts that can be implemented in both the physical and virtual library. The challenge is to define the essential focus area for this development in order to develop new concepts that the library can implement via the library staff. New concepts that will make a difference in the way users make use of information. We suggest a shift in focus away from access to information to a focus on enhancing the student's understanding of how working with information is an integral part of the academic work process. Therefore, we need to focus on pedagogy and methods which can be supported by the integration of technology in new ways. We, the library, need to be innovative if we want to place ourselves as active participants in the zone where students develop their qualifications, competencies, creativity and innovative ways of working.

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