Information Literacy and Digital Reference Work: How can the Norwegian Ask the Library Service (*Biblioteksvar.no*) become an educational tool for school children?

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ABSTRACT

The purpose of this paper is to examine how the Norwegian Ask the Library Service (*Biblioteksvar.no*) may contribute to information literacy among school children. The challenge is no longer to find information, but to find *good information* from reliable sources. The methods applied are a qualitative analysis of transactions and dialogues from the ATL archive and interviews with teachers, school librarians and librarians working in the service.

The conclusion is that *Biblioteksvar* could become a better educational tool by focusing more on the patrons and their individual information needs and their search strategies. This implies obtaining enough information about the patron to be able to present the answer in a way that promotes information literacy. It is desirable to be able to filter the questions according to topic, user group and purpose before they reach the librarian. Using new technology in this manner will allow the librarian to focus more on how they can help patrons develop their information literacy. The paper examines the possible use of automation processes based on web technology to improve the service. This could be done by performing automatic searches in Google, Wikipedia and the chat archive of the ATL service while the patron is waiting for an available librarian. This paper looks at how new technology creates challenges and possibilities for reference librarians, and is aimed at everyone who are interested in how new technology can improve the educational quality of reference work.

KEYWORDS:

Information literacy, chat reference, digital reference work, virtual reference

1. BACKGROUND

The Norwegian Ask the Library service, *Biblioteksvar*, is a digital reference service where patrons can communicate with librarians via chat, SMS or e-mail/web form. The librarians answer different factual questions, find relevant literature and information according to the patrons needs. The task itself is not different from everyday work in the library, but *Biblioteksvar* allows the patrons to choose their preferred communication form based on their needs and type of query. We have chosen to look closer at the chat service and the challenges and possibilities this new communication form entails.

We have reasons to believe that many of the patrons of the Norwegian ATL service are school children. We have gained some experience from the service by handling chat sessions ourselves, and many of the questions we got where from school children who needed factual information for school work. We have talked to people who work with *Biblioteksvar*, and they all confirm this assumption. Those who work in the project management believe that the percentage of school children amount to as much as 70 % – 90 %. We want to examine how the Norwegian ATL service can contribute to information literacy among Norwegian school children and how we can use new technology to improve the quality of the ATL service.

Using digital tools and gaining information literacy skills is an important goal in both primary and secondary education, but the specific methods for how to accomplish these goals are lacking. We believe that the Norwegian ATL service already plays an important role in the development of information literacy among school children, but do the library personnel work in accordance with the pedagogical intention behind the goals? How can we make sure that the service becomes as beneficial as possible for school children? Learning through project work has become more and more common in Norway, and finding and evaluate information is often an important part of the learning process. A service that does this job for the school children may come in conflict with the pedagogical intention. Through our observations we have discovered that the main challenges for maintaining an efficient ATL service are the long waiting period before the patrons get through to a librarian and that they ask very general questions. When we look at the chat logs we find that the librarians seldom have the time to do a thorough reference interview and help the patrons in their information seeking process and with their personal information need.

2. RESEARCH GOAL
We wanted to find out what school children actually need from a digital reference service, and what improvements can me made from today's situation. We wanted to look at possible solutions for how a digital reference service can become an educational resource. We believe that the challenge is no longer to find information, but to find *good information* from reliable sources. The patrons are often impatient and want the answers fast, which may lead to a heavy use of easily available sources like Google and Wikipedia. Would the systematic use of quality sources like subject directories, the Norwegian newspaper archive (*Atekst-Retriever*), the subject portal to official information in Norway (*Norge.no*) and other official sites, lead to better answers?

3. METHODS
The main methods used in the research are a qualitative analysis of transactions and dialogues in the ATL archive, interviews with teachers, school librarians and librarians working in the service. The dialogues give us information about the patrons and the type of questions they ask. It is also possible to see what kind of sources the librarians refer to. Talking to teachers who teach different subjects at different levels helps us get a broader understanding of the school children's needs.

4. EARLIER RESEARCH
Limberg, Hultgren & Jarneving's (2002) and Kuhlthau's (2004) research indicates that the information seeking process isn't a general process independent of meaning. It's hard for the patron to decide how to approach the problem without knowing what information is available,

and it's difficult to make use of the information sources in a good way if you don't know what the information will be used for. Salvesen (2006) and Nordlie (2000) have done research that implies that both librarians and patrons believe that they can use important words from the question they have as a search word in the catalogue and then find a relevant document. At the same time it's worth noticing that both Salvesen (2006), Michelsen & Jensen (2005) and Friis (2005) think that a good dialogue between patron and librarian where the librarian learn as much as possible about the patron and his or her information need increases the patrons probability for a getting a good answer.

Lending out material of different kinds have been considered the main focus in the library for a long time, but this research indicates that the focus is shifting and that the patrons and their individual needs are becoming increasingly important. In order to achieve this focus shift in the ATL service, it is important to know more about what characterize school children as a user group.

5. THE SCHOOL CHILDREN
Everyone we have talked to who work with the Ask the Library service have the impression that it is mostly school children who use the chat-service. It is used significantly less when the schools are closed in the holidays, a user pattern we do not see in the e-mail- and sms-services. Sometimes the users explains that the questions they are asking is about a school assignment, and it's often possible to say something about the users age based on the way they express themselves. Typing errors, sms-language and smileys are very common. Exactly how big this user group is is difficult to measure as no systematic questioning is being done.

One of the members in *Biblioteksvar*'s quality committee, Asgeir Rekkavik, has the impression that school children have some special demands and expectations to *Biblioteksvar*. In general, he thinks that school children are impatient users who want the answer fast. Often they want a lot of information, they want the sources to contain exactly what they want and not much else, they want their information to be free and easily accessible via the Internet, and they expect the information resources to be easily understandable, written in a language they understand and match their academic level (e-mail from Asgeir Rekkavik 26. april 2007).

Our impression is that school children mainly want background information about specific topics, and that they seldom have questions which require only short, factual answers. A small group of more advanced users could need other types of information, for instance opinions or arguments on controversial issues.

The teachers we have talked to believe that the ATL

service can be an important resource when school children are working with individual projects, when they need to find supplementary information to the information in the text books and when they need help with the process of gathering information. The teachers want help to find subject catalogues with information about web pages and books that can be appropriate to their pupils.

Some of the teachers think that the school children need to improve their ability to ask precise questions. A teacher in primary school had noticed that the pupils often ask questions without thinking through what they want to find out (conversation with Kari Ruud 1. april 2007). This is probably also the case for many of the school children who use the ATL service, because many of the questions we have found in the chat logs is "I want facts about something" or "I need information about a country". All the available information about a country is quite a lot of information, usually more than they will have the time to read. Ruud feels that the youngest school children need short and concise answers that are easily understandable. It is also important that they do not have to read too much, because many of them are weak readers. In the chat dialogues we have looked at have we found that the librarians often refer to sources that contain too much text and are too difficult to understand for the school children.

Librarian : 30.10.2006 12:24	Please wait a minute while I search, I shall see if I can find anything
Librarian : 30.10.2006 12:25	From encyclopedia: http://www.caplex.no/Web/ArticleView.aspx?id=9341091
Patron : 30.10.2006 12:25	Hey, I'm in 7th grade, dude
Librarian : 30.10.2006 12:25	Okay, I will see if I can find anything appropriate for you

Example 1 (our translation from Norwegian)

Librarian : 30.10.2006 14:31	Please read a little bit more of what you've got and look at this http://www.barum.folkebibl.no/tema/miljo_innhold.html
Librarian : 30.10.2006 14:31	Good luck! :)

Patron : 30.10.2006 14:32	Can't you do it? Im not that good at reading
Librarian : 30.10.2006 14:34	If you go to this page http://bellona.no/norwegian_import_area/energi/fornybar/sertifikater/18793 and click on energy, it's written a little bit about different renewable sources of energy there, advantages and disadvantages
Librarian : 30.10.2006 14:34	Is there anything else you want to know?
Patron : 30.10.2006 14:35	No go to hell u r supposed to help ppl who needs help, not just send confusing links!!!

Example 2 (our translation from Norwegian)

Some of the teachers think that the librarian has to find out as much as possible about the pupil in order to give the best help possible. From their point of view, it is important to find out what the pupil already knows, because new knowledge must always build on previous knowledge. If you know a little about what the pupil knows, it is also easier to give information on a suitable level. It is also wise to find out something about the context in which the information will be used, because then it is easier to know how comprehensive the information need to be. The teachers also call attention to the fact that school children are very different, and that pupils in the same grade do not necessarily have the same skills. Therefore, it can be difficult to capture the requisite information in a questionnaire. Most of the teachers believe that this has to be done through dialogue, because it's possible to get a lot of information about how complicated texts the pupils are capable of understanding based on how they express themselves. The teachers' philosophy is that there is no set answer for what is the most pedagogical answer, what is pedagogical depends on the pupil. It will not be pedagogical to explain where to search if the pupil is not capable of using a search engine, then it will be better to give the direct answer.

All the teachers think that it is important that the pupils get a conscious relationship to what they are trying to find out about and why. With the huge amount of information available on the Internet, it is important that the school children learn how to narrow down and precisely define their question. Asking questions to a service like the ATL service can therefore be seen as pedagogical in itself, especially if they get some feedback on how the question is formulated.

Many of the teachers believe that the school children

need adapted information. A lot of the information that is available on the Internet is written in an advanced language that is difficult to understand, even if the school children are old enough to read and understand English. Many of the school children find it difficult to relate to large amounts of information, according to the teachers.

Another thing that is important is that the school children get the answers as fast as possible. This is important for everyone of course, but especially for school children who have a school day which consists of clearly divided activities. Many of the school children have to go outside in the break, or maybe they have to finish their task before the next lesson begins. We have found several examples of this in the chat dialogues.

Patron : 06.03.2007 11:42	OK I'm waiting!"#`?=)(/&%¤#"!
Patron : 06.03.2007 11:43	Hurry up, I don't have much time!##
Patron : 06.03.2007 11:43	It's recess time soon

Example 3 (our translation from Norwegian)

Another thing we have noticed by examining the chat dialogues is that school children often are involved when the same question is being asked several times within a day. It may be the same school child trying to get a better answer, or several children from a class who have got the same assignment from their teacher.

6. SCHOOL LIBRARIES
Many school libraries are not as good as they should be, and many of those who work in school libraries in Norway have not got librarianship training. It is easy to get the impression that many teachers and school librarians lack the necessary resources to provide education in information literacy. It's also a problem that many school librarians are sitting alone in isolated libraries around the country, because this can hinder skills upgrading. We believe that *Biblioteksvar* can be a solution to several problems. *Biblioteksvar* can provide a good reference service for teachers and school children in schools with a poor library service, and also make it easier for school librarians to ask other librarians for help.

In order to be a good educational tool for school children, it is important that the *Biblioteksvar* staff know the user group and their needs. School librarians are used to communicating with school children and have experience in answering their questions. Many of them have also made their own collection of web links specially adapted to the user group, and it is therefore likely that they have knowledge of Internet resources on a suitable level.

7. POSSIBLE SOLUTIONS
We believe that it would be a good idea to let school children have their own entrance to *Biblioteksvar*. This would make it easier to identify the school children and customize the service according to their needs. It's also important to remember that school children aren't the only users of *Biblioteksvar*. If you're a busy businessman looking for a quick answer you're not really that interested in the pedagogical approach, and maybe be a little bit annoyed if the librarian with sensible laced shoes and grey hair tied up in a knot tries to tell you how to use the Internet. Different users have different needs, and it's important to take that into consideration when it comes to both design the service and answering the questions. By filtering the questions according to topic, user group and purpose before they reach the librarian, it will be easier to make use of the librarians' individual expertise.

It would also be interesting to use technology to bring the school and the library closer together, for instance by integrating *Biblioteksvar* in the digital learning management system used by the schools. This could enhance the focus on using library services as a learning method. It is also possible to expand this entrance to *Biblioteksvar* to become a portal where school children can be introduced to quality sources like subject directories and official sites. In some situations it might be beneficial to let the patron complete a form where they give information about age, preferred language, how much information they need and so on. This will not pick up on some of the differences the teachers talked about like level of maturity and how well they understand the question and some patrons might not want to use the service if they have to complete a form.

According to he teachers we have talked to it is important to find out what the school children need and give appropriate guidance according to where they are in their information seeking process. It is likely that the school children's learning outcome will increase if the librarian can help them find information resources the school children are not able to find on their own.

It is time consuming to learn school children how to search for information on the Internet, but when *Biblioteksvar* is being used as an educational tool is it important to ensure that the pedagogical intentions are taken into account. By focusing more on the process of information seeking than the answer itself, it's more likely that the school children will develop a more conscious relationship to both information seeking and their own learning process. Using chat as the channel of communication enables the possibility for dialogue between librarian and patron, and this dialogue can be used to carry out a reference interview and give grounds for process oriented learning.

When patrons use chat to communicate with a librarian, they expect a fast answer. In order to do this it is important that many librarians are available. It would also be interesting to look at how new technology and

automatic solutions can help the patrons while waiting for a librarian to become available. We imagine that a web application that performs searches and combines data from different sources that are heavily used in *Biblioteksvar* today can be useful. If the librarian knows that the patrons have already fed their question into a mashup solution that gathers data from for example Google, Wikipedia and the *Biblioteksvar* archive, the librarian can use more time helping the patron precisely define their question and search in quality sources. We would also imagine that the service could be more effective if it was easier to use the information that is stored in the archive of earlier questions. With an intelligent agent, a system that perceives its environment and takes actions according to it, it may be possible to create a system that suggest answers from the archive based on the dialogue between patron and librarian.

The teachers we have talked to want the school children to be more critical of the information they find on the Internet and to stop copying what they find without stating the source. To teach this to school children is a comprehensive task, and will probably be too time consuming in a chat situation. But it is obvious that this is needed in the school today, and teachers and librarians should work together to give the school children the necessary skills. This is a great example of how new technology can lead to new challenges. By using a digital form of communication that appeals to school children, librarians suddenly find themselves doing a job somewhere in between their normal job and what they consider to be the teachers' responsibility.

8. The use of Google and Wikipedia in the Norwegian ATL service

A search on the word Wikipedia or Google in the dialogue (chat) archive of the Norwegian service, any given month returns a substantial number of hits. In September and the first week of October 2008 as many as 20-30% of the links supplied to the patrons contained answers from Wikipedia.

A tabular survey of five dates gives this overview:

Date	Number of dialogues	Dialogues containing the word Wikipedia	%
010908	46	17	36
080908	57	15	26
150908	44	17	38
220908	33	33	100
061008	46	17	36

The numbers of references to Wikipedia links are a little lower than the figures above indicate, because the patrons

occasionally inform the librarian *not* to use Wikipedia or that he or she *has already has tried Google*. Most young people are familiar with these two sources of information and many of them have done simple searches themselves before they enter the ATL service. These figures seem to be in accordance with random checks at other dates (Husevåg, 2007, p. 45)

Marie Solum, manager of the Norwegian ATL service says that even though the patrons have done searches in Google and Wikipedia, they do not know how to make refined searches and how to evaluate the sources they find (interview 16. October 2008). She believes the use of Google and Wikipedia is actually increasing in the ATL service. To confirm this supposition, statistical data for longer periods are needed.

Links to Wikipedia articles are usually accompanied by links to other relevant sites in the answers to patrons. Generally the *quality* of the ATL service seems to be high in so far as the links passed to the patrons, in most cases, contain satisfying answers, and the patrons often express gratitude for the answers.

In the guidelines of the service the librarians are advised not to use sources which the patrons easily can find themselves i. e. to avoid the one sided use of Wikipedia and Google (Brukermanual [2006]).

In order to enhance the quality of the service, it is important to refer to quality sites especially from public or governmental web sites where experts and professionals are accountable for the information.

Because Wikipedia articles rank high on the Google hit list, it is obvious that preceding a Wikipedia answer there is often a Google search (or another search engine). A typical example could be a dialogue dated 18 October 2007, where a patron asks for information about lifestyle related illnesses. On top of the Google hit list is a link to the Norwegian Wikipedia article. Most of the ensuing links passed to the patron can be found on the Google list and the external links found at the bottom of the Wikipedia article (depending on how the search words are formulated / spelled).

For many librarians, working under stress from impatient patrons, waiting in long queues, Google is their first choice and natural starting point, depending on the questions asked. It is no coincidence that Google and Wikipedia are the preferred tools for information retrieval for most people. Often the results are exactly what the patron seems to need.

Nevertheless this is a random, haphazard way of searching, lacking a clear strategy and plan. Would a more systematic approach give better results and enhance the quality of the service? What could the alternatives be?

9. Alternatives to Google and Wikipedia

The obvious alternatives, or rather *supplements*, to Google and Wikipedia are subject directories, both general and special. The most important one for librarians working in the ATL service is their own internal wiki where they can edit and formulate the contents themselves. The purpose of this site is to help librarians find the best answer in the shortest time possible. The type of question decides where to search first. There is a short list of the most important search engines and Norwegian subject directories. These are divided by subject and directories made by libraries. The most important directory for public libraries is *Detektor* from Oslo public library which cooperates with the Norwegian ATL service. It will be updated by the end of 2008 with new software and better functionality. Norwegian university libraries and college libraries are working jointly on the subject directory *Bibsys emneportal*. The similar subject directories in Sweden and Denmark are *Referensbiblioteket.se* and *Bibliotekernes netguide*. The Danish one seems to be the most elaborate and updated one.

The main problems with these subject directories are that they often refer to the same web sites, they are difficult to keep updated and contain many dead links etc., and they seem to lack clear administrative leadership. Therefore many librarians working in the ATL service have built up their own web directories, which may be useful for direct search and answering reoccurring questions. Familiarity with quality web sites makes it easier to recognize them on a hit list of a Google search.

School libraries have also worked out subject directories, for instance on a regional basis, like the libraries in Østfold County: *Welcome to the digital library*, with different types of internet resources, well organized into sections for books and articles search, bibliographic databases and catalogues, subject directories for secondary schools and other types of relevant reference works etc.

Other important subject directories are *Skolenettet* (The Norwegian School net) from the Directorate for Primary and Secondary Education and *Utdanning.no* from The Norwegian Ministry of Education and Research. Both of them specifically target the needs of school children and their teachers.

There are many more directories, which may be useful for school children (i.e. *Viten.no, Forskning.no* etc.) and there are web sites for specific subjects. They are quite frequently referred to in the Norwegian ATL archive, but it is not clear whether the links are found through Google or by direct search in the web sites.

Reference questions from students or school children in secondary education, who are doing assignments or projects, often need information based on opinions or from different points of view etc. in addition to factual information.

A relevant place to search for this type of information could be the Norwegian newspaper archive *Atekst-Retriever*, especially in those sections of newspapers, where opinions and personal views are expressed (for instance the sections for editorials, feature articles, commentaries, debates etc.) In addition to information on topical issues they can find in depth analysis of important social issues, biographies of people in the media, definitions and examples on how (new) words are used. *Atekst-Retriever* has advanced search features for Boolean searches, options for browsing in subject categories and commands for search in specific fields, i.e. sections of newspapers. At first glance the search system of *Atekst-Retriever* may seem complex and difficult to use. The main reason for not being used in the ATL service is that *Biblioteksvar* has no license to transfer the articles to its patrons. Even though the libraries subscribe to it, not all school children have access.

An alternative to *Atekst-Retriever* could be the Norwegian search engine *Sesam*, which has specialized in news search. Only a selection of published articles from 1983 is available however, but the functionality is sophisticated, clustering the search results into newspaper articles, blogs, net-TV, images and more. It was developed by *Fast Search* and is currently powered by *Yahoo*. It is among the most popular search engines in Norway. While *Sesam* is used occasionally in the ATL service, *Atekst-Retriever* does not seem to be used at all, as no reference to it could be found in the ATL chat archive from October 2007 to October 2008.

The subject portal to public information in Norway (*Norge.no*) with links to debates in the Parliament (*Stortinget.no*) could be useful to students in need of arguments on controversial issues. Long debates in the Parliament are not easy to read, however, and an alternative could be to watch videos of the debates. The public have open access to the video programs stored in the Parliament's archive. Discussion programs on TV may be another relevant source in this respect. TV debates are freely available from the archive of the Norwegian Broadcasting Corporation (i.e. *RedaksjonEn*). Arguments for discussion can also be found in the political parties' programs. Organizations may have strong views on particular issues expressed on their web sites. This information is perhaps not easily found, especially not in a chat situation, but it is worth having in mind.

Norge.no has a key word directory, a search box, and a help desk for chat and e-mail. Public information from governmental or municipal sites is worked out by professionals. Reports, memos, brochures, laws and regulations may have great informational value. This site

has been much criticized in the media, however, for large investments and low traffic. Even though it is difficult to search, it should be used more systematically in the ATL service.

Biblioteksvar invites experts on information retrieval to regular seminars, in order to enhance the competence of the reference librarians. In the spring of 2008 the information specialist Roald Storleer lectured on reference work in a web environment. His main focus was on critical evaluation of web resources, and how to search with Google / Yahoo and subject directories. *Biblioteksvar* has established a special group for supervising the quality of the service. It publishes its own Newsletter, with good advice, for instance this one: if you are really stuck not finding any answers in Google or Wikipedia, why not contact a living expert through telephone? (Newsletter no. 1 October 2008). Through the internal blog, *Biblioteksvar* keeps their members updated on important events (http://blogg.biblioteksvar .no/)

Seminars, newsletters, mailing-lists and lectures, etc. contribute to the high quality of *Biblioteksvar*, together with the special group supervising the quality of the service.

To reveal the search methods and strategies behind the answers in *Biblioteksvar*, more extensive and systematic interviews with the librarians working in the ATL service are needed. Procedures for information seeking may vary from librarian to librarian, but despite this, it could perhaps be possible to capture some general trends. Together with statistical data from the chat archive, such information could form the basis for analysis of the best search tools applied to different types of questions.

It could be useful information for the patrons if a short explanation on how the answer was found accompanied the answer. This might contribute to their information literacy. Knowledge of the information seeking process could also be helpful for librarians consulting previous dialogues in the chat archive.

10. CONCLUSION
Based on our experiences and research, we believe that *Biblioteksvar* would become a better educational tool by focusing more on the patrons and their individual information needs, their search strategies and information seeking procedures. This implies obtaining enough information about the patron to be able to present the answer in a suitable way that promotes information literacy.

Chat is a communication form that facilitates dialogue between user and librarian. It is important to take benefit of the advantages of this communication form. In order to make better use of the special qualifications of the librarians working in the ATL service, it is desirable to be able to filter the questions according to topic, user group

and purpose before they reach the librarian. Automatic searches, based on the patrons' questions, could be performed in frequently used sources like Google and Wikipedia, while the patron is waiting for an available librarian. Using new technology in this manner will allow the librarian to focus more on how they can help patrons develop their information literacy.

It is important to perform a reference interview in order to reveal the school children's information needs. It is also important to know what kind of assignments they work with and what to expect from children at different levels.

School librarians and others who are familiar with school children can help them find suitable information and help them in the information seeking process.

In order to make the service more effective, it would be useful to make the archive more available to both librarians and patrons. To ensure both fast and good answers it is important to have enough qualified personnel available. It would also be interesting to consider automatic solutions to help the patrons while waiting for personal service.

In addition to this, we suggest more focus on the information seeking process, the search strategies and search methods. We believe that it is important for teachers and librarians to maintain a critical view on *how* they search and *where* they search for information. Subject directories, portals for public information and subscription databases (hidden behind the invisible web) would perhaps lead to better answers than accidental hits in Google?

All the teachers we have consulted state that school children need to be more focused on what their information needs are. One of the goals in the Norwegian school system is teaching the school children critical evaluation of the sources. To tackle this, it is important that the librarians use the possibilities embedded in chat as a communication form and stimulate to dialogue instead of using a question-answer model.

We believe that a librarian working with school children should help them to become more focused and precise about their information needs, as well as conscious about the quality or the lack of quality, of the applied sources.

An educational tool aims at stimulating the learning process. This can be achieved in *Biblioteksvar* by helping the school children in an active dialogue, adapted to their level. To enable the school children to make the most of the information they get, it is important that the information is intelligible. But what is intelligible for school children at different levels? To know this is difficult and require knowledge about school children and digital resources on the Internet. It is also a challenge for

the librarian to get the necessary information from the dialogue. To obtain a satisfactory learning outcome, it can be a good idea not to focus solely on finding the right answer, but to use the school children's question as an example of an information seeking process. By using the possibilities of the chat dialogue, the librarian can ask the school children to explain their question and to evaluate the information the librarian provides. We believe that this approach can change *Biblioteksvar* from being an easy solution to a service that stimulates to learning and reflection.

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