

Information literacy, learning, and the public library: A study of Danish high school students

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Abstract

The paper reports on a study of 12 Danish high school students' perceptions of public libraries' role in learning, user education, information literacy, and librarians' information competencies. The study is undertaken by use of literature review and interviews with a purposive select sample of public library users in Denmark. The study demonstrates that public libraries are considered an important place for learning. The high school students view the public librarians as very competent and as good at helping them to develop their information needs, identify sources, and support the students in the information search processes. The high school students show rather good critical skills, but poor information need developing skills. The study further shows that concepts of information literacy and lifelong learning are not very well understood by the users, i.e. the high school students. The results have a range of implications, both for pedagogical praxis in the public library and for Library and Information Science (LIS).

Keywords

Denmark, information literacy, learning, phenomenography, public libraries

Introduction

This paper reports on a study of 12 high school students' perceptions of the public library's role in learning. In this study, we identify how they perceive learning and user education in the public library, how they perceive information literacy and their own use of information, and which competencies they wish public librarians to have. The study is motivated by a need for a deeper understanding of users' perceptions of the role of the public library in learning and what users want from public libraries in relation to learning. This knowledge is essential for public librarians, because knowing what users want is the foundation to improve and adapt information literacy education to users' needs. Consequently information literacy education courses should have a theoretical and empirical basis, which enables public librarians (acting as mediators) 'to base practice on general principles rather than depending solely on hunches and intuition' (Kuhlthau, 2004: xv). Thus the aim of this paper is to present empirical results of users' perceptions of the public library as a place for learning, and on this basis to motivate a discussion of

how users perceive public libraries role in learning, user education, information literacy, and librarians' information competencies.

Background

The theoretical point of departure of the paper is based on a constructivist view of learning. As such the conceptual framework can be found in the works of Belkin et al. (1982), Bates (1986), Dervin and Nilan (1986) and Kuhlthau (2004). The constructivist process theory for library and information services emphasizes the information search process as an essential component of learning (Kuhlthau, 2004: 86). In the learning process the user passes through a number of phases, in which the public librarian as adviser,

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tutor or counsellor in the information search process may be needed (Kuhlthau, 2004: 115–125).

Easy access to information through the Internet has made many people very self-confident about their information skills. The question is, whether they really are as competent as they think they are? A recent article by Rowlands et al. (2008: 1) indicates that even though the Google Generation is competent at using computers, they are not capable of using more than the most basic web search tools and they do not apply enough critical and analytical skills to assess the information they find. In other words, the users are apparently good at retrieving relevant information, but they are incapable of evaluating whether the information is pertinent or even trustworthy. In accordance with this, Wilson (1977: 123) points out that one of the problems users face in relation to information use is the difficulty of using documents and not as much the difficulty of access to information. A similar study to ours by Fidel et al. (1999) shows that high school students are focused and flexible searchers, but need training and search support to fully use the Internet as a source of information. This corresponds with findings by Kuhlthau (1988) and indicates that users (high school and college students) need a mediator to guide them, especially when they have to assess the relevance and reliability of the information they find, and also to encourage them when they are uncertain of the search process or knowledge construction process. In the public library the librarian has the role of mediator, a role which Kuhlthau (2004: 107) defines as ‘a person who assists, guides, enables, and otherwise intervenes in another person’s information search process’. The mediator intervenes primarily by talking with the user about the topic, acknowledging the uncertainty and helping facilitate the formulation of information problems. Thus the public librarian plays a central role in the user’s information-seeking process – a process the librarian is to support most effectively, which is why we need to know how that is best achieved. Consequently, we pose the research questions put forward in the following subsection.

Research questions and outline

In order to learn how to improve the information literacy of the public library and qualify the librarians for user education, we need to understand how the public library is perceived as a place for learning, and what the users’ expectations are of librarians in this respect. It is our ambition that the present study provides understanding, insight, and recommendations that will make it easier for public librarians to offer the expected and needed information literacy support. As a result, the prospect is that public librarians can interact accordingly and adjust services and pedagogies to the needs of individuals as well as specific target groups when they design information

literacy education. To do this, the present paper aims to answer the following four research questions:

1. How do users experience the public library’s role as a place for learning?
2. How do users perceive their own information use and skills?
3. What do users want from the public library, and why?
4. How can public libraries improve their support of the users?

The study builds upon 12 high school students; the small sample number and the fact that they come from one geographic location in Denmark, limits the conclusiveness of the results. Consequently, the results are considered indicative for this particular group of public library users, only. With reference to implications of the results of the reported study it is obvious that evidence about the high school students’ perceptions of the public library’s role in learning, user education, information literacy, and librarians’ information competencies, provide insight and understanding that ensure a stronger and more profound basis for the librarians teaching and design and development of information literacy instruction for this specific target group.

The paper is composed of six main sections. Section 2 presents a literature review of definitions, models, and standards of information literacy, and continues with related research on users’ perceptions of learning in public libraries. Section 3 introduces the present empirical study and discusses the methodology applied. Section 4 presents the results of the empirical study. This is done by analysing statements from 12 high school students in order to uncover how they experience the public library as a place for learning, and how they perceive information literacy as well as their own information skills. Section 5 discusses the results of the study in relation to the previous research introduced in Section 2. The paper closes with summary statements, perspectives, and future work in Section 6.

Literature review

The objective of the present section is to introduce, position, and motivate the public library as a place for learning on the basis of previous research – this we do in Sub-section 2.1. By use of the previous research we define the concepts central to the study reported on, and hereby provide the basis for how to understand the public library as a learning place for lifelong learning as well as the focus for our study. In Sub-section 2.2 we discuss whether and why information literacy is of importance to public libraries and their

users; in other words we present the core essence and importance of our research focus and study object.

The public library as a place for learning

In Denmark public libraries are part of the general welfare of society. They are under a common legislation and are funded by the municipality they belong to. Public libraries in Denmark have a long tradition as guarantors of free access to information and as places for culture and learning. Hence, public library services are in almost all circumstances free of charge.

Public libraries have an important role to play in supporting the learning process because there is a recognized need for inclusion of informal elements in learning, flexible learning opportunities, and a shift towards self-directed learning (McNicol and Dalton, 2003: 5). Public libraries have the opportunity to offer all of these things. Lifelong learning has become essential to all people in today's information society as a result of easy and free access to information. The *Memorandum on Lifelong Learning* by the Commission of the European Communities (2000: 5) identifies two equally important aims of lifelong learning: promoting active citizenship, and employability, thereby enabling people to participate in all spheres of social, political, and economic life. The purpose of the European Commission is to promote active citizenship and employability through lifelong learning to make people become more active in the democratic process locally, nationally, and within the European Union (EU), as well as to improve competitiveness and prosperity within the EU (Commission of the European Communities, 2000: 5). The concept of lifelong learning is widely used in a variety of contexts and as a result with an unclear meaning (Morgan-Klein and Osborne, 2007: 6–8). A basic understanding of the concept is 'learning throughout life, either continuously or periodically' (European Commission, 2000: 8). This definition implies that learning is not confined to educational institutions. The memorandum identifies three types of learning: formal, non-formal, and informal learning (European Commission, 2000: 8). Formal learning takes place in educational institutions (e.g. schools, high schools, and universities). Non-formal learning typically takes place in the workplace or in organizations and complements formal learning. Informal learning is a 'natural accompaniment to everyday life' (European Commission, 2000: 8). The latter of the learning type definitions is of particular interest to public libraries, because self-directed informal learning is the predominant type of learning in public libraries (McNicol and Dalton, 2003: 11; Marchionini and Maurer 1995: 67). Public libraries provide a space for self-directed informal learning, which is not a school, but have staff, information resources, and physical and virtual space readily available to use for anyone. This, however, raises

the question of the librarians' role in the learning process and how far librarians can take their role as learning providers. Both McNicol and Dalton (2003: 4), and Spacey and Goulding (2004: 347) emphasize the need for librarians to know their own role in relation to learning. Librarians are not trained educators, but still need to know how to identify the users' needs and subsequently support them in their learning processes. In some cases public libraries might not be able to support learners to their satisfaction and referral to, or collaboration with other learning providers should be considered (Ashcroft et al., 2007: 130). Research by Skov (2004) shows that collaboration between public libraries and educational institutions can support not only informal learning, but also formal learning. Skov (2004: 6) argues that 'the challenge of the public library is to get involved in the knowledge construction process of school children in collaboration with school teachers and school librarians'. She further identifies a number of partnerships between public libraries and other institutions, mainly schools: partnerships that show how it is possible to target different groups to develop guides to project work, teach students and teachers information searching, make librarians participate in planning modules of project work with teachers, experiment with dissemination of information from the Internet for a project (Skov, 2004: 6–7). These examples of collaboration can be supplemented by the development of standardized research guides on popular topics and extensive information on evaluating websites and information on the Internet (Jehlik, 2004).

It is important to acknowledge that self-directed informal learning is characterized by a high degree of initiative from the learner. It is very much up to the individual to define his or her own goal for learning, identify and select sources of information, and evaluate the outcome (McNicol and Dalton, 2003: 14–15). This corresponds with elements of the definition of information literacy. For that reason, it is interesting and significant for the discussion of learning in public libraries to note that McNicol and Dalton (2003) do not use the term 'information literacy'. Several authors (e.g. Olsen and Coons, 1989; Owens, 1976; Rader, 1991) point out that information literacy is a prerequisite of the democratic society we live in, just as the above mentioned memorandum from the European Commission (2000) argues that lifelong learning is a precondition for proactive citizenship and employability. Olsen and Coons (1989), Owens (1976), and Rader (1991) do not refer to the public library specifically, but rather to higher education, schools, and academic libraries. In fact, there is a lack of research on the relations between public libraries and information literacy, which demonstrates the need for the present study. In contrast there are numerous publications on information literacy and academic and school libraries, which are documented by consecutive reviews (Rader, 1991; Johnson, 2002; Johnson and Jent, 2005; Johnson et al., 2007). These reviews give

evidence of a widespread understanding of the education of lifelong learners in school library and academic library environments, as well as of the importance of information literacy. The potential benefits of building on information literacy have not yet been acknowledged in the public library environment, even though there is a clear understanding in public libraries that they play an important educational role. While formal information literacy education in school and academic libraries builds on or relates to a curriculum and involves collaboration with teachers, these things can be more difficult in the public library setting. In the following section, we will discuss whether and why information literacy is of importance to public libraries and their users.

Information literacy in the public library

From a historical point of view the concept of information literacy was coined in 1974 by Zurkowski, who says that persons are information literate when ‘trained in the application of information resources to their work’ (Zurkowski, 1974: 6). Information literacy has evolved conceptually and has continuously been the topic of debate within the field of library and information science, since the information literacy concept is a complex and multifaceted one. Related types of literacies exist. These are, for example, library literacy, media literacy, and computer literacy, and can be viewed as inherent in the concept of information literacy in the context of the public library, i.e. of how to use the resources and facilities of the public library (Bawden, 2001: 223–230). Bawden (2001: 230) points out how these literacies have obvious overlaps, but that the library, media, and computer literacies are more focused on exact skills as compared to the information literacy concept. However, the present paper deals with the concept of information literacy, and hence the reader is directed to, for example, the paper by Bawden (2001) on digital literacies.

Several researchers have tried to come up with a single all-encompassing definition of information literacy or have tried to add to the existing definitions (e.g. American Library Association, 1989; Bruce, 1997; Doyle, 1992; Johnston and Webber, 2003; Kuhlthau, 2004). In the following we present the contributions of these researchers and their significance to our study.

Zurkowski’s point of departure is to optimize learning and information use of the employees, in order to enhance the basis on which business decisions are made and as a result make innovative solutions and products. As such Zurkowski’s definition of information literacy does not address the library community, specifically. Nevertheless, it has inspired the definition of information literacy by the American Library Association (ALA), which is the one generally accepted and employed. The definition reads: ‘To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use

effectively the needed information’ (ALA, 1989: 2). The ALA definition has been further extended by a number of researchers, for example Doyle (1992), Kuhlthau (2004), Bruce (1997), and Johnston and Webber (2003), which has helped to expand the definition, and make it clearer.

Doyle (1992: 10) defines information literacy as ‘the ability to access, evaluate, and use information from a variety of sources’. She further identifies 10 characteristics which the information literate person should possess. According to Doyle an information literate person ought to be able to:

1. recognize the need for information;
2. recognize that accurate and complete information is basis for intelligent decision making;
3. formulate questions based on information needs;
4. identify potential sources of information;
5. develop successful search strategies;
6. access sources of information including computer-based and other technologies;
7. evaluate information;
8. organize information for practical application;
9. integrate new information into an existing body of knowledge; and
10. use information in critical thinking and problem solving.

Basically, Doyle’s definition is identical to the ALA’s definition, but Doyle adds to it the important concept of critical thinking. Critical thinking is a complex concept in itself, but can be defined as ‘the process of purposeful, self regulatory judgment which results in interpretation, analysis, evaluation, and inference as well as explanation of the evidential, conceptual and methodological considerations on which a judgment is based’ (Facione, 1990: 2). Critical thinking is important, because it is an act and behaviour which is self-directed and oriented toward inquiry, analysis, and critique. As such it supports informal self-directed learning, which is the predominant type of learning in public libraries. For a more elaborate discussion of critical thinking, consult Facione (2009) for example. For the purpose of our study, we view critical thinking as the basis of evaluating and selecting information in the search process, as well as a vital part of the learner’s ability to analyse information and use it to communicate his or her thoughts and results.

Kuhlthau’s work (e.g. 2004) on the information search process (ISP) model complements the ALA definition. Kuhlthau’s ISP model is not in itself an information literacy model, but reflects definitional components of information literacy and makes it possible to view information literacy as a process. Her model shows the stages of ISP and outlines the parallel dimensions of the process by focusing on the feelings, the thoughts, and the actions of the user. Kuhlthau’s model is the first to add the emotional processes the learner goes through in the information-seeking process

Table 1. Simplified overview of Kuhlthau's ISP model and McNicol and Dalton's Cycle of Learning in Public Libraries

Comparison of elements of Kuhlthau's ISP model and McNicol and Dalton's Cycle of Learning in Public Libraries	
Kuhlthau's ISP model	McNicol and Dalton's Cycle of Learning in Public Libraries
Initiation – A learning and information need initiate a search process.	Engagement – stimulate the learner, gain attention, and create a positive climate for learning.
Selection – Finding a topic to research.	Planning – Identification of learning needs. Recollection of prior knowledge and derived identification of need for new information.
Exploration – The search for information going from general to specific, but not necessarily in an orderly fashion as the words say.	Exploration – Learners undertake a process of investigation and exploration of sources of information.
Formulation – Development of focus – leading to a search for more pertinent information.	Reflection – Analysis, clarification, rule application, synthesis, concept formation and the identification of patterns in the collected information.
Collection – Information collection based on increased interest and understanding of the topic.	Generalization and implementation – Learners make connections, validate learning and draw inferences.
Presentation – Presenting the product and reflecting on the need to know more lead to the interest in building an area of expertise.	Evaluation – Learners are able to determine the extent of their understanding and to decide whether they need to modify their approach or change direction or refocus. This activity may lead to further enquiry.

to the information literacy definition (2004). This addition of emotional processes and the visual representation of the process bring a more holistic view of the information search process in relation to learning processes to the ALA definition. The process approach to learning is also inherent in the self-directed informal learning approach of McNicol and Dalton (2003). They focus on the learning of users of the public library in contrast to Kuhlthau who bases her research on users of academic libraries. Comparing the two different process models by Kuhlthau, and McNicol and Dalton we find that there is little diversity. Both Kuhlthau and McNicol and Dalton identify learning needs and information needs as the starting point of an information search process. Table 1 shows the six subdivisions of Kuhlthau's ISP model (Kuhlthau, 2004: 82) and McNicol and Dalton's (2003: 15) Cycle of Learning in Public Libraries.

Table 1 shows a correspondence between what Kuhlthau refers to as initiation and selection and what McNicol and Dalton label planning. In the exploration phase, they both also emphasize that exploration of various sources of information is necessary to form a focus, and that librarians can offer support in this part of process (Kuhlthau, 2004: 116; McNicol and Dalton, 2003: 41). Reflection and critical evaluation of the information resources found are also part of both models. In both models this is a continuous activity throughout the learning process. Evaluation of the process itself is most visible in McNicol and Dalton's model, but it is also part of Kuhlthau's presentation phase. Kuhlthau and McNicol and Dalton integrate information literacy elements in their learning process models. In this way both Kuhlthau and McNicol and Dalton verify the importance of information literacy for learning.

The ALA's definition has also led to the development of elaborate standards, which specify skills an information literate student should possess (e.g. ACRL, 2004; SCOUNL, 2000). These standards have primarily been developed as tools to support information literacy instruction and measurement in higher education. In public libraries they could be used as a part of more formalized information literacy education, but they have been criticized for being too mechanistic and only focusing on skills and not enough on knowledge and values (e.g. Bruce, 1997; Webber and Johnston, 2000). The above mentioned definitions, characteristics, and most of all the standards have been criticized for being too focused on specific skills. Instead, Bruce (1997) approaches information literacy by inquiring into the user's conception of information literacy. Bruce (1997: 162) lists the following characteristics which the information literate person should possess:

1. engaging in independent, self-directed learning;
2. using information processes;
3. using a variety of information technologies and systems;
4. having internalized values that promote information use;
5. having a sound knowledge of the world of information;
6. approaches information critically; and
7. having a personal information style that facilitates his or her interaction with the world of information.

The seven characteristics of the information literate person by Bruce have similarities with prior definitions by the ALA

(1989) and Doyle (1992). In Bruce's view the emphasis is on the importance of the user's critical reflection on which forms of information technology, sources, search strategies, and types of information is relevant in specific situations. In addition, Bruce presents the idea that the focus should be on the individual and their individual information needs and information behaviour in relation to learning. Although the research by Bruce (1997) does not inquire into public library users per se, her research is still significant. The significance is seen in how Bruce (1997) adds to prior research by raising the awareness about people having different conceptions and approaches to information literacy in different contexts.

Johnston and Webber (2003: 337) argue the focus of information literacy is obscured by the many separate skills inherent in for example the SCONUL (2000) and ACRL (2004) standards. Consequently, Johnston and Webber (2003: 336) define information literacy as: 'the adoption of appropriate information behaviour to obtain, through whatever channel or medium, information well fitted to information needs, together with critical awareness of the importance of wise and ethical use of information in society'. Johnston and Webber's definition of an information literate person focuses on acknowledging the importance of information as a catalyst in problem solving, being able to locate information, evaluate information, and use information critically. As such it resembles the ALA's (1989), Doyle's (1992), and Bruce's (1997) definitions, but adds an ethical dimension of using information, which is very important in a time where plagiarism has never been easier, and where social responsibility in communicating information has never been more important. The freedom to communicate information always has to be weighed against the possible consequences of this communication even in societies with freedom of speech. The privilege of freedom of speech demands a duty to ensure that what you say and the way you say it are done correctly and in a way that leaves no doubt in the receivers mind.

To summarize: the concept of information literacy has matured from Zurkowski's (1974) rather narrow definition of work-related information use. The definition of information literacy by the ALA (1989) provides a broad underlying working definition, to which Doyle (1992), Bruce (1997), Webber and Johnston (2003), and Kuhlthau (2004) have all contributed in making the definition more comprehensive and clear. In addition, the standards supply a set of valuable tools for assessing information literacy on an individual basis, if needed in the more formalized teaching of information literacy. Common to the models of McNicol and Dalton (2003) and Kuhlthau (2004) is that they illustrate the connection between the information search process and the process of learning. Further, the learning processes outlined by McNicol and Dalton (2003) and Kuhlthau (2004) resemble each other, but come from two different fields of library and information science. McNicol and Dalton's (2003) comes from the field of public libraries

and Kuhlthau (2004) has based her research on academic library users. A holistic understanding of the concept of information literacy in public libraries integrates all of these contributions and will be regarded as a learning process approach. This will lead to a learning process approach that encompasses concrete information skills, technical skills, an awareness of information as an important resource in problem solving and self-directed learning, as well as recognizing the individual's information needs, the knowledge of when and how to use information, and the acknowledgement of using information in a critically and ethically correct way. Building on this understanding of information literacy education, the public library can be a place for learning and the development of lifelong learners. As such we rest our case for motivating the relevancy of information literacy for public libraries.

In the following section we introduce the methods of the empirical study of high school students' perceptions of the public library as a place for learning. We hereby aim at verifying recommendations for how to implement information literacy in public libraries.

Methodology

The present study is based on a phenomenographic research approach (e.g. Marton, 1986), which is signified by this approach's ability to generate qualitatively different answers to the proposed questions. Marton (1986: 31), one of the founders of phenomenography, describes the phenomenographic research methodology as 'a research method adapted for mapping the qualitatively different ways in which people experience, conceptualise, perceive, and understand various aspects of, and phenomena in, the world around them'. The methodology has proven its validity in studies, which have examined higher educators' conception of information literacy and how they relate to information (Bruce, 1997), English faculty's conceptions of information literacy (Boon et al., 2007), and undergraduates' perception of 'information use' (Maybee, 2007). The method is developed to study real people's conceptions of real problems and as such is particular appropriate for collecting data which show how people have various perceptions of concepts and relations to those concepts. The phenomenographic methodology applies a 'second order perspective', which implies that data collection has as its aim to collect information about how people understand or perceive certain phenomena, rather than making statements about what these phenomena are (Marton, 1981: 178). A phenomenographer will not state that: 'The differences in success in school, workplace and life are affected by different levels of information literacy', but rather: 'There are people that think that success in school, workplace and life are affected by different levels of information literacy'. As a result data collection will ask questions like 'How do you

perceive the public library as a place for learning?’ instead of ‘What is learning in public libraries?’ The data analysis process consists of a number of recursive readings of the interviews and deriving and progressively refining categories determining variation or agreement (Bruce, 1997: 106). In this process the collected data is the basis of the researcher’s constructs of a limited number of categories depicting the perceptions of the concepts in question.

Data collection

A semi-structured interview guide was designed for data collection. The interview guide is a compilation of questions in which we start out with open-ended questions in order to let the subject close the dimensions of the question they want to answer (Marton, 1986: 42). The following key questions are asked:

- How do you perceive user education in public libraries?
- What do you aim to achieve when you are using information?
- How do you think interacting with information will affect your learning?

To let the participants elaborate on the topics, we follow up on the open-ended questions by asking questions like: ‘Can you exemplify this?’ or ‘Can you explain that?’ Prior to the interview each interviewee received an explanation of the purpose of the study and an overview of which topics the researcher would like to discuss. The topics in question are:

- The public library as a place for learning
- User education in public libraries
- Information literacy
- The information competencies of public librarians.

In a similar study Maybee (2007) rephrases the term ‘information literacy’ to ‘information use’ in order for the participants to have a more familiar term in the questions. In this study we have retained the concept ‘information literacy’. In addition to ‘information literacy’ the participants were asked to consider separate elements of the concept. To do this, we further divided the term ‘information literacy’ into five sub-questions reflecting on information need development; information searching; critical examination of found information; selection; and use of information. We did this based on analysis of various definitions of information literacy (ALA, 1992; Bruce, 1997; Johnston and Webber, 2003). Please note, we are well aware that this is not in line with a ‘pure’ phenomenographic methodology, where ideally there is no link between prior conceptualizations of topics and new studies. We find this a false impression, since all researchers will be biased by their already existing knowledge, and we further find that all new research

ought to base itself on a solid foundation of previous research. This basically means that one as researcher has to be aware of this pre-existing knowledge, and not letting it influence and bias the current research project.

Participants

The study was conducted at Randers Statsskole, which is a high school in Denmark with approximately 800 students. The high school has its own library, but due to limited funding and the absence of trained librarians, the public library of the city of Randers is used as the primary library for most of the high school students. The public library offers library introduction to the high school students. This introduction primarily consists of an introduction to the physical library, the library’s own catalogue, the Danish national catalogue and supplementary services, such as personal guidance in relation to school assignments. There is no particular emphasis on information literacy. The sample used in a phenomenographic study is purposive instead of randomly chosen with participants sought out based either on the basis of seeking respondents on both ends of a spectrum or on their expertise and experience. Hence high school students were recruited as test participants in collaboration with the teachers. This was done to ensure that as many viewpoints as possible were adequately represented within this group. As a result the study’s participants are eight girls and four boys, from the age 15 to 20, and studying at the first to third levels. Their use of and experience with the public libraries differ. Only two of our participants did not use the public libraries for learning purposes, but the remaining 10 had various approaches in their use. Approximately half of the participants had had some kind of formalized introduction to the public library. All the participants responded positively to the role of public libraries in general and in relation to learning. Even the two participants who did not use the public library for learning purposes had the impression that others might benefit by using the services of the public library for learning purposes.

Data analysis

As said previously we base the study on a phenomenographic approach. The objective of phenomenographic research is: ‘to find and systematize forms of thought in terms of which people interpret aspects of reality – aspects which are socially significant’ (Marton, 1981: 180). Therefore the interviews were transcribed word-by-word and analysed to resolve the various ways in which the high school students perceived the topics of: the public library as a place for learning; user education in public libraries; information literacy; and the information competencies of public librarians. The analysis consists of a number of consecutive readings of the interviews, until a limited number of ‘categories of description’ can be resolved. The ‘category

Table 2. High school students' understanding of the public library as a place for learning

Category of description	Purpose and use of the public library
An information resource centre	Seeking and locating information Finding alternative sources
A place for independent learning	Students' proficiency Individual preoccupation Go into depth with a topic
A place for support and guidance	Knowledge construction Alternative sources and information retrieval

of description' is the outcome of the analysis, and depicts the high school students' various understandings of the topic in question. The categories of descriptions are constructs, which build on statements from one or more high school students. 'During data analysis, interviews are pooled, that is, they are not linked to individual informants' (Limberg, 2005: 280). Therefore the understandings of the high school students are pooled together in the analysis process, since one high school student might add valuably to more than one category of description. The categories of description are helpful to us in that they help us to understand the different ways students understand phenomena and by gaining insight into the users' perceptions to be able to propose how public librarians can act accordingly in the actual situation.

Results cohort

The objective of this section is to present, discuss, and put into perspective the results of our empirical study. In that way we aim to answer our four research questions. In Sub-section 4.1 we present our results in relation to how our high school students experience the public library's role as a place for learning. In Sub-section 4.2 we show how our high school students perceive information literacy and their own information use and skills. Sub-sections 4.1 and 4.2 form the basis of our analysis in Sub-section 4.3 of what users want from the public library, and why. Based on this analysis we discuss how public libraries can improve their support of users in Section 5, which we close with summary statements. Throughout the sub-sections we have included excerpts from the transcribed interviews to exemplify the different aspects attributed to each category. Individual high school students might have contributed to more than one category of description. As such the single categories are a representation of the collective experience of all the high school students and not the individual interviewee.

How do users experience the public library's role as a place for learning?

The objective of the first research question is to contribute to an understanding and awareness of the public library as

a place for learning from high school students' perspective. The research question reads: How do high school students experience the public library's role as a place for learning?

With reference to this question we have identified three categories of descriptions of the high school students' understanding of the public library's role as a place for learning, which are: an information resource centre, a place for independent learning, and a place for support and guidance (see Table 2).

The following sub-sections address the identified categories one by one.

An information resource centre. Six of the high school students perceive the public library as a place for learning in terms of the public library as an 'information resource centre'. This conception emphasizes the public library as a place for discovering new sources, and seeking and locating information in various sources both print and electronic. The students seek alternative sources of information to verify their prior results, which shows an understanding of the importance of new information in the learning process and relates to the primary stages by Kuhlthau (Exploration and Formulation stages) and respectively by McNicol and Dalton's (Exploration and Reflection stages) (see Table 1). These participants are also critical of information found on the Internet. Some of them even had the belief that print material per se was more reliable than electronic, and the reliability of Wikipedia especially is the target of the high school students. This preference for print material was founded in a sound notion of the editorship of print material. The dismissal of electronic information is however problematic, since much information only comes through electronic media. This calls for a change in attitude towards a broader understanding of how to evaluate information irrespective of the media.

The information found through the 'information centre' was primarily used for seeking evidence, thus confirming other sources of information or seeking evidence to back up an existing argument, which is evident in other studies too (e.g. Lupton, 2004: 52; Seamans, 2002: 116).

A place for independent learning. The high school students also think of the public library as a place for learning with an understanding of 'a place for independent learning', which is different from learning in school. The public

library in this conception is conceived and appreciated as a place for learning and education, but not as much for tuition and teaching. As one high school student formulates it: 'sometimes it is a better experience to learn something at the library, because you yourself have gone down there. You have chosen to go to learn something and you have taken the initiative'. This shows that the public library has a unique role to play in relation to independent learning and in supporting the users with reliable information as well as securing accessibility to a variety of information sources.

Some high school students emphasize the individual proficiency in a subject and their preoccupation with topics of interest, for example (talking about the public library): 'When you learn in school there are many pupils to consider', and 'You don't have to pay regard to others', and 'if there is something you find difficult'. This obviously gives a freedom to do things at their own pace that is highly appreciated. It also resembles recommendations by McNicol and Dalton (2003: 13) that learning should take account of the learner's background and experience.

The high school students also perceive the public library as a place for independent learning in support of the opportunity to go into depth with a topic: 'A possibility for the individual to become more deeply absorbed in things'. This is to show that independent learning can foster increased interest in a subject, whether it is as part of a school project or in another setting. Increased interest in a subject motivates learners to seek a deeper understanding, which is also apparent in Kuhlthau's Collection stage and McNicol and Dalton's Generalization and implementation stage (see Table 1). In addition, findings by McNicol and Dalton (2003: 14) show that learning should be presented in increasingly complexity, building on existing knowledge. Hence it is important to recognize the level of knowledge of the independent users to support them in the best way. This can be achieved by use of individual face-to-face interviews using, for example, open-ended questions and sense making (Dervin, 1998: 39).

A place for support and guidance. The study's participants understand the public library as a 'a place for support and guidance' with reference to the library as a learning place. The high school students emphasize the librarians' ability both to support them in the knowledge construction process, and to aid in choosing alternative sources of information and retrieving information. The librarians are perceived as guides to information, but not as teachers in the knowledge construction process. The most appreciated competencies of the public librarians are their knowledge of information sources, their supportive counselling in focusing problem statements, combined with their skills in information seeking. This appreciation is, for example, illustrated with the following quotation from one of the high school students:

I had to go and 'book a librarian' to get information from her. She found books, newspaper clips from other libraries. It helped me a lot in this paper, where I had nothing to go on. I didn't know what to do.

This shows that the public librarians' ability to identify information needs and find materials relevant to the user is highly appreciated. It does not show any explicit discussion of the learning process related to the information need. Such a discussion could possibly lead to further development of the focus of the learner and further support from the librarian.

The librarian's help in the search for alternative sources is also articulated by some of the participants. An example of that reads as follows:

It is a place where I can go and get guidance to seek new knowledge

and:

You can go there and ask about something, so as the librarian ... so that they can find something – what you seek. And then help you to get on.

Here we see indications of further support by public librarians in the learning process leading to new knowledge, but still with a focus on finding information.

The librarians' supportive function has strong relations to the students' expression of the public library as an 'information resource centre' where they as users also focus on information sources and the process of finding information. The main difference between the two lies in the use of the librarians. The librarians are not considered sources of information themselves by the high school students, but are merely viewed as a kind of gatekeepers to information.

How do users perceive information literacy and their own information use and skills?

The aim of this research question is to contribute to an understanding of information literacy from high school students' perspective, as well as verifying how high school students perceive their own information use and skills. The data analysis of the interviews of the high school students' understanding of the concept of information literacy reveal four different aspects of information literacy. The four identified perceptions of information literacy understandings are: mediation of information, finding information, process of making meaning, critical awareness of sources (see Table 3).

The data used in the analysis, which identify the perceptions of information literacy, are generated on the basis of asking about both the concept of information literacy and about the information need, use of sources, evaluation and selection criteria, and use of information. Without exceptions, the interviews were the first time the participants had

Table 3. High school students' understanding of the concept information literacy

Category of description	Focus
Mediation of information	Personal skills in giving access to information, pass on information, knowledge of a variety of sources of information, (someone who knows something about everything).
Finding information	Information source focus – use of a variety of sources for accomplishing a task, alternate between use of print and Internet-based sources.
Process of making meaning	Information needs focus – topic and task oriented. Subject focus – make sense of information, make connections between old and new information. Cognitive focus – read, synthesize, analyse, interpret, communicate.
Critical awareness of sources	Aware of bias, author intent and reliability, cross-checking sources.

encountered the term 'information literacy' and had had the opportunity to reflect on the concept. Despite this the majority of the students were willing to engage in a discussion about what the concept meant in relation to their learning process in the context of the public library. As the concept of information literacy was unknown to all 12 participants, they had difficulty in explaining their understanding. It was much easier for them to reflect on information needs, sources, selection and evaluation, and use of information.

The understanding of information literacy is primarily described in the context of the participants being high schools students. As Table 3 shows, high schools students' descriptions of information literacy can be categorized as: mediation of information, finding information, process of making meaning, and critical awareness of sources.

The following sub-sections address the identified categories one by one.

Mediation of information. Throughout the interviews the majority of the high school students begin to describe information literacy as 'mediation of information'. By mediation of information the student means that information literacy is about the ability to guide in the use of sources. This conception seems closely related to librarians' potential role as intermediary between the user and the information system in information retrieval (Ingwersen and Järvelin, 2005: 219–221). As it was the first time the high school students encountered the concept of 'information literacy', we assume that they describe it from a general point of view. An example of that reads as follows: 'help others search for information', or: 'someone who is good at guiding in knowledge'. This was the spontaneous or intuitive understanding from the majority of 12 student participants, when responding to the question: How do you perceive the concept information literacy? This relates to Bruce's (1997: 122) 'information sources conception' where information literacy is seen as finding information in information sources. Our participants had a stronger focus on mediation than on the sources of information and technology, as in Bruce's category. This indicates that an ability

to find information in sources is a prerequisite for mediating it, and as such there is a strong relation between the 'mediation of information' perception and the 'finding information' perception. Information literacy in this category is seen as an ability to communicate or pass on information in this understanding. The following quotations illustrate the point of communication from the participants' perspective: 'pass on information', and 'it is about how good you are at informing about things'. In that way it also relates to Bruce's (1997: 147) 'wisdom conception', which sees information literacy as using information wisely for the benefit of others. In our opinion this understanding reflects the high school students' need for someone who can help them find other sources and information than those they knew beforehand. A recurrent statement from the participants was the librarians' ability to show them 'other sources similar to those I had found'. The participants valued this support very highly. This is obviously an area where skilled librarians with a broad knowledge of sources and an understanding of both the learning process and the information search process can very easily be of support.

Finding information. The second understanding of information literacy 'finding information' emphasizes an information source focus which relates to the use of various sources of information for understanding a topic or completing a task. The student participants have a clear understanding that knowledge of a variety of sources allows for successful retrieval of information for completion of the tasks they are to solve. Public librarians' knowledge of the existence of the information sources available and their ability to make the most of them is therefore obviously a necessity in the support of users. Though the student participants do not work systematically in the information search process they do interact with multiple sources of information as a natural part of the learning process. The majority of the 12 students use the Internet search engines, primarily Google, as a starting point in this explorative part of the process. This is illustrated by the following interview replies:

It is very often a quick search on the Internet.

Well search engines among other things or ... yeah Google and all those and then you are often sent on to Wikipedia or something like that.

As one of the participants explains:

that is the way you find all the other stuff.

Our results are supported by the Rowlands et al. (2008), who document how their participants use the information sources in an explorative approach, which they use to build background knowledge and to formulate initial questions from which they develop a problem statement. In this process they read and explore general sources of information, such as teaching materials, newspapers and encyclopaedias, both print and online, as well as asking for human advice.

The 'finding information' category relates to the other categories of description (mediation of information, process of making meaning and critical awareness of sources), and seems to be the most essential for the high school students. Hence the 'finding information' category is an obvious starting point for most self-directed learning in the public library. As such, an awareness of this category and its relations to other categories are important for the support of users in public libraries.

Process of making meaning. The third perception of information literacy was as an understanding of 'process of making meaning'. This understanding is not very widespread among the participants, which is also seen in Maybee (2007: 458).

The information need focus inherent in this understanding relates strongly to the subject or task at hand of the participants. The student participants are asked 'How do you find out which information you need?' The majority of the high school students concentrate on establishing a focus for their search and find out what their topic is, for example in this quotation:

What would be relevant for this topic?

Or more elaborated:

I would try to clarify which information I should use. What am I interested in? How can I find out about this? How ... which material can I use to cover the knowledge I would like to have? Are there more angles to this case and how can I find them? Is there someone who has said or written something about this topic?

At this initial state of the information search process a majority of the participants would ask a librarian for help. Others explain that they use mind maps or brainstorm to develop their problem definitions and statements. The participants do not have a very clear understanding of their

own information search process. They also have a rather weak understanding of what an information need is, although they have a rather clear understanding that information is needed to complete their tasks.

They make sense of the gathered information by comparing it to what they already know, then paraphrase and use quotes as explained by some of the student participants:

paraphrasing it. It helps you to understand it better ... and remember it.

Yeah quotes ... yes, yes, I use quotes a lot', and goes on 'so if there are some cool phrases presenting the matter in an entirely different light.

The use of quotes, which five of our participants indicated they used, contradicts (in a positive way) the notion of the cut and paste generation described in Rowlands et al. (2008). The high school students in our study emphasize the use of other sources of information as inspirational to thinking about something instead of as a short cut to omitting thinking.

Critical awareness of sources. To our surprise the participants have a critical approach to information in contrast to what Rowlands et al. (2008) report on. The student participants are critical of the sources they use and the information they find both in print and online. They focus on the originality of information and reliability, authority and credibility. They cross check with other information. One of the student participants explains how information is validated:

I'll take a lot of different examples [of information] and compare them to see if they say the same.

As such the high school students implement part of the characteristics of the information literate person even though they did not already know the concept of 'information literacy' (e.g. Bruce, 1997; Doyle, 1992).

The participants differ on the question of using information on the Internet, for example Wikipedia, as a source of reliable information. Here are examples of what they say:

Yes, for example Wikipedia ... it is ordinary people who write. You don't know whether it is a professor from Aalborg University who has written it or Per who does not know much about the subject.

Others' main concern about Wikipedia is on the possibility to alter the information, as commented on in the following way:

I don't use Wikipedia that often. There is this that people can go in and alter if they have another opinion and then they go in and alter a little. Then it is not that trustworthy.

The participants have a marked preference for print material in relation to reliability, authority, and credibility. This is interesting as this contrasts with their preference for Internet search engines as their preferred starting point for all information seeking. This can be explained by the Principle of Least Effort, which explains that knowledge and familiarity with a source tend to increase the use of this source at the expense of other lesser well-known sources (Case, 2007: 289).

What do users want from the public library, and why?

As we have seen in our study and in earlier studies by McNicol and Dalton (2003), users recognize the public library as a place for independent learning. If we summarize what users want from the public library as a place for learning, we can identify at least four things:

- they want to learn at their own pace;
- they want to be able to be preoccupied with own interests;
- they want to go into depth with their topics of interest;
- they want to learn with help and guidance from librarians.

The relation between understanding their own learning processes and what they can expect from the public libraries and librarians is significant. The clearer the understanding of their own learning processes, the clearer and broader picture of what to expect from the public libraries. This is consistent in our data.

A majority of the high school students expects that the public library is a place for self-directed learning. This corresponds with the results of McNicol and Dalton (2003). The two student participants who do not use the public libraries for learning appear self-reliant in both their learning process and information-seeking process. At the same time these participants have no clear picture of what to expect from the public library in relation to learning. Even so, there are good reasons in favour of broadening the awareness among this group of users about what to expect of public libraries for learning.

Summary statements and implications for how public libraries can improve their support for the users

The current study provides us with the opportunity to learn about how their users perceive the public library as a place for learning and how the users understand the concept of information literacy.

Our study identifies three categories of description (information resource centre, a place for independent learning, and a place for support and guidance) of public libraries as a place for learning and four categories of description (mediation of information, finding information, process of making meaning, and critical awareness of sources) of the concept of information literacy. Methodologically, our study has identified that there is a limited number of categories of description of phenomena that a group of people will experience. Other phenomenographic studies (e.g. Bruce, 1997; Lupton, 2004; Maybee, 2007) confirm this. The study also shows that the categories of description of information literacy in some ways are qualitatively different from other studies of the same phenomena, but also confirms some common characteristics. As such our study documents the phenomenographic method's ability to generate variation in the description of people's perception of phenomena, as well as adding to the understanding of people's conception of public libraries as a place for learning and of the concept of information literacy. To understand how people perceive concepts and reality is important, because we can assume that people will act in accordance with their perception of reality and what they regard as true or false. In a public library context this implies that the stronger the perception of the public library as an important place for learning, the higher the use of the public library. The higher the use of the public library as a place for learning, the higher the possibility for the public library to influence the use of library resources, and impact information literacy. The perceptions and understandings identified in this study can be used in future planning for both formal user education and support of the users' informal learning experiences. As a result the public library can assist in the development of lifelong learners and support the users in their social, economic, and everyday life by putting an emphasis on learning as a process and information literacy as a natural part of learning. The study reveals that public libraries are perceived as places for learning in three different ways: information resource centre, a place for independent learning, and a place for support and guidance. The results imply that an increased effort is required to ensure progress in the use of public libraries for learning, although a majority of the student participants acknowledged that there is a connection between public libraries and learning.

The study also reveals similarities and differences in the way information literacy is perceived by high school students in comparison to existing studies, definitions, and models. High school students' perceptions of information literacy included process, skills and outcome-oriented understandings with some relation between information literacy and learning. Finding information seems to be most important to the high school students' learning processes, when we asked the participants to further develop and exemplify their understanding. The 'finding information' conception was also the one which related to most of the

other conceptions. This corresponds very well with the assumption that finding new information is an essential part of learning and constructing new knowledge, which both McNicol and Dalton's (2003) and Kuhlthau's (2004) models imply. Although the study reveals that critical awareness is considered important by the participants, it is still an area on which public libraries can focus their attention. The results also indicate that progress in developing information literate learners in public libraries would demand a higher awareness of a methodological approach to the information search process and a higher awareness of other sources than Internet search engines. This corresponds very well with the research of Rowlands et al. (2008), which shows people tend to use a limited number of sources for seeking information and that their searching skills are not very well developed. As a result public libraries also have a significant role to play in developing searching skills, which can be done either through formal user instruction courses or through one-on-one counselling. The concept information literacy itself seems rather vague in our participants' understanding.

The Internet increases access to information very much. This adds to problems which have existed as long as there has been information: Which information do I need? Can I find all the information relevant and should I? How do I find it? How trustworthy is the information I find? How do I evaluate the information I find? How do I use the new information together with the information and knowledge I already possess? All of these questions can be asked in everyday life situations as when you are buying something on the Internet, as well as in situations when you are learning as when you are writing a project. The questions are also related to information literacy, since the aim of information literacy is both to help people to pose these questions, and to provide them with the necessary competence to act appropriately when finding, evaluating, and using information. Public libraries have an important role to play in contributing to an awareness and understanding of the importance of information literacy, but this should be a welcome role, since public libraries are well-known and trustworthy places for learning and in addition possess the place, resources, and staff to perform the task.

Which actions can the public library and public librarians take more specifically? What have we learned from this study? First of all it seems like the perception of information literacy as 'finding information' is a good starting point for the public library. Finding information is the primary reason why the participants in this study use the public library for learning. If public libraries secure access to multiple sources of information and promote the existence of these sources, the users will return to the public library when in a learning situation. Access to information is not enough, though. A number of users in this study find their information for themselves in the public library; others use the librarians. The study shows that users value the

competencies of public librarians, especially in identifying information needs and finding information in print or electronic form. Hence public librarians will have to continue to develop their skills in interview technique and information seeking to support users. From our perspective public librarians have the opportunity to develop learning services further by using Kuhlthau's ISP or McNicol and Dalton's Cycle of Learning in Public Libraries as a framework, as well as characteristics of the information literate person for thinking about learning in the public library. Without such a framework, services will tend to limit themselves to supporting users' information seeking, but not the remaining part of the learning process. On the other hand, building on such a framework public librarians can support the education of lifelong learners in the public library.

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