

Information Literacy Teaching and Collaboration with the School Library: What Teachers Think and Do

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Abstract

What do school librarians and teachers know about each other? When two individuals with different professional backgrounds and expectations work together, knowledge of the other is required. The study that is presented in this paper contributed to librarians' discovery of the world of teachers. A qualitative case study approach allowed to gain an in-depth understanding about teachers' conceptions of student information literacy learning as well as teachers' practices of information literacy teaching and collaboration with the school library in an entire faculty in a US independent high school. The study revealed that information literacy teaching in formal education is a highly complex endeavor. A major implication for practice is that school librarians need to take into account this complexity and agree with teachers on common understandings of information literacy and negotiate opportunities, objectives, and responsibilities with them for providing pedagogical interventions about information literacy

Keywords: Information literacy, collaboration, conceptions, practices, case study

Introduction

School librarians are expected to take the lead in activities for enhancing student information literacy development, especially in a constantly changing information technology environment; moreover, librarians are expected to opt for an integrated approach and to work closely with classroom teachers (American Association of School Librarians, 2009; Todd, 2008; Umlauf, 2005). There is plenty of evidence that such collaboration has positive impacts on student learning (Lance, Rodney, & Hamilton-Pennell, 2000a; Lance & Schwarz, 2012; Smith, 2006b; Todd & Kuhlthau, 2004; Todd, 2012). However, LIS professionals around the world report low numbers and/or low levels of collaboration with teachers (Loertscher, Koechlin, & Zwaan, 2005; Smith & Hepworth, 2007; Kuhlthau, Heinström, & Todd, 2008; Todd & Heinström, 2008; Todd, Gordon, & Lu, 2010; Williams & Wavell, 2006).

There are considerable gaps in knowledge about teachers' conceptions and practices of information literacy teaching and collaboration. The necessity for undertaking more investigations about teachers as potential partners for information literacy teaching has been expressed by numerous researchers around the world (Gapski & Tekster, 2009; Herring, 2010; Lique, 2001; Probert, 2009; Todd & Heinström, 2008). Therefore, the purpose of the present study, which was undertaken in the context of a doctoral thesis at the Berlin School of Library and Information Science and supervised by Professor Dr Konrad Umlauf from Humboldt University and Dr Ross J. Todd, Associate Professor at Rutgers University, was gaining an in-depth understanding and developing a theory about the process of information literacy teaching in a whole high school faculty. The process was investigated through the following research questions:

- 1) What are teachers' conceptions of student information literacy learning and learners?
- 2) What information literacy competencies, if any, are encompassed in the research tasks that teachers assign?

- 3) Which pedagogical interventions, if any, do teachers use when they teach information literacy?
- 4) How do teachers work with the school library and school librarians, if at all, when they teach information literacy?

Literature

Information literacy theories, models, definitions, and beliefs

This section of the paper discusses theories, models, definitions, and beliefs about practice regarding information literacy, information literacy learning, information literacy teaching, and collaboration between school librarians and teachers for information literacy teaching.

Defining information literacy

The literature abounds with definitions of information literacy, a concept that emerged almost 50 years ago (Bruce, 1997). Widely acknowledged on an international level (Balceris, 2011; Chevillotte, 2009; Probert, 2008) is the ALA definition according to which “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” (American Library Association/Presidential Committee on Information Literacy, 1989). While numerous writers have highlighted the diversity in information literacy definitions and the complexity of the concept (Chevillotte, 2009; Herring, 2010; Ingold, 2005; Kapitzke, 2003a; Todd, 2000), others have identified similarities, arguing that the vast majority of them include the elements outlined in the aforementioned ALA definition (Owusu-Ansah, 2003, 2005; Williams & Wavell, 2007).

Information literacy is defined partly through standards and models. As far as the latter are concerned, based on Wilson (2009), a major distinction can be made between models that are empirically-based, for instance, Kuhlthau’s (2004) Information Search Process and Bruce’s (1997) Seven Faces of Information Literacy, and those that are descriptions (of ideal paths), such as Eisenberg and Berkowitz’ (2000) Big6 Skills, Herring’s (1996) PLUS model, the model in Dannenberg’s (2000, 2012) Information Literacy Learning System, and Homann’s (2003) Dynamic Model of Information Literacy. An important shortcoming of the second group is the neglect or minimization of the early phases in research processes. Other differences between the models are a disparity in the categorization of information skills and conceptions, the underlying learning theories or the degree of adherence to them and, as a consequence, their approaches to information literacy teaching.

Information literacy learning

Three learning theories are frequently discussed in the LIS literature: behaviorist, constructivist, and relational theories. The understanding of information literacy learning varies considerably depending on the underlying learning theory. Behaviorist information literacy learning is the acquisition of skills and attributes related to information literacy (for example, Doyle, 1992; Eisenberg & Berkowitz, 2000), constructivist information literacy learning refers to a context-dependent individual and social process of building knowledge from a variety of sources that requires critical reflection about the concept of information literacy itself (for example, Kuhlthau, 2004; Todd, 2006; Kapitzke, 2003b; Limberg, Alexandersson, Lantz-Andersson, & Folkesson, 2008; Lloyd, 2006), and relational theories understand information literacy learning as developing and expanding conceptions of information literacy, making experiences with information literacy, and knowing which conception(s) and experience(s) to use in a particular (new) situation (Bruce, 1997).

Information literacy teaching

The initiation of information literacy learning as described in each of these theories requires the use of specific teaching methods, also called pedagogical strategies (Crook, 2008). Education scientists emphasize that each teacher should be familiar with a variety of pedagogical strategies, underpinned by different theories, and be able to apply them in a pedagogically justified, competent, and flexible but not arbitrary way (Helmke, 2007; O’Neill,

2008). They require teachers to find a sound balance between strategies that foster teacher-directed and independent student learning (Helmke, 2007).

The majority of information literacy definitions, models, and standards begin with the identification of an information need, that is, “a recognition that your knowledge is inadequate to satisfy a goal that you have” (Case, 2012, p. 5). From observation about the origins of user queries in public and school libraries, Gross (2005) distinguishes between self-generated and imposed questions. In the school context, teachers typically impose questions or create information needs through the assignment of more or less encompassing and more or less formal research tasks.

Collaboration of school librarians and teachers

Various types of quantitative and qualitative studies have shown that information literacy teaching integrated with subject content has a positive impact on student learning (Achterman, 2008; Lance, Rodney, & Hamilton-Pennell, 2000b; Smith, 2006b; Todd, 1995; Todd & Kuhlthau, 2004; Todd & Heinström, 2006b). There is also largely unanimity in the literature about the role of the school librarian in the context of information literacy teaching: He is seen as a resource for students and teachers, as an important support in the planning phase, and, especially, as a teacher and a leader of information literacy development. Numerous studies have found these roles to have an impact on student achievement (Lance et al., 2000a; Lance & Schwarz, 2012; Smith, 2006c; Todd, Gordon, & Lu, 2011; Todd, 2012).

There is less unanimity about the role of the teacher. He is commonly seen as a facilitator of information literacy teaching in the sense that he opens his classroom for integrated information literacy units (Eisenberg & Berkowitz, 2000; Kuhlthau, 2010) and as the subject expert (Herring, 1996; Kuhlthau, Maniotes, & Caspari, 2007). However, less clarity exists regarding his role as a teacher of information literacy. For Kuhlthau et al. (2007), the whole pedagogical team (which includes at least one subject teacher in addition to the school librarian), is responsible for providing interventions based on the model of the Information Search Process but the school librarian is the only team member who provides instruction and interventions about information literacy. Eisenberg and Berkowitz' (2000) Big6 Skills are more oriented towards teachers and the two authors suggest that classroom teachers use the Big6 as a framework in their everyday teaching.

This part of the literature review revealed considerable gaps in knowledge: Texts about information literacy have predominantly been published by the LIS profession, literature from and about education professionals is scarce. The present study helped to close this gap by investigating how teachers perceive of student information literacy learning. The role of the school librarian in information literacy teaching is well-defined in the literature, whereas there is less clarity regarding the role of the teacher. The present study made a contribution to closing this gap by investigating how, if at all, teachers teach information literacy, either alone or in collaboration with the school library and librarian.

Research about teachers

As far as teachers and information literacy as a topic of empirical research is concerned, the literature review showed that studies dealing exclusively with teachers and information literacy are scarce. The focus of research has predominantly been on issues related to the school library, the school librarian, and student learning rather than on teachers, who, if they were included, tended to be used as observers and reporters (Lance, Rodney, & Russell, 2007; Lance, Rodney, & Schwarz, 2010; Lance & Schwarz, 2012; Todd & Kuhlthau, 2005; Todd & Heinström, 2006b). If it was addressed at all, teachers' own perspective on student information literacy learning, information literacy teaching, and collaboration with the library was of minor interest, and regularly teachers' perspective was investigated together with that of other staff members, especially school librarians as well as administrators, and not reported separately (Kuhlthau, 1993; Montiel-Overall, 2008; Todd & Kuhlthau, 2005; Todd & Heinström,

2006a; Williamson, Archibald, & McGregor, 2010). Regardless of the method, a tendency has been to concentrate on best practice examples, such as best practice school libraries and high-end librarian-teacher interactions (Montiel-Overall, 2008; Smith, 2006c; Todd & Kuhlthau, 2005; Todd & Heinström, 2006a; Todd et al., 2011). As a consequence, there is no clear picture of how “the entirety” of teachers in a school faculty perceives of and acts regarding information literacy teaching and collaboration.

The present study helped to fill these thematic gaps through an investigation of the conceptions regarding student information literacy learning as well as the practices of information literacy teaching and collaboration with the library in a whole teacher faculty. In terms of methods this study was innovative and reduced a gap in the sense that qualitative case studies with entire teacher faculties about information literacy or collaboration are scarce. Also, instead of using teachers as observers of, and reporters about, school libraries and librarians, this study collected data from the school librarians, administrators, and students in order to understand teachers better. The next section explains the details about the choices regarding the research design.

A qualitative case study design

The study described in this paper opted for a qualitative, inductive approach because it is particularly suited when there is a lack of theory (Merriam, 2009), which was the case for teachers’ conceptions and practices of information literacy teaching, which have not been addressed in many studies so far (Gapski & Tekster, 2009; Montiel-Overall, 2010; Probert, 2008). A qualitative approach allowed to make discoveries and to gain a deep understanding and deep knowledge by investigating the world from the perspectives of participants (Corbin & Strauss, 2008).

A case study design was chosen because one of its major features is doing an in-depth investigation of a bounded system, which can be a group of people (Yin, 2009), for example, a teacher faculty. Studying information literacy teaching in an entire teacher faculty was important as teachers’ perspective on information literacy (teaching), if it had been studied at all, was typically addressed as part of collaboration with school librarians (Montiel-Overall, 2010; Todd & Heinström, 2008) and in the context of best-practice examples (Donham, Bishop, Kuhlthau, & Oberg, 2001; Montiel-Overall, 2008; Todd et al., 2011). The aim of the present research was to gain a comprehensive picture of teachers’ information literacy teaching practices and to include teachers who teach information literacy on their own, without the school librarian, or who do not teach it at all.

The single-case design allowed to reach a deeper level of understanding (Simons, 2009) and to “catch the complexity” of that particular case (Stake, 1995, p. xi). It used an embedded design (Yin, 2009) so that the whole faculty was regarded as the larger unit of analysis, individual teachers as internal subunits, and students, the school librarian, as well as administrators as subunits external to the case.

The case

Both the case and within-case samples were selected purposefully (Patton, 2002). The case was the faculty of a small independent high school in the US, in the central part of the Mid-Atlantic States. The school had a well-equipped library run by a certified and highly motivated head librarian who, supported by an engaged team, was particularly active in the area of information literacy teaching.

Data collection

Triangulation of sources and data collection techniques helped to enhance the trustworthiness of the study (Pickard, 2007). Data were collected *about* teachers in four semi-structured individual interviews with administrators, including the head school librarian, and a focus group discussion with six students (external perspective), and *from* teachers in a questionnaire with

mainly open-ended questions in which 26 teachers participated (almost 90% of faculty) and eleven semi-structured individual interviews (internal perspective).

Data Analysis

For data analysis, predominantly procedures from grounded theory according to Corbin and Strauss (2008) were employed. As far as information literacy is concerned, the study used Bruce's (1997) model The Seven Faces of Information Literacy as a sensitizing frame (Corbin & Strauss, 2008). The theory was presented in the form of claims and sub-claims.

Limitations and trustworthiness

On the one hand, the use of a single-case design could be regarded as a limitation, on the other hand, it permitted to achieve a greater depth and richness (Simons, 2009). The disadvantage that the claims could not be tested, as it would have been possible with a multiple-case design, was compensated by thick descriptions of the context, which allow readers to judge about the transferability of findings to other settings.

A major concern about qualitative research, including case study research, is that it lacks rigor (Yin, 2009). In order to enhance the trustworthiness of the present study, that is, the partly overlapping issues of confirmability, dependability, credibility, and transferability (Guba, 1981; Miles & Huberman, 1994), several strategies were employed:

For ensuring

- Data confirmability, for example, a detailed audit trail (Mertes, 2014), triangulation (including a comparison of the internal perspective and the external perspective), alternating between shorter onsite and longer offsite periods during data collection, developing clear rules (for transcriptions, anonymization, and data entry in matrices), and taking into account competing conclusions;
- Dependability, for example, using maximum variation as a major sampling strategy, triangulation, testing and refining instruments in a pilot study, using written interview guides, high-quality recordings, and clear transcription rules;
- Credibility, for example, rich descriptions of context, triangulation, supporting claims and sub-claims with evidence from the data (numbers, quotes, paraphrases), as well as a deliberate search for rival explanations and negative evidence;
- Transferability, for example, using purposeful sampling and especially maximum variation, detailed descriptions of context and participants, rich descriptions of findings, and making suggestions for the transfer of findings to other settings.

Key Findings

This paper provides an overview of major findings. As far as the notion of information literacy is concerned, based on the data but enhanced by the literature and especially Bruce's (1997) information literacy model, the following seven categories emerged during the analysis:

- Completion of a process,
- Use of information technology,
- Information finding,
- Information control,
- Knowledge building,
- Ethical use of information, and
- Information presentation.

They were used for exploring and describing Malotha teachers' conceptions of student information literacy learning and their practices of information literacy teaching. First key findings about teachers' conceptions are presented, then those about their practices.

Conceptions

Teachers' conceptions of students as information literacy learners (Research Question 1)

In questionnaires, teachers' conceptions of student information literacy learning were gained through their descriptions of an information literate student. Teachers think that an information literate student is able to

- 1) Evaluate information,
- 2) Find information in a variety of sources and analyze information (both to the same degree), and
- 3) Make use of information technology for information location.

For example, as far as information finding is concerned, 15 out of the 26 teachers referred to the variety of formats. They wrote, for instance, that a student who is a good locator of information knows "all the possible ways one can access information or ideas" (QT2, par. 3) and "how to use all the resources available to him/her" (QT16, par. 3). Less often mentioned were the abilities to present information, to use information in ethical ways, to control information, and to execute an information process.

In interviews, teachers described their students' difficulties when they undertake research tasks. Teachers found that their students encounter problems especially with information analysis as well as the ethical use of information. Problems with the process as such and with presenting and controlling information occurred to be of lesser importance. The use of information technology, on the other hand, was only referred to as being easy for students, although only by a minority of teachers. One of them noted in his interview:

The ones that are good are so good that I don't know what they're doing. They just seem to not even have to read the screen. Their hands almost seem to fly and they just- Their maneuvers, it's like they're driving through a race course and they just seem to have the senses they need to make the right turn. (Teacher G, par. 40)

There was no unanimity between participants as far as students' abilities to find and to evaluate information are concerned, for both each time a majority noted that students had difficulties but there were also teachers who reported about students being good at them.

Practices

Information literacy competencies in the research tasks teachers assign (Research Question 2)

The research tasks that teachers assign encompass a variety of information literacy competencies. The strongest support was found from teachers in questionnaires and interviews (internal perspective) as well as from administrators and students (external perspective) for the following four:

- The use of information technology for locating information and to a lesser extent also for presenting information;
- The location of information in a variety of formats, the most cited formats being school library sources followed by web sources;
- Knowledge building, that is, first, analyzing information in order to develop a personal perspective and, second, evaluating information;
- Presenting information, for which the most mentioned formats were, first, written and, second, oral format.

For example, Teacher J explained in his interview that he encourages his students to build new knowledge and to develop a personal perspective from the information they collected in a variety of formats:

I think that what's really important is to have students look at a variety of sources, read a variety of articles or primary source documents ... And have them read multiple different types. And then kind of take all of those eclectic sources and gain their own perspective and opinion and view based on that. (Teacher J, par. 16)

For process and control being included in research tasks there was evidence from teachers only, however, the former was better supported (by questionnaires and interviews) than the latter (in interviews only). For the ethical use of information in research projects evidence was contradictory.

Teachers' pedagogical interventions to information literacy teaching (Research Question 3)

The majority of the Malotha faculty was found to teach information literacy, predominantly through the assignment of research tasks, and to employ, in this context, a vast array of strategies for whole-class teaching (for example, presenting analogies, having discussions, giving examples, doing exercises, giving written handouts, doing lectures, modeling, using prior skills, making decisions for students, summative assessment) or individual student assistance (for example, answering questions, asking questions, reading, making suggestions, making decision for students, formative assessment) or both.

Teachers provide whole-class teaching about information literacy concepts and competencies especially for

- 1) Information presentation,
- 2) Knowledge building, and
- 3) Information finding.

For example, three teachers in interviews and two in questionnaires noted that they do lectures about information finding. One of the interview participants reported that he not only talks about different types of sources but also shows them to students and explains how they can be accessed:

I talk about information coming from a variety of sources, the library being one of them, the computer being another, individuals another, film another. I guess, formally, I do it by actually ... demonstrating where this information is located, how to acquire this information. (Teacher A, par. 15)

Only a minority of participants reported about teachers teaching whole classes about the ethical use of information, the use of information technology, and information control. No unanimity existed regarding educators teaching their classes to go through an extended research project as a process composed of a sequence of steps; some teach it themselves whereas others leave it to the school librarian.

Through strategies of individual assistance, which they provide less often than whole-class teaching, teachers address especially knowledge building. For example, in his questionnaire Teacher 3 described how he evaluates sources for individual students, writing: "I use the knowledge I have to help them determine the validity of the information for their projects - I check it myself if I am not sure" (QT3, par. 11). Teachers offering individual assistance for all other information literacy facets was either not mentioned at all (for information technology), weakly supported (for information presentation and control) or contradictory (for process, information location, and the ethical use of information).

Teachers' collaboration with the school library for information literacy teaching (Research Question 4)

About three-fourths of Malotha teachers had already collaborated with the school library in one way or other. More than half of the collaborating faculty had already worked with school librarians either in the planning phase or in the actual teaching and more than one-third of the collaborating teachers had already used the library as a space in the context of research projects. When librarians get involved in teaching, they provide whole-class teaching or individual student assistance or both. Study participants did not provide descriptions of the strategies librarians used in the same detail as they did for teachers.

School librarians provide whole-class teaching about information literacy concepts and competencies especially for

- 1) Information finding,
- 2) Information presentation, and
- 3) Knowledge building.

For example, each time three teachers in questionnaires and interviews stated that librarians instructed their classes on how to find information in a variety of sources when they undertook research projects. For example, a questionnaire participant wrote: “Librarians introduce students to info. outlets - Reference volumes, databases ... and do an excellent [underlined] job of it here. Very organized. Excellent handouts and resources” (QT4, par. 13). Only a minority of participants, and only teachers, reported about librarians teaching classes about the execution of a process, the ethical use of information, and information control. No study participant mentioned that Malotha librarians teach students about the use of information technology.

School librarians were found to assist students individually especially with information finding, and then, and both to the same extent, with aspects related to knowledge building and information presentation. Only a minority of participants stated that school librarians help students on an individual level with ethical use of information and the process as such. As far as the latter is concerned, Teacher I explained that the individual help that the librarians provide is crucial to make students go successfully through the research process in his project, noting:

Librarians they do a real nice job for the kids that don't get it. First Name XY [School Librarian] yanks them out and says, “Go work with so-and-so [i.e., one of the librarians in the team].” And it's through that individualized instruction kids do get it. (Teacher I, par. 96)

No study participant reported about librarians providing individual assistance on the use of information technology and on information control.

Intervening conditions

The process of information literacy teaching at Malotha is partly shaped by the scope of research tasks and knowledge domains.

Scope of research tasks

Malotha faculty uses research tasks as the primary mechanisms of information literacy teaching. Study participants distinguished between two types: small-scale research tasks and extended research tasks. The difference referred to the time students need for completion and the size of end products so that the following definitions were developed: Extended projects take a month or more to accomplish and result in at least an eight- to ten-page paper, a four-page website, or a 30-minute presentation. All other projects were qualified as small-scale. Findings from interviews with administrators and students as well as teacher questionnaires and interviews indicated that the scope of research tasks shapes information literacy teaching in various ways.

The scope of research tasks shapes the information literacy competencies covered in the research tasks that teachers assign, for example, ethical use of information is required especially in extended research projects and school library sources, including databases, are the predominant sources in extended projects whereas web sources are the prevalent sources in small-scale projects. The scope of research tasks influences teachers' pedagogical interventions, for example, teachers provide individual assistance in extended tasks predominantly for knowledge building and they do more whole-class teaching on information location in the context of small-scale research tasks. The scope of research tasks also shapes teachers' practices of collaboration with the school library and school librarians. For example,

librarians provide whole-class teaching especially in the context of extended projects and they cover six information literacy categories (all except the use of information technology) when teaching classes in the context of extended projects.

Knowledge domains

Knowledge domains also shape teachers' practices of information literacy teaching. This study took place in a small school and in order to protect the anonymity of participants, only three groups of subjects were distinguished: history, languages, as well as math and science.

The information literacy competencies covered in the research tasks that teachers assign are partly shaped by knowledge domains. For example, information presentation in visual, electronic, and creative formats tends to be part of research tasks assigned by history and science teachers rather than those assigned by language teachers, and small projects assigned by language teachers are more likely to encompass ethical use of information. Teachers' pedagogical approaches also depend partly on knowledge domains. For example, language teachers are more likely than their colleagues to provide whole-class teaching about the process as such when students undertake extended projects, and math and science teachers are less likely to help students individually with information finding in extended research tasks. The way in which teachers work with the school library and librarians is also partly shaped by knowledge domains. For example, history teachers are more likely to collaborate with the library than their colleagues and language teachers tend to provide pedagogical interventions about information literacy on their own so that librarians do less whole-class teaching and individual guidance for them.

Interpretation, Discussion, and Conclusions

This section of the paper offers an interpretation of key findings, discusses them based on the literature, makes suggestions for practice and future research, and reflects on the overall significance of the study.

Risk of imbalance

The findings showed several dichotomies: On the one hand, teachers repeatedly stated that students risk to suffer from information overload in the present information age, on the other hand, student ability to control information was among the least mentioned in all areas, including whole-class teaching and individual assistance provided by themselves or by school librarians. Also, although Malotha School had adopted a strong plagiarism policy, and although it was one of the most mentioned in their descriptions of student difficulties, the ethical use of information did not seem to be part of the teaching priorities of Malotha teachers. It would be an oversimplification to conclude that ethical use of information is not important to Malotha teachers at all. Rather, it seems to be of great importance to a limited number of them, especially language teachers, and maybe the other subject teachers tend to rely on their colleagues from the language department for the teaching of this information literacy competency.

Malotha educators have the opportunity and responsibility to design the curricula for their subjects on their own, in the context of their departments. As there is no formal school-wide information literacy policy or curriculum at Malotha, there is a risk that students are provided numerous opportunities to develop particular information literacy concepts and competencies (especially the use of information technology, information finding, evaluation, analysis, and presentation, as well as completion of extended projects as processes composed of various steps) repeatedly and in great detail, whereas others may be neglected, such as information control and the ethical use of information.

Expanding the literature

As far as teachers' conceptions are concerned, similar to other studies (Probert, 2009; Williams & Wavell, 2007) the present investigation found that information literacy is important to

teachers. The prevalence of information evaluation at the expense of information finding in teachers' conceptions has not been systematically reported by other researchers. Several studies (Moore, 1999; Probert, 2009; Herring, 2010) found that teachers held a conception of information literacy as being related to information location in the first place, whereas this study together with Purcell et al. (2013) found that evaluation is regarded by teachers as more important than information finding. However, it should be noted that these two studies took part in schools with predominantly high-performing students.

There has been no unanimity in the literature about the question whether teachers do actually teach information literacy to their classes or not. There are reports about teachers who teach information literacy (Lance et al., 2007; Lance et al., 2010; Latham & Gross, 2008; Purcell et al., 2012). Other researchers found that educators do not teach information literacy at all, not explicitly, or that students were not satisfied with the assistance they had received from their teachers with research tasks (Ladbrook & Probert, 2011; Merchant & Hepworth, 2002; Moore, 1999; Smith & Hepworth, 2007). In questionnaires at Malotha School, 81% of teachers reported that they had already addressed information literacy with their students. However, for the qualitative part it was not possible to find any teacher who belonged to the remaining 19%. Those who were identified by the key informants or other interview participants as being included in this group and considered themselves as being part of it, were found, during their interviews, to teach information literacy in some way or other. A major conclusion is that educators teach students more about information literacy than they are aware of; they do not necessarily do it deliberately or explicitly but they may play a more important role for enhancing student information literacy than they have so far been entitled to play by the LIS profession. On the other hand, the high level of information literacy teaching within the Malotha faculty may also be, at least partly, related to the presence of a well-equipped library run by a well-trained and highly motivated librarian from whom teachers may have learned how to teach information literacy on their own.

The three impact studies in Ohio (Todd & Kuhlthau, 2005), Delaware (Todd & Heinström, 2006b), and Wisconsin (Smith, 2006a) showed that faculty considered the library as most helpful for students with finding information and using information technology and as least helpful, among others, with the development of subject knowledge. In concordance with these studies, the present study found that Malotha librarians teach classes in the first place about information finding. But different from these studies, the present investigation showed that Malotha librarians are also actively involved in the teaching of aspects related to student knowledge building.

Other researchers reported the intervening nature of knowledge domains on information literacy teaching (Arenz, Huth, & Pfisterer, 2011; Purcell, Heaps, Buchanan, & Friedrich, 2013; Williams, Coles, Wilson, Richardson, & Tuson, 2000) and collaboration (Todd & Kuhlthau, 2005; Todd et al., 2010; Todd, 2012). Both were confirmed at Malotha where, however, the respective roles of subjects were not necessarily the same as those reported by these other researchers. Hence, it may be concluded that any differences in information literacy teaching and collaboration between departments within a particular school do not necessarily have to be related to the knowledge domain as such. Discrepancies in teaching about information technology, for example, could also be related to personal interests of individual teachers or the presence of an information technology leader in one department. More research is needed for exploring this issue in greater depth.

More research on teachers and information literacy needed

This study was among the first to investigate the process of information literacy teaching in an entire faculty; more research about teachers should follow. For gaining an in-depth understanding and addressing the complexity inherent in information literacy teaching in a

faculty, the present study opted for a qualitative approach and was undertaken in a single school. The development of a theory about teachers' information literacy teaching has begun, it needs to be tested and refined in other settings, ideally with other faculties as a whole but also with individual teachers and in different types of schools (for example, independent and public) and in different grade levels (for example, elementary, middle, and high schools). At first, more investigations using a qualitative approach should be undertaken; afterwards, the theory should be tested in quantitative approaches with large, randomly selected samples.

Implications for practice in schools and school libraries

The majority of teachers offered students opportunities for developing concepts and competencies of information literacy and provided pedagogical interventions about them. A major implication of these findings for practice is that librarians do not need to consider themselves as being the only ones responsible for information literacy teaching in formal education, teachers are helping. For establishing a strong information literacy pedagogy in a school, the two professional groups should - based on the seven information literacy categories found in this study - ideally at institutional level and supported by the principal:

- 1) Agree on common understandings of information literacy,
- 2) Make an inventory of information literacy teaching activities that currently exist at their school, and
- 3) Develop a school-wide integrated information literacy curriculum.

Overall significance of the study

The present investigation was among the first to study information literacy teaching as practiced by teachers and their interaction with the school library and librarian in this context not only with frequent collaborators but an entire faculty. It clearly showed that information literacy teaching in formal education is a highly complex endeavor. If librarians want to play a major and maybe even leading role in information literacy teaching in a constantly changing world, they need to take into account this complexity.

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