

# Journal of Information Literacy

ISSN 1750-5968

Volume 10 Issue 2

December 2016

## Article

Boger, T. S., Dybvik, H., Eng, A. L., and Norheim, E. H. 2016. An assessment of library instruction: its influence on search behaviour of first- and third-year students. *Journal of Information Literacy*, 10(2), pp. 64-77.

<http://dx.doi.org/10.11645/10.2.2135>



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Chan, L. et al. 2002. Budapest Open Access Initiative. New York: Open Society Institute. Available at: <http://www.soros.org/openaccess/read.shtml> [Accessed: 18 November 2015].

# An assessment of library instruction: its influence on search behaviour of first- and third-year students

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## Abstract

This article presents the results of a follow-up study conducted at Østfold University College in 2015 which set out to examine information resource use among students of nursing and teacher education. The first study was presented in an article published in the *Journal of Information Literacy* Vol. 9 No. 1 (Boger et al. 2015). The two qualitative studies were carried out by interviewing the students about their skills in information retrieval, and observing them. The results show differences in search behaviour between first-year and third-year students, a decrease in the use of Google, and a difference between the students from the nursing faculty and the teacher education faculty.

## Keywords

information literacy; search behaviour; library instruction; undergraduate students; academic libraries; higher education; nursing; teaching; follow-up study; Norway

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## 1. Introduction

Students in higher education are expected to learn academic skills. One of the skills the students at Østfold University College are expected to learn is information literacy (IL), which is stated in the descriptions for most study programmes (Østfold University College 2016).

Like other academic libraries in higher education, the library at Østfold University College makes investments of time and staff resources in teaching IL. Based on this, it is of great interest to know if the library instruction has any influence on the students' search behaviour.

A study was conducted among first-year students in the nursing studies and teacher education programmes at Østfold University College. The aim was to find out if students started to use the library's resources to find information for their assignments after attending library instruction. Students were interviewed and observed after they had been offered their first library instruction. The results revealed that the students preferred Google to the library's databases, regardless of attendance at library instruction (Boger et al. 2015).

An increasing number of comprehensive studies about the results of teaching IL have been published in the last 10 to 15 years (Ivanitskaya et al. 2004; Novotny 2004; Novotny 2006; Hurst and Leonard 2007; Ivanitskaya et al. 2008; Cmor 2010). However, there are few follow-up studies in the field. Therefore, when the students from the first study had reached the highest level of their undergraduate studies, they were invited to participate in a new study. The purpose was to see

whether there were any differences in the results from the first and the second study and to find out if these possible differences might be explained.

## 2. Literature review

It is of great interest to know the IL competence of the students both before and after IL classes. This would enable librarians to develop and improve their teaching methods. Pre-tests and post-tests may be used to find out what students have learned from IL instruction and to assess the library's IL programme. Fain (2011) describes a study conducted over a period of five years that provides statistically significant information about the students' learning and important feedback on the IL teaching programme. The tests are limited to first-year students, but they provide useful information about the development of student skills in different areas. Mery et al. (2012) present the development of a longitudinal, online IL test to measure students' learning outcomes. The test produces answers that are described as statistically relevant, and other libraries are recommended to use it. This is also the case for the assessment tool described in a pilot study by Goebel et al. (2013) and the final study by Sharun et al. (2014). The assessment tool consists of a post-test questionnaire that includes both open-ended questions and knowledge-based multiple choice questions. There are plans to further develop the test, and other institutions are invited to use it as an assessment tool. On the other hand, Wakimoto (2010) states that merely testing students' knowledge of IL is not sufficient as a method of assessing the influence of IL classes. The use of pre- and post-tests shows a growth in the students' understanding of IL. The author underlines the importance of also testing student learning in general. A combination of self-assessments and achievement tests is used by Rosman et al. (2015). They conclude that a variety of test methods should be used.

Even if the students show what they have learnt in post-tests, there will be a question whether they use what they have learnt. This may be tested by using rubrics. The method is rather time consuming, but may give important information. The use of rubrics is recommended by Belanger et al. (2015) and Oakleaf (2014). Both articles describe the importance of performance assessments, which reveal how students use their knowledge of IL. Belanger (2015) underlines the importance of the use of rubrics, as it includes cooperation with faculty staff and contributes to show the library's impact. Leichner et al. (2014) combine search tasks and rubrics, and describe the development of a complex and comprehensive test that can be used by other colleagues when working on assessment. In their study, Holliday et al. (2015) assessed more than 900 student papers from students at different stages of their studies. Their work is useful with respect to information about student learning and their knowledge of IL. As a result of the study, the teaching of IL was revised by emphasising evaluation of sources and how to use information.

There are studies which take an approach that is more related to educational theory. The assessment of IL should focus on the students' learning outcomes and the learning process in order to obtain more information that can be used to plan how to teach IL. Schilling and Applegate (2012) provide an overview of different ways of measuring learning outcomes. Their recommendation is that the students must be given practical exercises to show what they have learnt. These tests should be administered for a period of time before it will be possible to see results. Lacy and Chen (2013) are concerned with students' learning outcomes. The construction of learning outcomes and the use of active learning techniques in combination with various forms of assessment provide important information for use in developing IL classes. It also enables librarians to demonstrate their impact.

It is of crucial importance that the teaching of IL has a lasting effect on students. Daugherty and Russo (2011) investigated the question of life-long learning of IL. They found that students who had completed a one-credit course in IL used their competence throughout their years as students. Answering an online questionnaire, most students stated that they used their IL competence in their studies. One third of the students answered that they also used their IL competence for

personal research. Rempel's study (2010) is limited to giving students assistance in connection with a literature review. The use of workshops proved to have an impact on the students' further research. Based on a study conducted between 2011 and 2014, Bausman and Ward (2015) conclude that their social work students should have several IL classes at different times during the course of their programme. One instruction session is not enough to ensure that students are IL-competent. The authors describe the development of an online assessment tool, the development of online research guides and a new strategy for teaching. They are, however, concerned about several ways of informing the students about library services and IL, especially research guides.

The importance of the use of library services and the connection between library use and academic success are described in various studies (Wong and Cmor 2011; Stone and Ramsden 2013). Bowles-Terry (2012) is concerned with academic success and the students' grade point average (GPA). This study describes a mixture of methods, using both focus groups and an analysis of academic transcripts of students at the university in a certain period. Combined with the records of library instruction classes, she found a correlation between GPA and the instruction of IL. The IL classes offered to second-year students and graduate students seemed to be most important. The conclusion is that IL classes should be given several times at different levels in the education programmes.

The study presented by Walton and Hepworth (2011) makes an important contribution as regards information about students' learning of IL and information search behaviour, emphasising factors such as teacher or student intervention, online social network learning and changes in cognition. They emphasise that students gain more certainty as they develop IL skills. Recognising and understanding this uncertainty at the start of their studies is of crucial importance for librarians when planning a teaching programme in IL. Christie et al. (2016) conducted a longitudinal study where 20 students were interviewed in their first year and in their third or fourth year. They were asked about their experiences of engagement and participation at the university. The results show that they made a transition from their first year of study to the last year. The students had increased knowledge of the conventions of academic writing, enhanced their critical skills and had found practical strategies to priorities learning. Karagiannopoulou (2006) interviewed eight first-year students and seven fourth-year students to compare the students' studying activities in revising for exams. They found that first-year students were mainly rote learners and the fourth-year students were mostly strategic learners.

Interviewing the students can also be a way of learning what they know about IL and providing important information about the students' search behaviour and what they think about IL classes. Pickard and Logan (2013) have interviewed students to investigate the difference in IL competence between first-year college students and seniors. Having found that first-year students often had low IL competence, a follow-up study four years later showed an increase in IL skills. A comparable study was conducted at Østfold University College. First-year students were interviewed to find out about their search behaviour, and the results were similar to those in Pickard and Logan's study (Boger et al. 2015). Third-year students are interviewed in the present study, which is a follow-up study.

### **3. Method**

For the first study it was considered desirable to have every participant's description of the information searching process. The questions that guided the study were:

- Do librarians succeed in teaching students how to search for information in the library's databases?
- Do students as a result of this training start using the library's resources to find information for their assignments?
- And perhaps most importantly, do their skills in IL improve?

In the follow-up study, the intention was to find out if there had been any development. To ensure that it would be possible to compare the results from the follow-up study with the initial study, it was regarded as appropriate and important to use the same research method in the first and second study. It was considered advantageous to have the same students taking part in both studies in order to make the comparison as valid as possible. All the participants in the first study who were still attending the university college were asked to join the follow-up study and be interviewed and observed again.

### 3.1 Library instruction

In the nursing studies programme, the students had been offered IL courses every year during their studies. The courses were given as lectures by the librarians, with 30–40 students in the class. The students were taught how to search for information in the library's OPAC and scholarly databases, such as the Scandinavian bibliographic database of medicine, SveMed, and Cinahl on subscription from Ebsco. They were also taught critical use of sources and referencing. The students listened to and watched the librarian performing searches in the different databases, or alternatively, performed the searches simultaneously on their computers. At the end of the referencing lecture, they were given exercises in referencing to work on in class.

Every year, the content of the IL instruction was on a higher level than the previous year, and the exercises became more challenging. The timing and content of the library instruction was decided in collaboration with the academic staff. The librarian teachers knew which topics the students were working on, and the IL instruction was designed to prepare for assignments relating to these topics.

The students in the teacher education programme were offered similar IL courses every year. However, they had not had the same number of lessons, and the IL classes were not designed for special assignments.

### 3.2 Participants

A group of 19 first-year students took part in the initial study. The students were randomly selected, although still selected in a way that ensured that half of them had attended library instruction classes and half of them had not. The names of the students who chose to attend the library instruction classes were recorded, and by using registers containing names of all students it was possible to identify those that had not attended. 10 students from each group, randomly extracted, were asked to participate in the study. The students were assured that their identity would be anonymised, and identifying any individual results would not be possible.

For the follow-up study, the intention was to have the same students participating. However, some of the students had left the University College, some students attended other education programmes, and some students had taken a break from their studies. In the end, a group of 12 third-year students participated in the second study. It was not possible, and nor was it intended, to ensure that some of the students had attended fewer IL classes than the others. For various reasons, which will be commented on together with the results, students from the teacher education programme had not attended the same number of lessons as the students in the nursing education programme.

### 3.3 Data collection

A semi-structured interview guide was developed specially for the initial study. The students were asked:

- how they searched for information
- how they chose their sources
- how they developed search strategies
- which sources they knew about
- how they used the information.

It was considered reasonable to use the same interview guide in the follow-up study. The interviews took place at the University College and were conducted on a one-to-one basis. Each interview lasted about 20 minutes and was tape-recorded, with the student's consent. Immediately after the interview, each student was asked to search for information in the library, using the library's resources and services. The intention was to see how their search behaviour related to their answers in the interviews. In order to record data systematically, an observation protocol was developed. Each student worked in the library for about 15 minutes, while being followed and observed by the librarian who had conducted the interview. There was no communication between the student and the observer during the observation, and the students did not talk while working. The observer only took notes. Each student decided when the information search had been completed.

### 3.4 Generalisability and limitations

Semi-structured interviews have an openness and flexibility that seemed to serve the purpose of capturing as much information as possible in each individual context. On the other hand, during semi-structured interviews the informants are normally encouraged to describe their experiences in their own words, and most likely they will in some way be influenced by the interviewer. In both studies, the interviews were conducted by library staff who know the field of study well. It is possible that the students were influenced by the librarians' background in some way and that they might have given different or more critical answers to more neutral interviewers.

The number of students in the sample groups was not very high. A higher number of participants might have given more reliable results. However, in qualitative research there is not a claim for the number of participants in the sample groups, as the focus in the analysis will be more on the participants' descriptions than on causation and correlation.

In qualitative research, the term generalisation may be used to a limited extent (Creswell 2014, p.203). The main purpose of the study was to find out whether IL instruction is valuable at Østfold University College. The institution and the number of students participating are too small to say anything in general. The context at other institutions will also be different. Therefore, generalisations outside the University College can hardly be made based only on this study. However, there are theorists who emphasise that qualitative results can be generalised to help in developing broader theory (Yin 2016).

Efforts were made to ensure the validity and reliability of the study. During the coding process, the coders communicated regularly to ensure consistent transcription decisions and coding. Using the same interview guide in the follow-up study made it possible to compare the answers from the two studies. However, it was not possible to compare results individually.

Although there are limitations in how the results can be generalised to other institutions, it may be possible to compare and draw conclusions from the results in relation to other faculties at Østfold University College.

It may also serve as an example or illustration for other institutions of how a study can be done, and tell them something about students' experiences.

### 3.5 Data processing and analysis

A thematic content approach was adopted to analyse the transcripts from the interviews and the observation forms. It was inspired by Braun and Clarke (2006). The thematic content analysis was based on the interview guide, which was designed to enable the application of this form of analysis. Categories based on the interview guide were created to process the collected data. Interview transcripts and observation forms for each respondent were coded according to the categories. Some recurring themes were identified from the coding.

In addition, the software NVivo-10 was used for the data processing. All the interviews were entered in 'sources' in NVivo-10. In this software, the categories are called nodes. The interview transcript forms for each student were coded using the node structure. The nodes were divided into three main themes inspired by the interview guide. 13 nodes were made from the theme 'information searching', such as: use of Google, search strategy plan, what kind of resources do you use, how do you find information and so on. Using NVivo-10 helped to identify connections and relationships in the data material. The use of queries in NVivo made it possible to identify the number of students who had given different answers to each question category.

## 4. Results and discussion (initial and follow-up study)

This part of the article presents the results of the follow-up study and includes a separate discussion.

By comparing the two studies, the analysis yielded three main results: a change in the use of Google; the students' growth in academic maturity; and the differences between the students from the teacher education faculty and the nursing faculty.

### 4.1 Results – the use of Google

In the initial study, 16 of 19 students mentioned Google as their first choice for searches (Boger et al. 2015). In the follow-up study, 7 of 12 students mentioned Google, but only one student mentioned Google as the first choice for searches.

The following quote represents a typical answer from a nursing student in the second study:

*I use the databases I find from the library's homepage. I mostly use Svemed, because that database gives me the opportunity to choose peer reviewed articles easily, and it makes that part of the search simpler. Then I continue to use Pubmed, and sometimes I use Idunn. I am used to search in them all and find that many articles can be accessed through more than one database. I usually start in one database, and continue to the next if I do not find enough information in the first.*

Compare this with a typical answer from a nursing student in the first study:

*When I need to find information, I mostly use Google. But when I kind of need to start searching for academic literature, I think I will be using the library a bit, too. I feel that may be a bit safer.*

This indicates a change in the students' search behaviour from their first year of study to their final year.

## 4.2 Results – students' growth in academic maturity

In both studies, the students were asked whether they had planned a search strategy when they started searching for information. Two nursing students in Study 1 answered as follows:

*To be honest I haven't actually done that. I have just thought that when I am sitting there and trying to find information I just start somewhere. So sometimes I don't really see all the results, just usually the first ten, because the most relevant results appear from best to the poorest, in a way.*

*Usually I just start searching very simply, and then I see and take it as it comes. If I then find something relevant in an article, but the actual article is not good, I then do a search based on this. So in a way everything goes in an eternal circle.*

In both these quotes from Study 1, the students do not have a search strategy and the searching is random.

In Study 2, the students were asked the same question about a search strategy and two informants from the nursing faculty answered as follows:

*Mm. I usually take some of the words from the title of my thesis, the case or the subject I am going to write about. And then I have to take it from there and take a look at what I get, and perhaps angle it or think in another way and find synonyms to be able to carry on or to get more results. Sometimes it is actually easier to do it in English because they often use English subject terms in Norwegian scholarly articles. It depends, but mostly I need more than just one word when I do the searching.*

*Well, I start with a mind map and which subjects I am going to write about in my assignment. And then I find some subject terms, many in Norwegian and a few in English. If I do not find any Norwegian subject terms, then I have to use English subject terms. Then I use the English ones and I find something I can use. That is how I start anyway.*

In the second study, many of the students had know-how and were confident about how to start searching for information. They don't actually state that they use a search strategy, but they have a plan.

This quote from the first study shows a teacher education student's lack of understanding of what an article actually is:

*Can you tell me what an article is?  
Newspaper articles are the most common, it's like... They are about something scholarly.*

In comparison, this quote from the second study illustrates the students' growth in academic maturity, this time represented by a nursing student:

*When I find an article in a database I'm probably not as critical towards it as I would be if I had found it somewhere online. I feel that it has been quality-assured. I don't know if that is true or not. But of course I check to see if it is an academic article. Sometimes I check other things that the author has written, articles mostly. But that is to find information about the subject, because it is often the case that they use their raw material to write more academic articles.*

In the first year of study, the students did not quite know what an article was, but their understanding developed during the next two years.



### 4.3 Results – the students from the teacher education faculty compared to the nursing faculty

In recent years, the nursing faculty has adopted a more academic approach by using evidence-based practice. The students from this faculty have been given assignments where they are required to use academic articles. The library has established cooperation with the academic staff in order to provide the students with the required skills in these matters.

This quote is from a student from the nursing faculty who has a good understanding of different sources that can be used. Articles are used a lot by the nursing students in particular.

*The first thing I do is to find articles, and I use the library's homepage. I'm fond of Svemed, Pubmed and Cinahl. And when I have found out what kind of research it is, I start searching for literature and, for that, I use the library's search engine. There, I check what kind of literature there is to be found, and what options I have. And if it is e-books, I scan them quickly, and then I borrow some books that seem relevant.*

Here is another quote from a student attending the nursing faculty:

*(I use) web pages because they are easily accessed, the information is easy to find. You search Google, and it is easy to refer to the page. Books are much better and safer literature and easy to refer to. And scientific articles, just because it is a requirement. You have to include it. And that is fine. The assignment is better when you refer to relevant research.*

This shows that the students from the nursing faculty are aware that they primarily find and use articles because it is a requirement for their assignments.

The teacher education students in this study had no such requirements for their assignments, and library instruction was not a fully integrated part of the study plan in this faculty. The library provided information about searching and referencing, but the connection between the information literacy training given by the library and the assignments set by the academic staff was not taken to the full extent. This means that the librarians lacked an overview of what the teachers emphasised as important in this process.

Two students from the teacher education faculty put it like this:

*The first thing I do is to use the internet, I then do some searches either on Google or I have become better at using the library's website. I also talk with the teachers and other experts. (Study 2)*

*I go in there and start searching, and then I have searched, well, what shall I say, using the main words from my thesis title. I have also searched online, but I have found nothing there. I have also used the library's website.*

This shows that they do not have the same understanding of using different sources, but mainly use books.

In addition, due to internal factors in the library, the library instruction that was offered lacked continuity in the period between the first and second study, which meant that, by chance rather than design, it was possible to compare the two faculties in ways not imagined when designing the research project.

The students were asked to reflect on their own search practices while pretending to be starting on an assignment. One student in the teacher education faculty put it as follows:

*First, I start by using Google and that refers me to something more. I do not use a special website, but there are different sites that review and sell books. 'Bokkilden' (a Norwegian online bookshop) sells books. On the same website, you can read a little more about the book. There are also other websites where you can read book reviews.*

The differences between the two student groups as regards search behaviour is illustrated by a quote from a student at the nursing faculty.

*I usually use Cinahl, Svemed, Helsebiblioteket (a Norwegian website containing health information) and Idunn (a Norwegian database of articles). I use these four most. I use research articles a lot. I also use the Norwegian nursing website a lot. If I can't find anything, I may use Google. I also use articles in newspapers. I search for old assignments, look at them and the references and see if I can find something useful. So I am aware that this is not the most convenient way of finding information.*

Due to the requirements stipulated in their assignments, the nursing students needed to use the academic databases, and their answers reflect this. The teacher education students had no requirements as to what kind of sources they should use for their assignments, and, consequently, no motivation to carry out more than basic searches in the library catalogue.

#### **4.4 Discussion of different explanations**

The results show a change in search behaviour, which is more significant among the nursing students than among the teacher education students. One main finding was a decrease in the use of Google as the students' first choice for searching, and a growth in academic maturity in both groups. In the following, several ways of explaining these developments will be presented.

##### **4.4.1 Use of Google and academic maturity**

The first study showed that a large majority of the first-year students used Google both as their starting point for information searches, and often as their only search tool. In the current study, about half of the students used Google at some point in their literature search. But all students, with one exception, also used academic databases.

One reason for this development may be that Google is easy to use. The students are used to Google long before entering higher education, and, as new students, they continue to use this familiar and easy way of finding information. This makes the work of the librarians and the teachers more challenging when introducing academic databases in the first year of study.

Most of the students in this study had attended more than one literature search class at the library during their study period, and consequently increased their searching skills. Simultaneously, the students go through a transition, and grow in academic maturity as a result of the skills and competence they acquire in their day-to-day life as students. Teachers, librarians and fellow students all contribute to this growth in academic maturity, although in different ways. This explains part of the findings on the use of Google when comparing the two studies. It also explains how even the students who had not attended more than one library class in three years were still able to use additional search tools.

The terms academic maturity and transition are used to refer to the same transformation that students go through when they enter higher education and later during their studies. Christie et al. (2016, p.483) documented 'the importance of time in the processes through which the students became members of the university community; many referred to a gradual process of accumulating knowledge and skills about how to be a university student'.

When comparing the results from the initial study with the results of the follow-up study, the students showed a better understanding of the literature search process in the latter. This finding is supported by Christie et al. (2016, p.483):

What was clear in the accounts of all of the 20 students who were interviewed again in their third or fourth year of study was that by their final years, they had all come to know and understand how to operate effectively within the university's teaching and learning environment. They felt they had become independent learners and were conscious of the transitions they had undertaken

The research from Pickard and Logan (2013, p.403) showed that '... many seniors have developed additional, necessary research skills and a much more complex understanding of research as a process'. This is in line with the finding that the students talk about their literature searches in a more mature way three years into their studies.

The results of our study indicate that the students have grown in academic maturity and undergone a transition from their first year to their final year. This is supported by Karagiannopoulou (2006) and Christie et al. (2016) who found in their studies that the students had increased their knowledge of academic writing, enhanced their critical skills and adopted a deep strategic approach. Weaver (2013) suggests that academic libraries also play an important part and role in the students' journey throughout their studies. Furthermore, Weaver (2013) makes the point that collaboration is necessary to teach the students the relevance of IL.

Against this background, the key issue will be how to position the library in relation to the students' transition. What should the library's role be, and what will it take to reach the goal of helping students to become information literate? The answers are complex and depend on many variables. Firstly, the results show that the first-year students are used to Google and will continue to use Google, and only Google, until they have experienced alternatives. Secondly, the library needs to take into account that first-year students may not be prepared to digest all aspects of IL in their first year of study. Knowing this, the librarians changed their practice by starting all information search classes for first-year students by using Google as the starting point for searches. By doing so they familiarised the students with the situation, then slowly introduced the academic databases by making it clear to the students when they should use different tools.

Academic maturity is influenced by teachers and librarians. This means that cooperation between the library and the academic staff is extremely important in order for the library to make an impact on the students' IL.

#### **4.4.2. Different requirements in academic assignments and cooperation with academic staff**

The students from the nursing faculty were required to use articles from academic journals in their assignments, and most of these students talked about how they searched the appropriate databases for this purpose. The teacher education students did not display this kind of search behaviour. They did not have any similar requirements attached to their assignments, and consequently they did not see a need to search the databases for articles. This kind of difference in search behaviour is supported by the findings of Belanger et al (2012, p.9):

Approximately half of the students – nine in total – found journal articles during the library session, but only four students out of 17 used journal articles for their final papers (compared to 15 students who used at least one book other than their course text). We believe that the key reason for this was that students were not specifically required to use journal articles in their final assignment.

This was not surprising, but led to a discussion about how the library should change its teaching practice to bring it into line with the requirements set by the academic staff. Belanger et al. (2012, p.9) put it like this:

After discussion with faculty, we came to the conclusion that it was more in line with the class learning goals to emphasize the importance of selecting the right source for the need, rather than focusing on finding journal articles. As a result, we decided to alter the content of the second library session. For this session, faculty and librarians decided to devote less in-class time to sources (such as journal articles) and tools that students did not directly need for their assignments. Instead, we changed the focus of the second session to source evaluation.

There is no need for the teacher education students to learn about search strategies for finding articles. Instead, these students receive more training in literature searches in Google and the library catalogue. If the academic staff in this faculty decide to change the assignment requirements to include academic articles, the library staff are ready to change the IL instruction accordingly. It is worth mentioning that the teacher education students themselves expressed a need for additional training throughout their studies.

Cooperation with the academic staff is an important factor if the library is to succeed in its goals. If effort is put into establishing collaboration with a faculty, it will produce results. Research shows that collaboration with the academic staff is crucial for the library if the aim is to further develop the IL teaching (Monge and Frisicaro-Pawlowski 2014). The library department in the nursing faculty has had a long-term plan to integrate library instruction into the schedule for the nursing students. The nursing faculty has also focused on giving first-year students courses in academic writing. The library instruction has been integrated in these courses from the start and the students are given instruction in information searches, critical use of sources, referencing and avoiding plagiarism. The nursing faculty has a long tradition of good cooperation with the library. This is confirmed by Schulte and Sherwill-Navarro (2009), who indicate that the nursing faculty is perhaps open to collaboration in spite of its relatively traditional perception of library services.

The results from the first study show that the students did not remember a lot from the IL instruction. Consequently, it is important for the library to provide regular IL instruction and not just in the first year. This is supported by Lacy and Chen (2013), who state: 'Since most librarians are confined to the hour-long, "one-shot" session, they very often try to compensate for this limitation by covering as much material as possible.' The library could offer IL instruction in all the study years, dividing up the content of the IL instruction. This is necessary in order to ensure progression from the first to the final year. The timing of the IL lessons is also an important factor. Cooperation with academic staff is essential to ensure continuous IL instruction and to give the students instruction when they need it. The library and the academic staff must prepare a plan to include the IL classes in the students' ordinary schedule. As mentioned earlier, it is also important to bear in mind that the IL instruction must be implemented in the students' assignments.

## 5. Conclusion

Three main results have been presented in this article. First, the study showed that there are differences between first-year and third-year students as regards search behaviour. This article has provided different explanations for this growth in academic maturity.

Second, the results show a decrease in the use of Google as the students' first choice for searches. The students were more experienced in using academic databases in their third year than in their first year.

Third, the students in the nursing faculty showed greater growth in academic maturity and they had received more library training due to the requirements for their assignments. The growth in academic maturity in the teacher education faculty was slightly smaller, and they received less library training.

Accordingly, cooperation with the academic staff is very important for the library in order to make an impact on the development of students' information literacy. It might be of great interest to conduct similar studies interviewing new groups of students. This might help to build generalisable theory.

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