Journal of Information Literacy

ISSN 1750-5968

Volume 9 Issue 1

June 2015

Article

Nierenberg, E. and Fjeldbu, Ø. G., 2015. How much do first-year undergraduate students in Norway know about information literacy? *Journal of Information Literacy*, 9(1) pp. 15-33.

http://doi.dx.org/ 10.11645/9.1.1983

How much do first-year undergraduate students in Norway know about information literacy?

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Abstract

This study aims to document first-year undergraduate students' information literacy (IL) skills at a typical university college in Norway. This research is the first of its kind in Norway as previous studies on new students have focused mainly on the literature search. Prior to library instruction a selection of these students completed a survey with questions on the critical evaluation of sources, on plagiarism and on citing sources. Survey questions were designed to reflect the content of the library course in IL. Although most students were confident that they could avoid plagiarism when writing, many had large gaps in their knowledge, and lacked essential skills. Results also show that new students are better at evaluating sources than they are at citing them. Ethical aspects of plagiarism are discussed and comparisons drawn between students coming directly from upper secondary school and those who have some previous higher education.

Keywords

information literacy; library instruction; plagiarism; citations; references; source evaluation; academic libraries; higher education; undergraduate students; Norway

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1. Introduction

Librarians at Hedmark University College (HUC) teach classes in information literacy (IL) for students at all levels. This study aims to document new HUC undergraduate students' knowledge and skills, prior to library instruction, in the following three areas:

- Critically evaluating sources of information
- Avoiding plagiarism
- Citing sources in the correct manner

The standard definition of IL in Norway is "the ability to identify when information is required, to search for and find the information you need, to evaluate the information critically, and to use it appropriately for your needs" (Rasch and Trondsen 1999 p. 6, own translation). Although the definition includes search techniques, the researchers chose to narrow the focus in the study at HUC to the three points stated above.

Although the HUC library has worked extensively to integrate an IL course into first year curricula, it still needs to improve and strengthen the course's position. The researchers hope that this article will contribute to these efforts, and that the results from the survey will be used internally to improve library instruction in the three areas of focus. In addition, the results will provide an indication of the level of IL knowledge and skills amongst first year undergraduate students in Norway and thus be of interest for the IL community, both nationally and internationally.

By first year undergraduate students the researchers mean students who come directly from upper secondary school and newly registered students who already have completed some level of higher education. Results from these two groups of new students differ significantly in several areas, and these differences are discussed below.

2. Background

2.1 Hedmark University College (HUC)

Located in Hedmark County in south-eastern Norway, HUC is one of the country's 20 public university colleges. These state schools provide a research-based education, often in a profession or a practical field. Approximately 37% of students in higher education in Norway attend these institutions.

HUC has four campuses: Elverum; Evenstad/Blæstad; Hamar; and Rena, and a total of more than 6,500 students. It offers undergraduate and graduate programmes in a range of professions, including teacher education, business administration and nursing. The college welcomes approximately 2,000 new students yearly from a wide variety of backgrounds. Some come directly from upper secondary school, whereas others may have higher education or job experience.

HUC is in many ways a typical Norwegian university college. Students' grades are slightly higher than average but in other respects, based on the means for number of graduating students per year, students' age composition and rate of completion of planned study, HUC is average (Norwegian Social Science Data Services 2014).

The HUC Library offers two courses in IL: *Evaluating and citing sources;* and *Searching for information*. Aside from teaching students how to critically evaluate sources of information, and how to cite sources in the correct manner, the first course also includes instruction in how to avoid plagiarism. This course has been offered since 2008 and is taken by the majority of first year students to improve their academic writing.

IL competency levels of incoming students can vary widely. HUC librarians who teach hear frequently from students after class that much of the material covered was new to them, and that they would have benefited greatly by learning this material earlier in their schooling. Librarians have also observed gaps in students' IL skills based on the types of questions which students regularly pose in the library, especially regarding the citing and reliability of sources. Faculty members detect new cases of plagiarism every year, and frequently express to librarians their dissatisfaction with students' abilities to cite information sources correctly in academic writing. In addition, news stories refer every year to cases where students are caught plagiarising. So how well-prepared for academic writing are Norwegian students when they begin higher education?

2.2 The Norwegian qualifications framework

The European Parliament and Council adopted the *European qualification framework for lifelong learning* in 2008, in an effort to translate and compare learners' and workers' qualifications across Europe. Several European countries, including Norway, adopted their own national qualification systems. The Norwegian Agency for Quality Assurance in Education (2011) effectuated the *Norwegian qualifications framework for lifelong learning* (NQF) in 2012. This framework specifies the learning outcomes in knowledge, skills and general competences that pupils/students are expected to possess when completing each level of education.

In terms of knowledge relevant to IL, pupils who have finished primary school should possess "a basic knowledge about the use of sources, about how information can be obtained, documented, assessed and applied" (p. 19). During upper secondary school, this basic knowledge is to be transformed into practical skills, and pupils should be able to "search for and use information from

different sources" (p. 20) and "analyse and assess different types of sources" (p. 21). When students from upper secondary school enter higher education, one can therefore expect them to possess these skills. However, since NQF was first implemented only two years before our survey was conducted, it is uncertain if all respondents coming directly from upper secondary school had as yet acquired its IL skills and competences.

According to the NQF (2011), students' skills and general competences are further refined when they have completed a bachelor degree. They are expected to "find, evaluate and refer to information and scholarly subject matter and present it in a manner that sheds light on the problem" (p. 24) and to have "insight into relevant academic and professional ethical issues" (p. 24). Library IL instruction should therefore aim to teach students these specific skills.

3. Literature review

Many international IL studies focus specifically on literature searching, disregarding or downplaying the critical evaluation and use of sources, as well as plagiarism. Several of these search-focused studies show that students, on entering higher education, lack basic searching skills (Mittermeyer 2005; Oblinger et al. 2005; Ivanitskaya et al. 2006; Conway 2011). The researchers chose not to focus on this search aspect of IL in this study, and the literature review reflects this decision. Several of the studies mentioned above also cover evaluation of information sources whereas other research focuses specifically on source evaluation (Walraven et al. 2009; Hogan and Varnhagen 2012) or citation of sources (Kargbo 2010; Lee 2013). Students' use of Wikipedia is a question that is addressed, and one which also has been studied by Head and Eisenberg (2010), Biddix et al. (2011), Traphagan et al. (2012) and Head (2013).

In addition to search-focused studies there is also a strong international focus on plagiarism. The vast amount of research dedicated to plagiarism – and to academic dishonesty in general – reflects the complex nature of this issue. For instance, while one recent study focuses on possible cultural differences between undergraduate students' perceptions and knowledge of plagiarism (Ehrich et al. 2014), another study (Gullifer and Tyson 2010) approaches the problem of plagiarism by adopting an individual, psychological approach. Gullifer and Tyson stress the importance "for institutions to develop an understanding of the perceptions of the university students' understanding of plagiarism" (p. 478), in accordance with the findings of Macdonald and Carroll (2006).

This study specifically attempts to identify students' beliefs and ethical perceptions regarding plagiarism, and to pinpoint specific difficulties that they have. Strittmatter and Bratton (2014) studied students' ethical perceptions of plagiarism before and after library instruction, and found that library instruction was beneficial in helping students to understand ethical issues. Strittmatter and Bratton write that "students who were present for library instruction consistently exhibited higher post-test ethical perceptions than they did in their pre-test surveys" (2014 p. 746). Survey questions were similar, but not identical to those used by Strittmatter and Bratton in their pre-test survey.

The most recent Norwegian study on students' attitudes to and perceptions of scientific dishonesty, including plagiarism, focuses on PhD students at medical faculties across Norway (Hofmann et al. 2013). Despite the fact that this study concentrates on doctoral students, some of the results are interesting for us, especially as they indicate that although there is "less scientific dishonesty in Norway than in other countries" (p. 6), "scientific dishonesty is not unknown to Norwegian doctoral students" (p. 5). Better quality of teaching and communication of good scientific practice is therefore necessary (p. 8).

Boger et al. (2010) examined Norwegian students' experiences with and attitudes towards cheating, and plagiarism in particular; finding that students do not know what these terms imply, and thereby assume that some may plagiarise unintentionally (p. 43). There can be multiple reasons for this lack of knowledge - definitions of these terms can be hard to locate on the institutional websites and, when located, they can be hard to interpret. This can lead to different

understandings of the terms between students and faculty (Carroll 2007; Gullifer and Tyson 2010). Boger et al. (2010) also point out that some schools stress the importance of IL more than others, and they claim that "upper secondary schools generally do not emphasise an academic writing culture" (p. 10, own translation). Additionally, they found that students' individual attitudes and ethics regarding use of research may vary depending on their cultural traditions and individual attitudes (p. 10), an aspect that also has been studied by Gullifer and Tyson (2010). Collectively, these observations serve to put the objectives outlined in the NQF in perspective, reminding us that not all students may have reached the same level of IL skills when entering higher education.

Despite the fact that research in this area of study is limited in Norway, the country's focus on IL has been strong for years, resulting in various freely available online tools for students. These include *Search & Write* and *VIKO: Your guide to information literacy*, tools that offer students (and others) free advice and information on how to critically evaluate sources, how to cite them correctly and how to avoid plagiarism, as well as how to search for literature. After the implementation of the NQF in 2012, increased attention has also been given to the necessity of integrating IL instruction into the curriculum. Karen Marie Øvern's research (2013) supports this effort in showing that integrating IL courses into the curriculum can improve students' learning outcomes. This claim is in agreement with findings in recent international studies such as Carr and Cunningham (2014) and Mullins (2014).

4. Methods

New undergraduate students completed an online survey early in their first semester, just before attending the library course *Evaluating and citing sources*. The questions were designed to provide insight into the students' prior knowledge in the three topics of the study: critically evaluating sources of information; avoiding plagiarism; and citing sources. The respondents were also asked to assess their own aptitude, and whether or not they had previously received instruction in each of the three topics. The questions were designed to reflect the issues and ethical dilemmas that are discussed in the course itself.

The survey was administered at all four college campuses to first-year undergraduate students in the following programmes: preschool and primary school teacher education; nursing; forestry and wildlife; and business administration. The researchers aimed to select programmes whose gender ratio and age composition reflected the college as a whole. All students in these programmes who attended the library course received the survey before instruction began. In an effort to maximise the response rate, the survey was personally administered in the classroom. Researchers stayed until students had completed all questions. The selection was therefore limited to those in attendance, and this number varied at the different campuses. A smaller percentage of enrolled students attended the course at the more decentralised campuses, Rena and Evenstad, which means that the cluster selection is unrepresentative of the general population of new students. Despite this variance, the results still give an indication of the situation at HUC, and may be of value for other university colleges in Norway as well.

5. Results and analyses

Of the 507 students in the selection who attended the library course *Evaluating and citing sources*, 434 responded to the survey. There was an over-representation of female students and young students relative to the entire population of undergraduate students. The distribution of respondents from the four campuses was skewed, with Campus Hamar (pre-school and teacher education) over-represented, and Campus Rena (business administration) under-represented. The only independent variable with a significant correlation to survey results was the students' level of previous education. (The only exception to this was that male students consistently assessed their abilities as higher, compared to the assessments from female students.)
In the analyses the focus is therefore on the correlation of survey responses to prior education level. The highest level of prior completed education for 82% of respondents was upper secondary school, including both academic and vocational programmes. In this study these students are referred to as Group A. The remainder had some college education and are referred to as Group

B. Half of these had earned a bachelor's degree, and most of the others had completed individual undergraduate or graduate courses (see Table 1).

Table 1: Highest completed level of education of respondents.

	Highest completed education level	**Number of respondents**	
Group A	Upper secondary school (academic programme)	318	354
	Upper secondary school (vocational programme)	36	
Group B	Individual undergraduate or graduate courses	38	80
	Continuing education	1	
	Bachelor's degree	40	
	Master's degree or PhD	1	
Total			434

Below are results and analyses of survey questions for each of the three main topics:

- Critically evaluating sources of information
- Avoiding plagiarism
- Citing sources in the correct manner

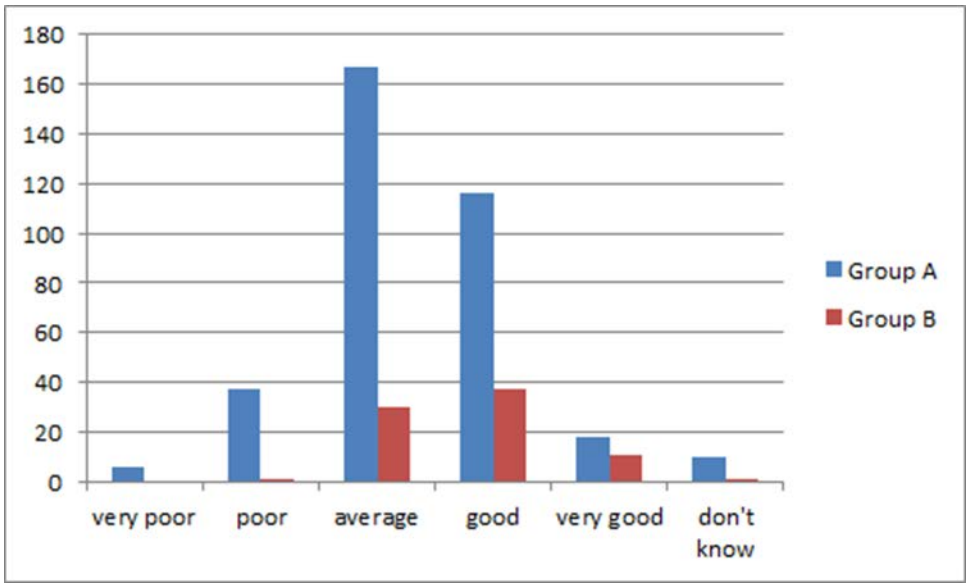
For each topic, students began by assessing their own abilities, and stating if/when they previously had learned about the subject.

5.1 Critically evaluating sources of information

Question 1: How would you describe your ability to critically evaluate sources of information?

197 of the 434 respondents (45%) assessed themselves as average; 182 (42%) as good or very good; and 44 (10%) as poor or very poor at evaluating information sources (see Figure 1). The higher the education level of the respondents, the better they assessed their abilities. Nearly 60% of those from Group B, those with a higher education level, estimated their abilities as good or very good, while only 38% of those from Group A said the same.

Figure 1: Self-assessment - critical evaluation of sources, in numbers of respondents.



Question 2: Have you learned about the critical evaluation of sources previously?

Approximately 12% of respondents had not learned about this topic previously; 72% had learned about it in primary or secondary school; 17% had learned about it in college; and 10% could not remember ever learning about it. (The total is more than 100% because respondents could choose several alternatives.)

Question 3: Which of these questions should you ask yourself when critically evaluating sources?

Respondents could select three of the following six questions:

- Is the author's name provided?
- Are there illustrations?
- Is it searchable in Google?
- Is the publication date provided?
- Is it easy to read?
- Is there a reference list?

A technical flaw in the online survey allowed respondents to choose fewer than three alternatives, which is a source of error. The researchers received 1,038 of a possible 1,302 answers from the 434 respondents, which shows that some chose fewer than three criteria.

The majority of students in both groups identified the three correct criteria – presence of author's name, publication date and reference list. As expected, those with a higher level of education more frequently chose the correct answers. Some respondents chose incorrect alternatives, for example more than 7% believed that a reliable publication must be easy to read. This misconception was more prevalent amongst those with a lower level of education. One incorrect alternative was however chosen slightly more frequently by those from Group B, namely if the article is searchable in Google.

The fact that some respondents chose only one or two alternatives can partially explain why 18% of respondents did not identify the presence of the author's name as an essential criterion, and 34% did not consider the presence of the publication date important.

Question 4: Which of the following statements about Wikipedia do you believe to be true?

Respondents could select three of the following six statements:

- Wikipedia can be used in the start-phase of research, e.g. to find facts and definitions that you can work with further.
- Faculty members do not consider Wikipedia to be a reliable source.
- Wikipedia is the best source of information.
- Anyone can write in Wikipedia.
- Only experts write in Wikipedia.
- All articles in Wikipedia are quality-controlled.

The researchers received 968 of a possible 1,302 answers from 434 respondents, which shows again that many chose fewer than three alternatives. This source of error can partially explain why only 68% of students realised that faculty members do not consider Wikipedia to be a reliable source, (thus implying that nearly one-third consider it acceptable in academic writing). As Traphagan et al. (2014) have found, faculty members may in some cases give explicit instructions to undergraduates to not use Wikipedia as a source in their academic writing. This can present a challenge to those students coming directly from upper secondary schools where use of Wikipedia as a source was more widespread.

18 respondents believed that all articles in Wikipedia are quality-controlled. Although this number is small, it is still surprising for students at this level of education. One explanation for this could be that since no definition of quality control was provided in the question, these 18 respondents may have considered the process of collaborative editing which is inherent to Wikipedia to be a sufficient control of quality.

Interestingly, a higher percentage (62%) of the respondents from group A (with a lower education level) than from group B (54%) realised that Wikipedia can be used in the start-phase of research. Nevertheless, the results confirm the findings of previous international research documenting students' frequent use of Wikipedia at the beginning of a project (Head and Eisenberg 2010; Biddix et al. 2011; Head 2013).

The six statements reflect the use of Wikipedia as a source of information, but not as a learning tool in the classroom. Recent research indicates that students can benefit from using Wikipedia as a tool for learning how to write and cite in their respective subjects (Traphagan et al. 2014). By learning to cite their sources in accordance with Wikipedia's policy they may improve their ability to critically evaluate sources, including other Wikipedia articles.

Question 5: Åse heard on Norwegian radio that new research shows that girls learn to read later than boys. She writes this in her paper. Should she use the radio broadcast as her source?

In this question about the reliability of a radio broadcast, approximately 70% of respondents, from both education-level groups, realised that it is best to cite the original research article rather than the radio broadcast. This result is encouraging, especially for Group A students, because it shows that many students, also those who are new to higher education, think critically about where information comes from.

Question 6: What characterises a scholarly article?

Respondents' answers to the question about scholarly articles varied considerably. This indicates that some may not have previously learned about the criteria or channels for scholarly publications.

Respondents were to select three of the following six criteria that they believe characterise a scholarly article:

- It is published in a printed journal.
- It is peer-reviewed prior to publication.
- It is based on research.
- It is written in everyday language that is easy to understand.
- It has a reference list and an abstract.
- It is written by a faculty member.

The researchers received 967 of a possible 1,302 answers from 434 respondents, which shows again that many chose fewer than three alternatives. This can partially explain why percentages of correct answers are low despite the fact that many respondents chose the three correct criteria. For example, only 47% from Group A and 64% from Group B answered that scholarly articles include a reference list and an abstract, and only 57% from Group A and 49% from Group B answered that they are peer-reviewed prior to publication. It is more encouraging to see that 82% of respondents from Group A and 90% from Group B recognised that scholarly articles are based on research.

The most surprising incorrect answer was that more than 22% of the total number of respondents believed that scholarly articles must be published in printed journals. This is quite high, considering that the journal's medium (print/online) is not a factor. This misbelief was more prevalent in Group B, which shows that even students with previous academic experience can be unfamiliar with modes of scientific publishing.

Question 7: This article is from an online magazine. Would you say that this source is reliable?

When it comes to critically evaluating sources, Hogan and Varnhagen (2012 p.10) identify a gap between "students' knowledge and intentions" and their overall inability to apply this knowledge in practice. This question was designed in order to bridge this gap and thereby operationalise students' skills in evaluating sources. Students were asked to read a paragraph from an online magazine article and judge whether or not the source was reliable. The text had obvious errors and deficiencies, and should have easily been identified as unreliable. For example, results of research were presented with no in-text citations. Despite this, more than 20% answered that the article was reliable, and this percentage was equal in both education-level groups. The safe answer to this question was that there was not enough information provided to evaluate the article sufficiently. 63% of respondents in Group A and 55% of those in Group B chose this alternative, which shows that those with a lower level of education are more uncertain about how to critically evaluate sources of information.

In conclusion, the results from this section on source evaluation show that many students think critically about where information comes from, but that they also have gaps in their knowledge (scholarly articles) and various misconceptions about the critical evaluation of sources, an important part of being information literate. These last results are in accordance with Walraven et al. (2009). When comparing survey results with students' own perceptions of their capabilities, it seems that respondents somewhat over-estimate their abilities. It is interesting to note that there are only small differences between the different education-level groups in this section.

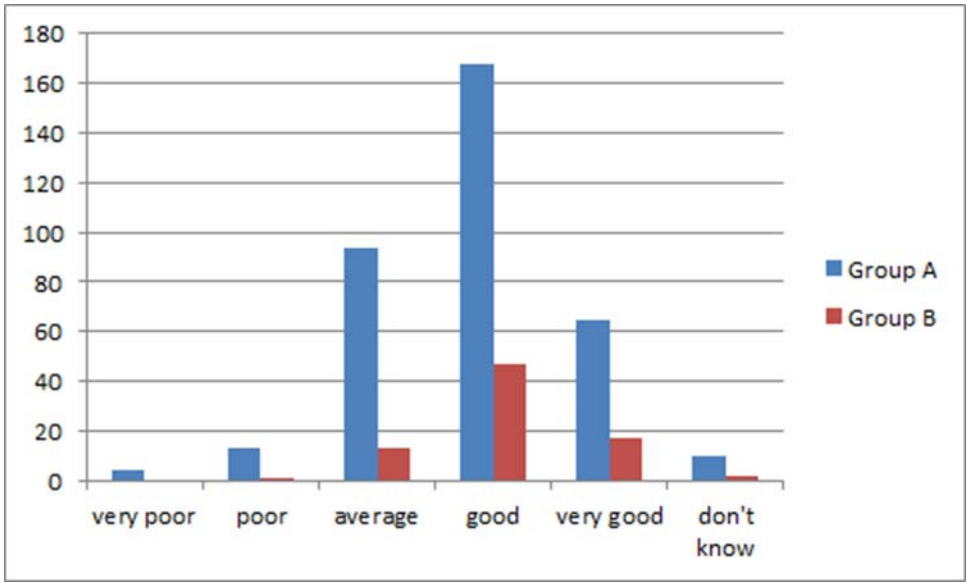
5.2 Plagiarism

The following explanation of plagiarism was provided at the start of this section: "Plagiarism occurs when a person uses another's work and represents it as his or her own. Students who plagiarise can be penalized for cheating."

Question 8: How would you describe your ability to avoid plagiarism when writing?

297 of the 434 respondents (68%) answered that their ability to avoid plagiarism was good or very good, constituting 66% of those in Group A (lower education-level), and 80% of those in Group B. Of the 18 students (4% of total) who assessed themselves as poor or very poor at avoiding plagiarism, only one was from the higher education-level group (see figure 2). Interestingly, respondents have much more confidence in their ability to avoid plagiarism than in their abilities to critically evaluate sources of information or to cite sources.

Figure 2: Self-assessment: ability to avoid plagiarism, in numbers of respondents.



Question 9: Have you learned about plagiarism previously?

Approximately 8% of all respondents answered that they had never received instruction about plagiarism, and another 8% did not remember. Nearly 88% had learned about plagiarism in primary or secondary school, and 19% in higher education.

Question 10: Otto is writing a paper and knows that he must provide sources in order to avoid plagiarism. When should he cite the sources that he has used?

Questions 10 and 11 focused on formal aspects of plagiarism. In question 10, students were provided with six cases, and asked to identify the three in which it is necessary to cite the source in order to avoid plagiarism. The answers to this question reveal considerable confusion. More than 6% of respondents believe that it is required to cite sources after every paragraph in a paper, although this is clearly unnecessary. Nearly 15% believe it necessary to cite easily-found facts, although this is also superfluous. These results show that some students may err on the side of citing too frequently in their papers, which can be messy and time-consuming, but not dangerous in terms of plagiarism. A larger percentage of these were from the group with a lower level of education.

A more serious offence is neglecting necessary citations, which is plagiarism. Only 71% of respondents answered that it is required to cite the source when using statistics from a scholarly article, which is clearly requisite. (This somewhat low percentage could be the result of respondents simply choosing fewer than three alternatives in this question, a possible source of error.) Nearly 86% recognised the necessity of citing direct quotes, and 79% knew to cite the source when using others' ideas, opinions or theories. For each of the cases which required citations, a larger percentage of respondents from Group B answered correctly, as could be

expected. The two aspects of IL, plagiarism and citing sources, are essentially intertwined: if you do not cite or write a reference correctly, you risk being accused of plagiarism.

Question 11: Is this considered plagiarism?

Students were given six writing scenarios and asked to judge whether or not they represented plagiarism. In three of the cases, more than 90% of all students responded correctly. This is encouraging, and shows that the great majority of students realise that it constitutes plagiarism to use research results without citing the source, to simply translate a text from one language to another, and to copy-and-paste, only changing a few words. Below is a discussion of the three scenarios in which there was more uncertainty amongst respondents.

- *Oda borrows a paper from a previous student and rewrites it in her own words. She does not provide the source.*

  Slightly more than 80% of respondents do not consider this to be plagiarism, although it most certainly is. The results for Group A and B were nearly identical. This implies that a large majority of respondents believe that it is both acceptable to 'recycle' the work of another student, and that it is not necessary to cite them when they do so. Could it be commonplace to reproduce the work of others in this manner? This is a daunting prospect, and shows that students must be taught explicitly that this practice is unacceptable.

- *Jon uses others' theories and rephrases them with his own words. He does not provide the sources.*

  Only 57% of respondents recognised this as plagiarism. The remainder apparently do not realise that theories must be cited. This is true, of course, whether or not the original texts are paraphrased. A slightly higher percentage (61%) of students from Group B answered this correctly, as compared to Group A (57%). This scenario had the most incorrect answers. A possible explanation for this misunderstanding could be that respondents misinterpreted the word 'theories', and thought that the question referred to more informal ideas than to scientific hypotheses or models.

- *Eva finds the dates of the Gulf War on the internet. She writes this in her paper and does not provide the source.*

  This fact is easy to look up and it is therefore not necessary to document the source. Despite this, 26% of the total number of respondents believed that it is plagiarism to not cite the source of this information. A larger percentage of those from Group A (28%) answered incorrectly, as compared to Group B (20%), as could be expected.

Question 12: To what extent do you agree/disagree with the statements below?

Questions 12 and 13 addressed ethical aspects of plagiarism. Having asked the respondents to judge whether or not certain writing scenarios represented plagiarism, the researchers wanted to illuminate the moral perspective inherent in these issues. Students were first asked to judge to what extent they agreed or disagreed with five statements, based on the text below:

> *Thea must hand in a 20-page paper next week, but she's been busy and hasn't started. The paper counts for 50% of her grade, and she has to pass in order to retain her stipend. Thea solves the problem by copying entire paragraphs from articles she's found on the subject, and putting them together in her paper. She writes a short introduction and conclusion in her own words. She provides all sources in her reference list.*

The five statements were nuanced in order to cast light upon the moral dilemmas regarding this method of writing. In addition, the question was designed to reveal how common this writing practice is, and students' perceptions of its acceptance, at our institution. Their answers should

then provide insight into their beliefs, values and ethical perceptions of plagiarism. The answers also provide clues as to necessary instruction in the library's IL course. The statement purposely did not specify that Thea omitted in-text citations, since that would have made the case too obvious. The researchers assumed that students with a thorough understanding of referencing would notice that these citations were lacking. Each of the five statements is discussed below.

- *Thea's actions comply with recognised ethical norms in academia.*

  Remarkably, only 58% of the total number of respondents disagreed or strongly disagreed with this statement, while 39% were unsure. Thea's actions clearly violate academic norms, and more students should therefore have disagreed with this statement. Perhaps students did not understand the concept of ethical norms? A larger proportion of respondents from Group B disagreed with this statement, which shows that those with some higher education have a better understanding of ethical norms in academia.

- *Thea's method of writing is traditionally and culturally acceptable.*

  Only 6% of the total number of respondents agreed or strongly agreed with this statement. This shows that most realise that this method of writing is unacceptable in our traditions and culture, which is an encouraging result. There was little difference between Group A and Group B.

- *Thea's method of writing is accepted at our school.*

  Of the total number of respondents, 84% disagreed or strongly disagreed with this statement. A slightly larger proportion of these were from Group B, with a higher education-level. Although this is a large majority, it is still somewhat surprising that not all students realised that HUC does not accept the practice of copy-and-paste. It is clearly necessary to provide more information about this type of plagiarism in library instruction.

- *Several students write papers in a similar fashion.*

  49% of the total number of respondents was uncertain as to whether or not there are students who write in this manner. This is not surprising, since they had just recently begun their studies, and this is not the kind of disclosure that fellow students would openly confess. However, it is surprising to see that 31% agreed or strongly agreed with this statement. This suggests that many students either write in this fashion themselves or know of others who do so. There was little difference between respondents from Group A and Group B in this question.

- *Thea's actions are not morally justifiable.*

  69% of the total number of respondents agreed or strongly agreed with this statement. A larger proportion of these were from Group B, with a higher education-level, as could be expected. The majority, in both groups, thereby acknowledge that there are moral issues with this copy-and-paste technique.

Question 13: How much does Thea learn about her topic by writing in this manner?

In the final question in the plagiarism section we wished to build further upon the Thea scenario. Students were asked to estimate Thea's learning outcomes in four different writing scenarios. Their estimates should provide information on how they view the connection between a certain writing method and the extent of the learning outcome, which is, after all, the crux of the matter of learning. Students use/cite sources and write papers not only to receive a passing grade and avoid plagiarism, but mostly in order to learn! For each of the four methods discussed below, students were asked to estimate the learning outcome: much, some, little, or very little learning.

The results are encouraging, and show that students realize that they can maximise their learning by utilising sources in the correct manner:

- *Thea writes her paper using the method described in the previous question.*

  This scenario was the worst of the four alternatives, and respondents agreed. Little is learned by simply copying and pasting others' texts into one's paper, although some learning may occur by writing the introduction and conclusion. More than 80% of respondents, in both education-level groups, recognised that the learning outcome is little or very little with this technique, and it was ranked in fourth place.

- *Thea paraphrases ideas from the articles she has read and uses them in her paper in order to answer her research question. She cites the sources in her text.*

  This was the best of the four choices, and respondents recognised this. The fact that the original texts were read, paraphrased and used constructively in the paper increases the learning outcome. More than 75% of all respondents answered that this method provides much or some learning, and the alternative was ranked in first place. Respondents from Group B rated the learning outcome as greater than those from the lower education-level group.

- *Thea combines copied texts with articles that she has reformulated in her own words. She cites the sources in her text.*

  This alternative is only slightly better than the first, because Thea at least paraphrases some of the texts she uses. Respondents realised this and ranked this method in third place. Interestingly, respondents from Group B, with a higher level of education, believed that the learning outcome was greater than those from Group A, for this method.

- *Thea summarises the articles she has read, and cites the sources in her text.*

  This was the second-best alternative, and respondents agreed, ranking the method as number two. Had the summarised texts been used constructively in a line of reasoning, more learning would have occurred. Respondents from Group B ranked the learning outcome as greater than those from Group A, as could be expected.

All new students at HUC must sign a statement regarding the submission of written work, pledging that their paper/exam has not been previously submitted; that it is their own, individual work; that it includes correctly written references to sources; and that they are aware that violation of these terms is considered cheating, and the students involved can be subject to sanctions. This part of the academic honour code is clearly not fully comprehended or respected by all students in our survey, as shown by the above responses to questions regarding the formal aspects of plagiarism, especially the responses given in the three writing scenarios in question 11.

In conclusion, although several questions regarding plagiarism were answered correctly by a majority of students, responses to other questions reveal a great degree of ignorance and mistaken beliefs amongst new students, despite the positive assessments of their own abilities in avoiding plagiarism. This limited understanding of plagiarism encompasses both formal and ethical aspects. The researchers' findings were in accordance with others' research including: Ehrich et al. (2014), who underline students' general lack of understanding of plagiarism; Gullifer and Tyson (2010), who note the confusion experienced by students when confronted with plagiarism issues; and Boger et al. (2011), who find that many students plagiarise unintentionally. On a positive note, it was encouraging to see that students recognised that the learning outcome is greatest when sources are used in the correct manner.

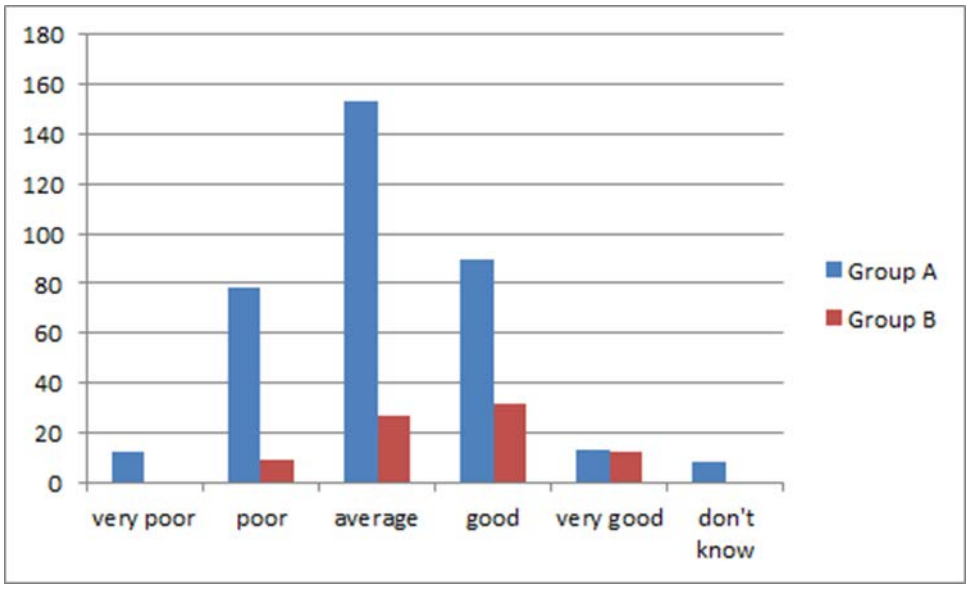
5.3 Citing sources

A short explanation of the terms “in-text citation” and “reference” were provided in this section of the survey.

Question 14: How would you describe your ability to cite sources in the correct manner when writing?

99 of 434 respondents (23%) assessed their ability to cite sources as poor or very poor (see Figure 3). 180 respondents (41%) believed that they were average, and only 147 (34%) answered good or very good. These numbers differ significantly with the other topics of this survey, showing that students have less confidence in their ability to cite sources than they have in critically evaluating sources and avoiding plagiarism. The differences between students with lower and higher levels of education are as could be expected in this self-assessment. Approximately 29% of students from Group A and 55% from Group B assessed their ability to cite sources correctly as good or very good. Roughly 25% of students from Group A and 11% from Group B considered themselves poor or very poor at citing sources.

Figure 3: Self-assessment: ability to cite sources correctly, in number of respondents.



Question 15: Have you learned about citing sources previously?

17% of respondents had never received instruction in citing sources, and another 15% did not remember if they had learned about it previously. Only half had learned to cite sources in upper secondary school. This implies that many incoming students, from both education levels, may lack the necessary background and referencing skills for higher education, and may therefore be insufficiently prepared to write academic texts.

As previously noted, according to the NQF (2011), students should possess “a basic knowledge about the use of sources, about how information can be obtained, documented, assessed and applied,” and have the skills to “use information from different sources” after completing upper secondary school in Norway. This basic knowledge of how information can be documented, and the skills required to use information, cannot be expected to fully prepare students for academia, where the requirements are more demanding. The results discussed below confirm that this is indeed the case, and that new undergraduate students need more skills in order to cite sources correctly.

Question 16: Which of the following statements about in-text citations are correct?

Only 65% of respondents realised that an in-text citation shows that the material originates from another source, which is a surprising result. Nearly 17% incorrectly thought that in-text citations include the name of the publisher, and only half realised that there is a direct connection between citations in the text and references in the reference list. These results show that many respondents are uncertain about the purpose and content of in-text citations, despite the definition given at the start of this section.

Question 17: If Per writes the following sentences, does he need to provide the source?

Students were asked to judge whether or not it was necessary to cite the source in individual cases. Each of these is discussed below since there were many incorrect answers, showing a great deal of uncertainty.

- *Nine out of ten Norwegians buy Christmas presents on the internet.*

  Only 69% of respondents believed that it was necessary to cite the source for this assertion. The students were possibly confused by the absence of written numbers, and the everyday language in the statement, but in fact, this is the type of statistic that must be supported by research. A greater percentage of those from Group B (higher education-level) realised this, compared to Group A.

- *Alf Prøysen* (a famous Norwegian) *was born on July 23, 1914 and died on November 23, 1970*.

  In general, dates of birth and death do not require a citation, yet 39% of the total number of respondents thought it necessary to cite the source of this easily-found fact. A much larger percentage of those from Group A answered this incorrectly, as could be expected. Could a possible explanation be that since this is not the type of common knowledge that can easily be recalled without looking it up, students believed that it required a citation?

- *The Conservative Party received 26.9% of votes in the latest election*.

  This is an example of an official statistic which is possible to locate in many sources. Despite this, nearly 80% of all respondents believed that it must be cited. Could this confusion be due to the use of a precise statistic? A slightly higher percentage of those from the higher education-level group answered correctly that no citation is required.

- *New research shows that those who have been bullied in school have a greater chance of being unemployed as adults*.

  This research should clearly be cited, and more than 91% of respondents from both groups recognised this. Of the six cases in this question, this one received the most correct answers. Perhaps the words “new research shows” provided a clue to the students that the source must be documented.

- *Men have poorer memories than women*.

  This assertion obviously needs to be supported by research, yet only 59% of respondents realised that it needed a citation. Students could possibly have been confused by the statement’s vernacular or by its lack of statistics. A much larger percentage of those from higher education-level group realised that a citation was required.

- *According to Vygotsky's sociocultural theory of human learning, learning occurs through use of language and participation in social practice*.

  Although this refers to a scientist's theory and requires documentation, more than 20% did not find it necessary to cite the source. A greater percentage of those from the group with a higher level of education answered correctly, and realised that a citation was required.

The answers to this question show that respondents do not always know when it is necessary to cite sources in a text. As could be expected, those with a higher level of education were better able to accurately assess the need for citations. In both groups of respondents, citing too frequently seems to be as common a problem as citing too seldom, although it is of course not as serious an error. First year undergraduate students clearly need more instruction in order to know when citing is required.

Question 18: You have learned that you must write a reference list at the end of your paper. Which of the following statements about reference lists are correct?

The respondents were asked to choose three of six statements which they believed to be true. Their responses either reveal how they were instructed to write reference lists at their previous schools, or how they believe it should be done here at HUC. Since they had not yet received library instruction and learned the details of the reference technique that the institution recommends, their answers should neither be considered correct nor incorrect.

It is interesting to note that only 55% of all respondents thought that all references should be placed in the same list. 36% of all respondents believed that internet sources should be written in a separate list. A slightly higher percentage of these were from Group B, those with some higher education. Another fairly common belief, which was especially prevalent in the lower education-level group, is that references should be written in the order that they were used in the text. Can these results suggest that some students were taught these practices at their previous schools? Only 70% of respondents were aware that references must be cited in the main text, and a greater percentage of these were from Group B, as could be expected.

In conclusion, the respondents' self-assessments in the ability to cite sources were much lower than for avoiding plagiarism and for critically evaluating sources. Survey results confirm this lack of knowledge and show that many new students neither know what information in-text citations should include, nor understand their purpose or when they are necessary. These observations are similar to those by Andrew Y. Lee (2013), whose research also reveals students' lack of basic understanding of citations, especially with regard to citing electronic sources. The survey findings also correspond to those of John A. Kargbo (2010), who found that undergraduate students at a university in Sierra Leone lacked the skills necessary to write proper in-text citations and references.

6. Discussion

Results indicate that, although incoming students have considerable knowledge and skills, especially in evaluating sources of information, they still have much to learn about IL. They are relatively uninformed in the remaining two of the three topics that this survey addresses: avoiding plagiarism and citing sources of information. As a consequence, they do not yet possess the academic writing skills necessary for higher education. These findings should not be surprising, given the fairly modest outcome levels of knowledge, skills and general competences specified in the NQF (2011) for students upon the completion of upper secondary education. Upon receiving a bachelor's degree the levels specified in the NQF are much higher, and the library's instruction hopefully contributes to the students achieving these goals. This is a process of maturing and gaining writing experience as well.

The results are interesting in light of international statistics which show that Norwegian society in general is quite advanced, not only with respect to its education system, but also technologically, socially and economically (Central Intelligence Agency 2015; International Monetary Fund 2015). The United Nations Development Programme's *Human Development Index* (HDI) has ranked Norway as the number one country in the world overall for eleven of the past thirteen years (2014), based on statistics for education, life expectancy and income. The education statistics encompass literacy rates, population with at least some secondary education, gross enrollment ratios, primary school drop-out rates, education quality, and expenditures on education. Based on these statistics it can be assumed that the Norwegian educational system is a good one. With this in mind, could its population, after completing upper secondary school in one of the world's most advanced societies, not be expected to have higher IL skills when entering higher education? This is not an easy question to answer and illustrates the discrepancy between the potential of a country's educational system and its students' actual learning outcomes.

Hofmann, Myhr and Holm (2013) found that plagiarism and other forms of scientific dishonesty exist in higher education in Norway, despite the country's high ranking. With such a good position, should Norway expect more of students? Are the levels specified in NQF upon completion of upper secondary school too modest, given the potential of this rich, top-ranking country? Higher education at public institutions in Norway is free. Students pay no tuition, only a small administration fee each semester. Although the cost of education is borne by the government, students have associated expenses for books, food and lodging. In addition, admission to Norwegian university colleges is normally less competitive than to universities. These two circumstances in combination allow many people in Norway, with a variety of backgrounds and incomes, to study at a university college.

The diversity of backgrounds, in particular the level of prior education, can partially explain the variation in survey answers. The researchers found no significance, however, in other independent variables such as gender or age, with one exception: male students estimated their abilities as greater than female students in all three focus areas.

A weakness in this study is that the selection of respondents, with its over-representation of female and younger students, is not representative of the population of HUC's new undergraduate students. Despite this, the researchers believe that the results can still give a good indication of the situation at the institution, especially since no significant correlations between IL skills and gender or age in survey responses were found. Another source of error in this research is the result of a technical flaw in the online survey. In questions where respondents were to choose three of six alternatives, they were able to choose fewer than three, which denied the researchers a complete basis for analysing answers. In addition, this study could have been more pertinent internationally by utilising a questionnaire based on, or identical with, earlier questionnaires (for instance, Mittermeyer 2005), for better comparison of results.

7. Conclusions

The research results illustrate the varying degrees of proficiency of new undergraduate students at HUC before receiving the library's IL course. By illuminating students' specific strengths and weaknesses this study can help to improve library instruction. It is important to note that, although many new students struggle with concepts of IL, this does not imply that they are information illiterate. Salisbury and Karasmanis (2011 p. 44) also emphasise this important distinction in their article, and assert that most students need some training in an academic environment in order to become information literate.

Students' self-assessments of their abilities in two of the three focus areas of this study, critically evaluating sources and citing sources in the correct manner, correspond fairly well with survey results. It is shown, as many respondents suggested, that they are relatively skilled at evaluating sources, but quite poor at citing them. However, results indicate that many students over-estimate their abilities when it comes to avoiding plagiarism. Many do not consider it plagiarism to copy from

others without crediting the source, or to recycle the work of previous students, for example. These results give a clear indication of which areas the library must focus on in its IL instruction.

A follow-up study of respondents, comparing before-and-after library instruction, is an obvious topic for future research. How much did the students learn from the library's courses in IL, and by actually writing academic papers? Is our instruction effective?

In future studies it would also be interesting to compare students' levels of IL in Norway with that of students in other countries. If significant differences exist, which factors contribute to these variances?

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