BLENDED LEARNING IN INFORMATION LITERACY EDUCATION. HOW TO MAKE THE RESOURCES STRETCH?

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Abstract

Many small university libraries struggle with lack of resources for teaching information literacy (IL) skills to the students. There is not enough time or personnel to reach all the students in need of IL education. On the other hand, the faculties expect students to use high quality academic information sources while writing their papers. However, the teachers have neither time nor knowledge to instruct their students in information retrieval.

The paper describes one solution model to the problem. In the Lappeenranta University of Technology the library personnel have created an IL education package which requires few resources but works well in teaching university students. It can be tailored easily to meet the needs of different faculties. The package consists of a short pre-assessment, a lecture, and a practice session in a computer classroom. The formative pre-assessment consists of four questions and it is done in small groups by using a social media tool. It gives the teacher information about the students’ existing skills and knowledge. Based on that, the teacher tailors the lecture material package by focusing on the issues which are the most unfamiliar to the students. During the practice session, the teacher instructs the students on searching information on their own subjects. The required resources per group are one teacher who reads the pre-assessment answers and gives the lecture and one or two instructors in the computer class.

IL education is integrated in the curriculum. The faculty and the library cooperate closely in planning the sessions. The pre-assessment is linked with the subject of the course which motivates the students to complete it. When the students produce collective answers using social media, they learn from each other and the teacher has fewer papers to read.

Keywords: Blended learning, Higher education, Information literacy, Information literacy education, Undergraduate students
1. Introduction

Information literacy (IL) is determined as a university student's essential and basic ability to find, use, and evaluate the source material used in various assignments. The concept of IL is presented in the International IL competency standards approved by the Board of Directors of the Association of College and Research Libraries (ACRL) on January 18, 2000. (ACRL, 2000)

In most universities, IL education is given by librarians. The libraries either give the students their credits or the education is integrated in the faculties' curricula. The librarians have expertise in searching information but their training normally doesn't include pedagogical education. Therefore, many librarians have attended continuing education to qualify pedagogically to teach IL. They are also active in searching new ways to guide their students to better IL skills.

In order to meet the true needs of the students, it is important to know their existing IL skills. However, in many cases the librarian only meets the students in the classroom where a one-shot lecture is given. Dunoway and Orblych (Dunaway & Orblých, 2011) describe how a pre-assessment is used to find out about the graduate students’ existing information literacy skills in order to plan the content of the instruction session. The pre-assessment also provided the students with knowledge of their existing IL skills and thus increased their motivation to learning.

Many academic libraries implement online instruction to resolve the contradiction between the growing student population and the library’s limited teaching resources. A number of studies show that face-to-face instruction and online instruction are equally effective. Kraemer and her colleagues (Kraemer, Lombardo, & Lepkowski, 2007) found that contact with a librarian is an important component of students’ learning. According to their study a hybrid group attending both face-to-face and online instruction showed the greatest improvement in their skills, perhaps because the combination of instructional methods appeal to diverse learning styles.

2. Background

Lappeenranta University of Technology (LUT) has a long tradition of teaching information literacy to students of technology and economics. From 1977 to early 1990’s, students were offered a 16-hour-course in information sources and retrieval. Librarians and information specialists were responsible for teaching on the course and it was financed by the Faculty of Technology. Because of economic reasons, the course was removed from the curriculum and there was practically no IL education except of the freshmen's library tours until 1996. That year one of the professors at the Department of Business Administration (later LUT School of Business) asked the Library to give an IL session to his seminar group. Since then the IL education has gradually become a part of the majority of Bachelor’s seminars at LUT.

At present, IL education in LUT is carried out according to the national recommendations (Information Literacy Network of Finnish University Libraries, 2004) which are based on the International IL Competency Standards (ACRL, 2000). First-year students are introduced to library services and information sources on a guided tour followed by a classroom lecture and a web course. Bachelors-to-be are given a two-hour lecture on retrieving and using information and the basics of bibliometrics by a pedagogically qualified information specialist. After the lecture, the students can attend a two-hour hands-on training session given by one or two instructors. Masters-to-be and PhD students are taught the recent changes in the information sources of their fields of science.

Universities of applied sciences (polytechnics) where grounded at the beginning of 1990. Since then polytechnic libraries began to develop IL skills teaching in close cooperation with professional teachers and integrated this teaching in degree studies. Since 2011, when the Saimaa University of Applied Sciences (SUAS) moved to the same campus with LUT, the Lappeenranta Academic
Library has arranged library and information services also to SUAS. The library services include teaching information literacy skills.

In 2007 the AMKIT Consortium working group listed four IL core competencies in universities of applied sciences to be applied in planning IL teaching in different universities of applied sciences (UAS) and their training programs (AMKIT Consortium, 2007). The main goal is to teach the students to use the acquired information and apply it in their field of expertise during studies and later in working life.

Today, all IL education is integrated in the curricula and carried out in close cooperation with faculties. Each LUT faculty has its own Introduction to Studies course for first-year students and the IL education is a compulsory part of that course. Professors instructing Bachelor’s seminars request the IL sessions from the Library when the course begins and the timing and coverage are agreed at that point. Master’s and PhD students attend their own teaching sessions which are more occasional and arranged upon request. At SUAS, the teachers contact the Library when they want to order IL education to their student group. The SUAS procedure is not yet as well organized as it is at LUT but development work is going on. Regardless of the university, the Library does not charge for the education in case of undergraduate students.

The biggest problem in IL education is the shortage of the time resource in comparison to the abundance of things to be taught. According to interviewed students, learning to use the information sources of their own field of science is an essential part of studies. This education should be given in connection with the Bachelor’s seminar (3rd year) when the students do their first independent information retrievals. (Talikka, 2010.)

### 3. IL education for Bachelors at LUT

At LUT, the IL instructor of Bachelor’s seminars normally has two 45 minute lessons for teaching and another 2x45 minutes for hands-on training. To avoid spending time on teaching things already familiar to the students, the existing skills of the student group should be determined. Until 2010, the students’ previous knowledge was estimated only on the basis of the librarian’s previous experience and the infrequent feedback from the students. A questionnaire with enough but not too many tickable questions was presumed to be too laborious to make and use. Moreover, open questions would be needed anyway to find out about the topics which the students planned to write their theses about.

#### 3.1. Launching the formative pre-assessment

In 2010, a formative pre-assessment was first tested in order to find out about the existing IL skills of 12 Bachelor’s level students. The questions were much the same as in the Dunoway and Orbych pre-assessment. However, the assessment was not supposed to be an exercise but merely to give qualitative information about the students’ present knowledge and to introduce the students to information searching before the classroom session. The assessment consisted of four tasks. The students were asked to

1. find a scientific article on their seminar topic and show a link to it,
2. report how and where they found it,
3. tell about possible problems in information retrieval, and
4. explain why they think the retrieved article is scientific.

The reports were returned to the instructor by email. The answers gave good knowledge of what the students already know and what they still need to learn. This was so encouraging that the practice was to be continued.

The Bachelor’s seminars at LUT start in September and in January. Gradually the number of seminar groups using the pre-assessment grew and in January 2012 there were already 160 students sending their individual answers to the teacher that was responsible for the Bachelor’s seminar IL education. It became too laborious for one teacher to read them through. At that point
the idea to reduce the abundance of answers by using social media was tempting. There are examples of successful blended learning approaches to teach IL to large student audiences with limited library staff resource. One of them is presented by Fiona Ware in Health Information & Libraries Journal in 2011 (Ware, 2011). Another one is presented here.

There were many social media tools that could be used. One of them was a handy tool called EtherPad which is freely available for example via the VTT Technical Research Centre of Finland. EtherPad is a web-based collaborative real-time editor with the ability to display each author’s text in their own color. The authors can simultaneously edit a text document and use a chat box in the sidebar for communication. EtherPad was chosen to this project because it is easy to exploit and requires no administration.

In September 2012, the students were grouped into teams of 4-6. Groups were formed in different ways: alphabetically from the enrolled students’ lists, seating in the class, free grouping of friends. Some groups were formed by faculty teachers. Each group produced their collective answer. The group answers turned out to be about the same length as the individual answers. This reduced the teacher’s reading time to about 20 per cent compared to reading individual answers of the same number of students.

The fact that the students worked in groups was expected to benefit their learning process. According to previous research, for example as presented in a recent study published by Laal and Ghodsi, working together promotes learning (Laal & Ghodsi, 2012). Using the described pre-assessment method, the social media tool allows students to see each other’s texts and learn from them.

### 3.2. Findings from the answers

The number of student groups in this study was 30. When the described problems in group answers vs. in previously employed individual answers were compared it was noted that the same issues arose in both forms of answer. The distributions of mentioned problems in the individual answers have not been examined yet but the group answers are analyzed below.

In each group there were answers from one to six students. Each mentioned difficulty was counted only once regardless of the number of times it was mentioned in one collective answer. Table 1 shows the matters that students consider difficult in information searching.

<table>
<thead>
<tr>
<th>Difficulties in searching</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding search words</td>
<td>17</td>
</tr>
<tr>
<td>Limiting the search</td>
<td>17</td>
</tr>
<tr>
<td>Finding correct databases</td>
<td>5</td>
</tr>
<tr>
<td>Finding the right kind of information</td>
<td>4</td>
</tr>
<tr>
<td>Finding reliable scientific information</td>
<td>4</td>
</tr>
<tr>
<td>Don’t know what to search</td>
<td>2</td>
</tr>
<tr>
<td>Finding the full text</td>
<td>2</td>
</tr>
<tr>
<td>Using the English language</td>
<td>2</td>
</tr>
<tr>
<td>Scientific vocabulary</td>
<td>1</td>
</tr>
<tr>
<td>Different operation of databases</td>
<td>1</td>
</tr>
<tr>
<td>Using the Nelli portal</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 1.** Problems in information searching
According to the data, students most often experienced inadequacy in their searching skills. 56 per cent of the groups had problems in finding the right search words and/or in limiting the search so that they could filter the right and useful information out of a large number of references. Surprisingly, despite the fact that the Nelli (National Electronic Library Interface) search portal supports selecting the database, five of the student groups (17 per cent) reported that it was difficult. Other, less mentioned problems were difficulties in using different databases and the Nelli information retrieval portal.

Issues related to understanding what information searching means in general, caused also quite some problems. Finding the right kind of information and/or finding reliable scientific information were considered difficult in 13 per cent of the groups. Some groups reported problems in using the English language or the scientific language in general while a few groups described that they had difficulties in information retrieval because they did not yet have a clear picture of their topic.

<table>
<thead>
<tr>
<th>Criteria of a scientific article</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes references and in-text citations</td>
<td>18</td>
</tr>
<tr>
<td>The author is an expert in the discipline</td>
<td>13</td>
</tr>
<tr>
<td>The text deals with new scientific information</td>
<td>13</td>
</tr>
<tr>
<td>Published in a scientific journal</td>
<td>12</td>
</tr>
<tr>
<td>Scientific structure of the paper</td>
<td>8</td>
</tr>
<tr>
<td>Peer reviewed</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 2. The most common criteria of a scientific article in the students’ answers

Table 2 shows the students’ ideas of the distinctive features of a scientific article. In-text citations and a reference list were the most often (60 per cent) mentioned criteria of a scientific article. Almost half (43 per cent) of the answers also referred to the authors expertise and/or new scientific information as important criteria of a scientific article and 40 per cent instanced publishing in scientific journals as evidence for being an academic paper. Some students brought up the structure of the paper and the peer reviewing process as signs of scientific papers. Moreover, the facts that the text was targeted to professionals, other scientists cite the article, the vocabulary is scientific, the text includes tables and diagrams, and the text can be found in a database which refers to scientific information were considered as proofs of a scientific article.

Some groups took full advantage of the EtherPad tool by using the chat function which allows users to discuss aside from the writing process. Especially the question about how to determine a scientific article caused lots of chatting.

The students really seemed to learn from each other, as was expected to happen. The group answers showed that students tended to use the same information sources for finding scientific articles as others in the same group. It was also evident, that producing a collective answer supported both the activity and inactivity of the group. When some students in the group are active in writing, others will also write more. On the other hand, if there are lazy writers in the group the rest of the group tends to limit the length of their texts as well. It was also notable that in groups the students wrote much shorter texts compared to the answers were given individually.

The pre-assessment was not compulsory nor were the answers graded. This was not emphasized to the students but they realized it. Therefore, although most students answered the questions and participated in writing the group answer, some of them did not answer at all.
3.3. Implementing the results to teaching

The idea of the whole project was to offer the students IL education which fulfills their needs and to find a way to manage with limited teaching resources. Based on the pre-assessment results, a PowerPoint presentation with the idea of easy tailoring was created. The structure of the presentation follows the national IL curriculum recommendations with the addition of basic bibliometrics. The tailored part consists of search examples in the most important databases of the group’s discipline. Moreover, examples of how to find, use, and combine search words are tailored using vocabulary of the particular field of science.

Each student group is briefly interviewed after the lecture to find out if they had got answers to their questions and if they felt that information searching would be less difficult after the education. This data are not yet documented well enough to present any results. However, the overall impression is that students are excited about information searching and they all can name new skills which they have learned during the education.

The hands-on training session follows the classroom lecture within two weeks. By that time most students have decided about their topic. The size of the group varies from eight to fifteen. There are normally two information specialists instructing in the computer lab in order to give each student individual guidance during the session. The students have been very pleased to be able to discuss their own search plans and problems with an expert.

4. Future plans

In the future, it will be interesting to find out if there are any clear differences between disciplines in matters that the students find difficult in information retrieval. In this study there were students from the School of Business, the Faculty of Industrial Management, and the Faculty of Technology. The individual or group answers were not compared in this respect.

Another plan for future research is to study the possible changes in the types of information sources used in the students’ papers. In the past, the students have mainly used books as references. This may have changed as this new IL education method concentrates on electronic material.

In addition to LUT, Lappeenranta Academic Library also serves the Saimaa University of Applied Sciences (SUAS) which is a polytechnic. The described method could be used in the IL education of SUAS students. More discussion is needed to find out how it should be modified to meet the needs of the polytechnic’s students.

5. Discussion and conclusion

The introduced method is applicable also in polytechnics. However, the pre-assessment must to be tailored to fit the polytechnic level and its needs. The polytechnic pedagogy is based on teaching abilities and skills needed in occupational environments and in pragmatic development tasks. Therefore, the scientific point of view in the pre-assessment cannot be emphasized. It is evident that finding applied information is more difficult than finding scientific information. Thus the pre-assessment must be planned by taking this into account.

The teaching method presented in this paper has been created to meet the needs of a small library organization which needs to stretch its resources to teaching information literacy to a large number of students with only a few pedagogically qualified librarians in only a couple of hours. To succeed in joining their teaching resources, the library and the involved faculties must trust each other and have close cooperation in carrying out the IL education sessions. This pedagogical solution helps greatly in using the limited resources so that the teachers can concentrate on the essential topics.
References


