

# Evaluating an Information Literacy Assessment Instrument

## The Case of a Bachelor Course in Business Administration

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### **Abstract**

Google is both a bane and a boon. One of its greatest merits is that it empowers users, even with little IT and/or information retrieval skills, to find information easily on the Web. However, at the same time there is the danger that many users start believing that they are highly information literate. In order to avoid such wrong self-evaluations, multiple choice questionnaires could be a promising approach since they allow a quick (self-) assessment of the respective level of information literacy.

This article reports on a survey in which such an information literacy questionnaire was used to assess information literacy of students in a bachelor course providing an introduction to this topic. For this purpose, the test instrument which was developed at the University of Düsseldorf (Beutelspacher 2014a) was slightly adopted to the professional background of the students (business administration). In this article, we will report about the acceptance of this test instrument by the business administration students, about the experienced advantages, the perceived problem areas, and those information literacy aspects which cannot be covered by such an instrument in their opinion.

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## 1 Introduction to information literacy

For some years information literacy is seen more and more as an essential competence for the 21<sup>st</sup> century. Skills like searching, using, evaluating and creating information are required not only for university students or library users but for each participant in the knowledge society.

To unitize these skills of information literacy, numerous models and standards have been developed over the last decades. Probably the best known standards are the “Information Literacy Competency Standards for Higher Education” (American Library Association [ALA] 2000). They describe the specific skills an information literate university student should have. This includes the identification of needed information, the effective and efficient access to information and information systems, the evaluation and use of information as well as the understanding of economic, legal and social issues regarding information. These skills can be identified in a lot of models and standards. But due to the fast development of information and media technology, new skills need to be taken into consideration. For example, the role of users in the Internet has changed a lot. Whereas previously the user participated passively, he now steps out of that role and becomes an active participant of the web, a so-called “prosumer” (Toffler 1980). This kind of information creation and dissemination requires new skills relating to generating and indexing information, but also knowledge about legal aspects and ethics, like ensuring privacy or data security (Gust von Loh & Stock 2013). As a consequence, information literacy requirements are not static but need an adaption from time to time.

## 2 Assessing information literacy

When choosing a suitable method for assessing information literacy, the implementing institutions should be aware of the exact target, the subsequent

use of the data and the target group of the survey. As can be read in the literature, the use of Multiple Choice (MC) tests is a very popular method for assessing information or media literacy. A well-known example for such a test is the “Information Literacy Test” developed at James Madison University (Cameron, Wise & Lottridge 2007). Here constant answers are suggested, from which the subject has to select one or more.

A clear advantage of this test method is the objectivity. Each respondent gets the same questions and answers. For each question there are clearly right and clearly wrong answers, regardless of the test administrators. Moreover, the results can be compared very well among institutions or individuals.

But especially in the area of information usage or similar issues, the disadvantage of this method becomes clear: “Yet such tests may not well-suited to the task of evaluating higher-order skills, such as a student’s ability to integrate new information” (Scharf et al. 2007: 462). We can therefore only assess the knowledge of the test subjects but no actual performance. In addition, there is always the risk of falsification due to random checking the right answers by the subjects (Bühner 2010).

Some institutions try to minimize the disadvantages mentioned by using rubrics instead of multiple-choice tests (Oakleaf 2009). Rubrics provide teachers or test users with the ability to assess results based on specific criteria. They describe the performance of a specific task, a product or a service and evaluate them. Using rubrics for information literacy assessment brings some benefits for teachers and test users as well. Since the evaluation is not only done by grades but through performance descriptions, learners can understand where they might have problems. The disadvantages of rubrics are also obvious: The results of the tasks are rated subjectively, in spite of predetermined evaluation criteria. The analysis is thus not completely objective, and the comparison between test results may suffer. This manual rating, however, brings another problem with it. The analysis is very time consuming and cannot be automatized. Also, the construction of such a rubric is very time-consuming and costly.

Another form of performance tests are the real-world scenarios. Here the subject is shown a scenario (for example a research task), which they need to solve in a given time. In most cases, the test is automatically rated based on clicked links, keywords used or selected literature. A good example for this assessment method is the ETS iSkills (Katz 2007). An advantage of this method is especially the realistic setting. Due to the scenario-based tasks, areas such as critical thinking or the development of problem-solving strate-

gies can be tested. A disadvantage is the high effort in creating the different tasks: The scenarios and algorithms for rating need to be implemented and the performance of the tests need to be ensured.

### **3 Indicators and information literacy questionnaire**

The information literacy assessment instrument which was developed at the University of Düsseldorf (Beutelspacher 2014a) was partly adapted for its use at the Faculty of Social Sciences and Economics at the University of Graz. Most of the questions were taken from the initial questionnaire, a few questions were transformed to the business administration context, and several questions were omitted. Finally, the resulting information literacy questionnaire consisted of 25 questions. The adopted questionnaire can be downloaded from the Website of the Institute of Information Science and Information Systems (INWI 2015).

The initial questionnaire was developed by referring to different skills of information literacy, which were selected from various standards, models and research literature (Beutelspacher 2014b). The resulting 62 indicators were divided into seven areas:

1. Identifying information need
2. Searching and finding information
3. Evaluating information
4. Using information
5. Organizing information
6. Communicating and publishing information
7. Responsible handling of information.

To make sure that the initial questionnaire covers all aspects of information literacy, the questions were assigned to the areas and indicators. However, we are aware that it is not possible to assess all indicators with such a multiple-choice test since only the knowledge and not the performance can be tested (Beutelspacher 2014c).

## 4 Case study

There is only one elective course (called “Information Science”) in the bachelor program on business administration at the University of Graz which is primarily devoted to information literacy. The main objective of this course is to provide students with basics in information literacy with regards to

- an increased knowledge about important information sources;
- more efficient information seeking skills;
- information evaluation (UGO 2015).

For this purpose, an introduction to information literacy is given in the first part of the course which ends with a written exam. Usually, the students have to answer various questions and perform several small exercises (for instance, calculating the impact factor for a journal, formulating a Boolean search or constructing a small Thesaurus out of a few words). In the second part of the course, the students have to explore a search engine or a database on their own, write a manual (term paper) and present the search engine/database to the other students.

This semester, the information literacy questionnaire was used instead of the usual written exam. However, the students did not know this before. In general, the students answered most questions successfully. Yet, the relatively small difference between the best (26 points) and the worst student (20 points) was not expected. The mean score amounted to 23.6 points, the median to 24 points. Another interesting result was that the best student missed the maximum score by 3 points. This means that three out of the 25 questions were answered wrongly. This might be due to the fact that there were a few single/multiple choice questions which left some room for interpretation.

## 5 Evaluation of information literacy questionnaire

After the students had completed the information literacy questionnaire, they received another questionnaire in which they were asked for their opinion on the information literacy test instrument. Contrary to the information literacy questionnaire, the second survey was anonymous. The questionnaire con-

sisted of 2 closed-ended and 5 open-ended questions. The answers to the open-ended questions were categorized in a bottom-up approach, i.e. the statements to questions 2 to 4 are the result of categorizing the answers of the students to larger “units”.

### 5.1 Appreciation and length of used questionnaire

Figure 1 shows the results for question 1, in which the students had to assess their appreciation of the information literacy questionnaire on a 5 point scale (1 = very reasonable, 5 = not at all reasonable). As can be seen, 18 out of 27 students judged the test instrument to be “reasonable”.

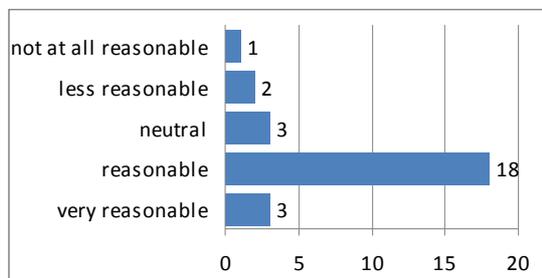


Figure 1. Acceptance/appreciation of information literacy questionnaire by students (n = 27)

Most students completed the information literacy questionnaire in 20 minutes. More than 80% found the length of the questionnaire appropriate. However, the 25 questions appeared too little to assess the level of information literacy to 4 students (see fig. 2). This could be an indication that such a questionnaire could be slightly extended.

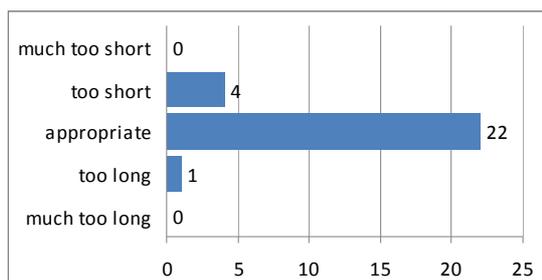


Figure 2. Length of information literacy questionnaire (n = 27)

## 5.2 Advantages

In question 2, the students were asked for the advantages of such an information literacy questionnaire. 8 mentions referred to the case that such a questionnaire allows an “efficient assessment of information literacy”. Also in 8 statements the students indicated that such an assessment instrument allows to give a “good overview about the level of information literacy”. Accordingly, such a questionnaire can be used for “self-assessment” (3 mentions). It was not expected that as much as 7 students indicated the “comparability of the test results”. Closely related are arguments like “assessment of big samples possible” (3 mentions), “objectivity” (1 mention) and “possibility to identify correlations with other variables” (1 mention). Since the questionnaire was one part of the final marking of the students, two arguments with two mentions each were given in this context: “more convenient exam situation” and “easier to pass exam”. Two of the arguments given above (comparability and objectivity) were already mentioned before.

## 5.3 Problem areas

One of the two most frequently arguments seen by the students was that it is “not possible to assess information literacy more comprehensively” (10 mentions) – see also next subsection. This means that higher-order skills cannot be tested (Scharf 2007 et al.: 462). One reason for this is that probands can “only select between closed-ended questions” (3 mentions). Creating “questions the fixed response options of which are unambiguous to all respondents” received also 10 mentions. Since business administration students must pass several (electronic) multiple choice exams due to the great number of students, the participants in this survey have some kind of “expert status” in this regard. This was also confirmed through a few critical comments: “danger that questions are too specific” (2 mentions), “students must be familiar with technical terms (for instance, SWOT analysis) to be able to give correct answers” (2 mentions) and “fixed response options could possibly irritate students” (1 mention). Third most indications referred to the risk of distortion (Bühner 2010) because it is possible to “guess the right answer” (6 mentions) which would not be possible for open-ended questions. This could partly explain the positive feedback of the students with regards to the exam (see sub-section Advantages) and, finally, why all students received at

least two thirds of the total score attainable. Finally, one student indicated that it is generally “difficult to measure information literacy”.

#### **5.4 Areas which cannot be assessed**

Question 4 followed up the previous question and asked for areas which cannot be assessed by such an information literacy survey. In the previous subsection it was already revealed that certain aspects of information literacy cannot be tested. This concerns in particular “situations in which information literacy must be applied to real-world problems”. This aspect was mentioned by 22 students out of which 8 indicated that performing a good search, for instance, for a bachelor thesis, cannot be evaluated by an information literacy questionnaire. Another student wrote that an ethical use of information can only be evaluated in reality. 2 students noted, also in line with the results to question 3, that it is “not possible to assess information literacy on a more detailed level”.

#### **5.5 Irritating and needless questions**

In question 5 the students were asked if there were any information literacy questions unclear to them. For 12 students all questions were clear. However, not less than 10 students criticized the question where they had to select one search term in order to find literature on SWOT (strength – weaknesses – opportunities – threats) analysis. This question was wrongly indicated as a single choice question though four correct closed-ended questions were listed. Four students noticed that for one question it was necessary to know the term “acquisition” to be able to give the right answer.

For 18 students all questions were appropriate for assessing information literacy (question 6). 4 students indicated that professional terms (SWOT, change management) should not be included in such a questionnaire because they are not directly related to information literacy and the relevant questions cannot possibly be answered without knowing them. 3 respondents noticed that personal data (smartphone use, use of search engines, etc.) is not directly related to information literacy and, therefore, should be omitted. For one student the question where the respondents had to estimate their own level of information literacy on a five point scale did not make sense.

## 6 Conclusions

This case study aimed at investigating the value of a multiple-choice questionnaire to determine the level of information literacy. It turned out that 18 out of 27 students found the information literacy questionnaire reasonable for such a purpose. However, it was also elaborated that it is not possible to assess information literacy more comprehensively with such a questionnaire. This concerns in particular situations in which information literacy must be applied to real-world problems like, for instance, the search of relevant and high quality literature for a master thesis. While it is not possible to measure the performance of the information literate subject solely by the means of a multiple-choice questionnaire, the test instrument was considered to be an efficient and convenient knowledge assessment tool and – furthermore, yielding results with high comparability – even for big samples. The risk of falsification due to subjects randomly guessing the answers to self-contained questions was discussed as well as the difficulties of questions which leave room for interpretation or which are too specific.

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## Appendix

### Questions used for evaluating the information literacy questionnaire

1. How do you evaluate the used questionnaire for the purpose of assessing information literacy:  
o very reasonable o reasonable o neutral o not reasonable o not at all reasonable
2. Which advantages does such an information literacy questionnaire have in your opinion?
3. Which problem areas are related to such a questionnaire?
4. Which areas of information literacy cannot be evaluated with it in your opinion?
5. Were there any unclear questions? Which ones?
6. Were there any needless questions? Which ones?
7. How appropriate was the length of the information literacy questionnaire:  
o much too long o too long o appropriate o too short o much too short