The Role of University of Maribor Library in Library Information Literacy Training of High School Students

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This article discusses the role of the University of Maribor Library in the process of library information literacy training for high school students of Maribor, Slovenia. Based on the annual education plan Library Information Literacy Training for High School Students at the University of Maribor Library (UKM) in the 2009/2010 academic year, in this paper, we describe that development and content of education modules offered to high school students by the University of Maribor Library. We then present the students’ evaluation of the quality of the modules and the level of fulfilled expectations of the students. The questionnaire results led to the conclusion that the higher the percentage of students who regard the education modules (classes) as beneficial influence on their success in further education and the higher the level of their fulfilled expectations, the more important the role of the UKM is in the process of information literacy training of the high school students. The research results led to the conclusion that the University of Maribor Library, with minor adjustments of the modules, can competently cooperate in the process of information literacy training of high school students and, therefore, prepare future students for the use of the library services as university student and contribute to the processes of lifelong education and personal growth of the participants.

Introduction

University of Maribor Library was established to meet the needs of the users in the scientific-research and pedagogical sphere at the university level of education (Act on Library Services, 2001). Rapid social and technological changes, developments in knowledge and the information society, which demands lifelong learning, are changing the role of libraries and the method of library user education.

In Slovenia, systematic information literacy training for students at primary and secondary education level is organized. At primary education level, the subject Library Information Knowledge (KIZ) and the optional subject Information Literacy Training are carried out as a 1-year program in the third cycle of the 9-year primary school and offers a
continuation, enhancement and development of the goals and content of the KIZ curriculum (Sušec 2001) that is implemented in the Primary School Curriculum.

Secondary education at general, classical, and technical gymnasiums offers a further 15 hours of training in Library Information Knowledge that is carried out during the 4-year period of study. KIZ was included in the high school curriculum in 1998 and, according to Novljan (2010), offers sensibly organized contents within the scope of organization, availability and usefulness of information for specific purposes. Students of the vocational-technical upper secondary education participate in the KIZ modules (classes) by visiting the University of Maribor Library in a Study Library tour and through their Trips to Education Institutions curriculum. Lower vocational education students visit the University of Maribor Library within the scope of Trips to Education Institutions; vocational upper secondary education students as part of their compulsory Study Library Tour and the Seminar Paper Writing curriculum.

Carrying out library information knowledge training on school premises has some limitations (e.g., schools have no access to e-books or e-magazines and limited special collections and equipment), therefore, it is sensible to hold at least part of the library information knowledge program at the University of Maribor Library.

The purpose of school libraries’ services and library information programs is to teach students how to read and use books and to understand the informational framework of research. The curriculum for general, classical and technical gymnasiums states that schools (not school libraries) should enable learning by teaching with flexible adaptation to the needs of an individual and a group. The development of teaching methods, interculturality, goals of individual subjects, management of information, acquiring knowledge of ICT, development of reading culture, cooperation with parents and other institutions outside the school environment (Kurikul, 2008) is also a responsibility of schools.

However, according to Filo (1991, p. 17-30), even the most developed elementary and secondary education programs cannot fulfil all of their goals without the aid of programs offered by various types of libraries. At the library, students bolster the education process and, with new information, further develop their existing knowledge. In this context, through library information and other resources, university libraries are able to encourage the curiosity of high school students and at the same time develop their research and work strategies in regard to working with modern technology.

The inclusion of university libraries in the process of information literacy training for high school students provides a sound basis and solid preparation for their further education and lifelong learning. Therefore, the UKM prepared an education program for high school students based on the Library Information Knowledge curriculum for general, classical and technical gymnasiums, which also includes activity and long-term experience in education of the UKM and its cooperation with school libraries and teachers.

In this paper, we describe the empirical research that was carried out to assess the effectiveness of the education program in two segments: 1) assessment of the quality of the modules and 2) assessment of the usefulness of the contents of the modules. In the framework of the first segment, the degree of students’ satisfaction with the structure of the modules, appropriateness of the complexity level of the modules and students’ evaluation of the quality of instruction were assessed. In the framework of the second segment, an analysis of students’
assessment of the usefulness of module content for their further education was carried out. From the results, we conclude that there are some possible suggestions for adjusting the modules and guidelines for planning the information literacy training process for high school student at the UKM are given. This study may provide important insight into how school libraries can work more closely with university libraries to provide students with optimal information literacy training.

**Literature Foundation and Study Context**

The Self-evaluation Report of the University of Maribor Library for the School Year 2008/2009 (2010) stated that the University of Maribor Library is a learning centre with collections and services that serve the processes of education, teaching and research at the University of Maribor and that it also provides personal intellectual and professional growth and the lifelong education to users. In this context, the information literacy programs of the UKM are fundamental for achieving educational goals. The above-mentioned leads to the conclusion that the University of Maribor Library possesses the knowledge, capabilities and, according to legislation on libraries (Act on Library Services, 2001), must also embrace the mission to participate in the education of their users, on tertiary as well as on secondary level of education.

**Library Cooperation and Developing Key Competences of High School Students**

If libraries wish to successfully complement and enrich the education process, they must increase the number of library users and enable a variety of learning forms. Libraries can most successfully complement formal and informal lifelong learning by turning themselves into education centres for the wider population in partnership with political bodies, local educational institutions and non-profit organizations (Stanley, 2010, p. 57, 90) and by promoting their activity (Mardis, 2008). By cooperating in the process of information literacy training for high school students, the UKM as well as school libraries are integrated in the wider social environment. The cooperation of high school libraries with the University of Maribor Library carries an immense importance from the point of view of the information needs of students in the framework of the school curriculum, as well as educating future active users of higher education and university libraries. Filo, (1993), Steinbuch, (1997, p. 55) and Ferlež (2000) all emphasize the importance of university libraries in meeting the information needs of secondary users.

Cooperation of two types of libraries can be based on school curriculum, interest for research and scientific work of the young population, or sharing methods of acquiring information, library services, and modern technology. Bojana Boh and Vesna Ferk Savec (2009) stressed the potential benefits of cooperation between various library types in their examinations of information literacy levels of new university students. They discovered that the students possessed different levels of prior-knowledge, computer technology skills and information literacy knowledge, and method depending upon their prior exposure to different kinds of libraries. Furthermore, research by the Slovenian Science Foundation (2010) revealed Slovenian high school students are typical representatives of the “internet generation” in the field of science, as 93% of them searched for science information on internet. More than a half of the study participants occasionally read papers or magazines and a third used scientific and
The study also reported that the percentage of students who visited libraries and other education institutions was low and that many school library resources and literature were underused. While a possible explanation is a lack of promotion of library services, it may indicate lack of information skills of high school students. The UKM presupposes that its inclusion in the process of information literacy training for high school students would promote library services and activity at all levels, as well as develop students’ key competences for work with information sources.

During the KIZ program, high school students develop key competences necessary for survival in modern society. One of these skills is information literacy which is defined by Dolgan Petrič (2012) and by Chip (2005) as to know when and why we need information, where to find it, how to assess, use and transmit it ethically. School libraries are involved in developing key competences with its services and by implementing the KIZ program. The UKM, according to its mission, services and activities, personnel, and high technology, can assist high school students in developing key competences such as:

• communication competence in mother and foreign language;
• basic scientific and technological competence;
• digital literacy;
• learning to learn, lifelong learning;
• social and civic awareness;
• sense of initiative and entrepreneurship; and
• cultural awareness and expression.

In the framework of information literacy training modules offered to high school students by the UKM, they discover the usability of the library by gaining knowledge and skills for independent material search, assessment and usage of information according to model Big 6 which will be presented in the following paragraph.

**Applicability of the Information Literacy Training Model of Skills**
Eisenberg and Berkowitz developed the Big 6 Model for developing competences regarding the work with information in a systematic process of solving an informational problem. The six big skills are as follows:

1. Defining the problem (defining the information problem and key information required for resolving the problem);
2. Information search strategy (defining possible information sources, assessment and selection of the most appropriate sources);
3. Location and accessibility of the sources (defining the location of the sources and find the appropriate information);
4. Use of information (reading, listening and reviewing the information in the source and writing the relevant information);
5. Synthesis (organization of information from different sources and presentation of results);
6. Evaluation (evaluation of the efficiency of the result and solution of the problem)

The Big 6 is based on critical thinking and enables a general information problem solving approach (Herring, 2011, p. 64-65). It is adjustable to different situations and its order can be
altered. Additionally, it encourages different individual problem solving styles and offers different paths to goals (Godec, Jug in Kotar 2006; Eisenberg, 2012; Dolgan Petrič, 2012). Due to the fact that the Big 6 is widely applicable, usable in all learning situations, and very flexible, it was included in the University of Maribor information literacy training for high school students as a basis for a systematic problem solving.

**The University of Maribor Library Information Training Modules**

High students can learn how to efficiently search for information, select, evaluate and use information, if we show them how we do it (Fisher, Frey, & Lapp, 2009). Each of our modules begins with the librarian modelling the activity, then teaching it to students in segments. Finally, students apply what they’ve seen and practiced with assistance to their own information problem. By simulating, a librarian demonstrates how to define a problem, select appropriate sources and support it with arguments, use effective search strategies, locate the sources, review the sources and find relevant information, organize and present the information. The procedure is then repeated by students in the scope of first and second module. Then, in the third module, the students follow the procedure when solving their own problems in the form of seminar, matura or research paper.

**Module 1. Library Information Training for 1st and 2nd Year High School Students**

According to Alvite and Barrionuevo (2011), the needs of library users who get in touch with the library for the first time are general. Therefore, we designed the first module with the aim to present the basic services, activity and facilities of the library by using the web page of the UKM and by touring the library. Users also learn to use the online catalogue.

In order to keep students focused on their prior knowledge and their progress through the modules, we use K-W-L: What we know? What we want to know? What we learned? (Ogle, 1986; Pečjak in Gradišar, 2002). K-W-L is carried out by writing answers to above-mentioned question in three columns. The K column enables a quick review of the prior-knowledge through brainstorming whereby students say everything they know about a certain subject. It is usually used at the beginning of the lessons, because discussion encourages further thinking processes of individuals and enables them to see new relations among different information. In the W column, students describe the problem for which they are seeking information, the questions they are asking, and the kinds of information they might find useful to solve their problem. The L column, students provide information about the effectiveness of the module. High school students complete this column in the third part of the segment evaluation of achieved knowledge and skills.

**Module 2. Information Literacy Training for 3rd and 4th Year High School Students**

Module 2 is based on a simulated problem appropriate to students’ curriculum and interests that enables students to discover the reference and other literature. By exploring this example problem, students become acquainted with the special collections of the UKM and with more demanding procedures of library research. The students develop a strategy for solving the problem by applying the Big 6 Model and information literacy skills. They get acquainted with and use the modern IKT technology during the process of resolving the problem.
Module 3. Seminar, Research or Matura Paper Writing

The final module, Module 3, is a resource and literature search skills workshop for the purposes of seminar, research or matura paper writing. It represents a new, enhanced form of organized education for high school students that includes an increased level of inclusion of libraries in the process of preparing students for university programs. In the high school curriculum, students are introduced to theoretical basics of writing a seminar, research or matura paper. At the UKM, students familiarize themselves with the research and literature aspects of the Big 6 process by defining possible information sources, locating, evaluating, and selecting the most appropriate sources; analyzing sources and noting relevant information; synthesizing information and presenting of the results; and evaluation the efficacy of their research experiences. Emphasis is placed on sources students cannot access from school and general periodical databases such as EBSCOhost, SpringerLink, Wiley …

Methodology

Some libraries include online “packages for information literacy” in their education programs and, thereby, help users to develop information search skills, others also include guidance on library and Internet use. The most successful education programs are programs, which include problem-solving exercises, emphasise the importance and value of the subject taught and encourage the “learning through practical work” approach. The UKM process has evolved over time to meet the needs of students in the University of Maribor area. In an effort to evaluate UKM’s modules, we examined data were carried out in the last three academic years (from 2008/2009 to 2010/2011).

The intent of the research was to evaluate students’ perceptions of the modules’ usefulness by examining:

1. Level of appropriateness of the module structure.
2. Appropriate complexity level of the presentation.
3. High school students’ evaluation of the quality of lectures.
4. High school students’ evaluation of the usefulness of the module contents.

Each group of students completed questionnaire about their experiences with the three modules. Differences according to school and year of study were analysed and are presented here.

Description of the Sample

The research is based on a convenience (non-random) sample of 1st, 2nd, 3rd and 4th year high school students at Prva gimnazija Maribor, Škofijska gimnazija Maribor, Srednja šola Slovenska Bistrica - general gymnasium, Srednja šola Slovenska Bistrica, general gymnasium – sports department, Dvojezična srednja šola Lendava - gymnasium, Srednja gradbena šola and gimnazija Maribor and Tehniški šolski center Maribor (TŠC) – technical upper secondary education, who participated in the educational programme at UKM in the school year 2009/2010. There were 332 questionnaires submitted and 305 returned. Inferential statistics based on a simple random sample drawn from hypothetical population were used.
Table 1 illustrates survey respondents by type of school.

<table>
<thead>
<tr>
<th>School</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gymnasiums</td>
<td>205</td>
<td>67.2</td>
</tr>
<tr>
<td>Technical Gymnasiums/ Technical Upper Secondary Education</td>
<td>66</td>
<td>21.6</td>
</tr>
<tr>
<td>Vocational Upper Secondary Education</td>
<td>34</td>
<td>11.1</td>
</tr>
<tr>
<td>Total</td>
<td>305</td>
<td>100.0</td>
</tr>
</tbody>
</table>

As the table shows, the sample includes 205 students of general (gymnasium) upper secondary education, which represent 67.2% of the entire sample, the rest are students of technical upper secondary education and vocational upper secondary education. The reason for the high percentage of gymnasium students involved in the sample is their curriculum, which presupposes more school hours for attending the education modules than curriculums of other programs.

Table 2 shows the number of survey respondents by year in school.

<table>
<thead>
<tr>
<th>Year in School</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>66</td>
<td>21.6</td>
</tr>
<tr>
<td>Second</td>
<td>33</td>
<td>10.8</td>
</tr>
<tr>
<td>Third</td>
<td>163</td>
<td>53.4</td>
</tr>
<tr>
<td>Fourth</td>
<td>43</td>
<td>14.1</td>
</tr>
<tr>
<td>Total</td>
<td>305</td>
<td>100.0</td>
</tr>
</tbody>
</table>

As seen in Table 2, the education modules were attended mostly by third year students (n=163). In the third year of study, students are being acquainted with the demands of matura paper preparation.

Table 3 illustrates the sample by indicating, by school type, whether students have a library membership.

<table>
<thead>
<tr>
<th>Library Membership</th>
<th>Type Of Educational Institution</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Upper Secondary Education/ Gymnasium</td>
<td>46 (22.4%)</td>
<td>159 (77.6%)</td>
<td>205 (100%)</td>
</tr>
<tr>
<td></td>
<td>Technical Gymnasium/ Technical Upper Secondary Education</td>
<td>4 (6.1%)</td>
<td>62 (93.9%)</td>
<td>66 (100%)</td>
</tr>
<tr>
<td></td>
<td>Vocational Upper Secondary Education</td>
<td>2 (5.9%)</td>
<td>32 (94.1%)</td>
<td>34 (100%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>52 (17%)</td>
<td>253 (83%)</td>
<td>305 (100%)</td>
</tr>
</tbody>
</table>

Table 3 indicates that the vast majority of students (253 or 83%) are not library members. General upper secondary education (gymnasium) students constitute the highest percentage of students with library membership. High percentage of third year students with library
membership indicates that education, divided into stages, promotes the awareness of library services among high school students (Filo, 1993).

**Table 4. Students with a Library Membership by Year in School**

<table>
<thead>
<tr>
<th>Library Membership</th>
<th>Year in School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
<td>Second</td>
</tr>
<tr>
<td>Yes</td>
<td>2 (3%)</td>
<td>14 (42.4%)</td>
</tr>
<tr>
<td>No</td>
<td>64 (97%)</td>
<td>19 (57.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>66 (100%)</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>

Table 4 shows that second year students have a high percentage of library memberships (42.4%). Again, the differences are due to the process of preparation for matura, which takes place in the third year of school study.

**Description of the Instrument**

The questionnaire was divided into three sections and included closed-ended and open-ended questions. The first survey section introduced the purpose of the survey and include general questions about the students and their education (school, year of study). The second part of the survey contained questions about the quality of modules and the usefulness of information acquired in libraries for further education of the students. Questions in these two sections were closed-ended. The questions were funnel-shaped, moving from general to more specific questions. This kind of arrangement of questions was used to avoid the possibility that the more specific questions would be answered too quickly and without due consideration.

**Validity, Reliability, and Objectivity**

The validity of the questionnaire was ensured by the preliminary test which showed that it provides required data.

The questionnaire was pilot tested on the preliminary research sample of 62 students who were not included in the final research. We then reviewed the questionnaire and created the final version. The survey was conducted in the school year 2009/2010 in the Breda Filo Classroom where a part of the training also took place. The questionnaires were self-administered.

Based on the preliminary test, the questionnaire was improved (some questions were eliminated, some were expressed more specifically). The reliability characteristics of the questionnaire were ensured by the exact nature of the questionnaire instructions and the specific and unambiguous questions.

Closed-ended questions enabled objective answer analysis (without the subjective rendering of information). The objectivity of the conduction phase is based on self-administered questionnaires.
**Data Analysis**

SPSS for Windows was used for the statistical processing of the data, while in order to assess the independence of the two variables, frequency tables for absolute (N) and percentage (f%) frequencies and an $\chi^2$-test were applied.

**Results**

This section presents the results of analyses of the survey questions regarding the assessment of the quality of modules and the questions regarding the applicability of module contents. The differences according to school and year of education are also assessed.

**Quality of the Implemented Modules**

Questions in this section pertained to high school students' assessment of implemented content and the scope of instruction; complexity level of the contents of the module; and quality of instruction and presentation. This section of the questionnaire also included questions about that extent to which students were satisfied with the structure of the module.

As Table 5 shows, most students (n=194) reported that the modules suited them. Students in all types of schools reported this perception most frequently.

**Table 5. Satisfaction with Module Structure by Type of School (N=305)**

<table>
<thead>
<tr>
<th>Degree Of Satisfaction</th>
<th>General Upper Secondary Education/Gymnasium</th>
<th>Technical Upper Secondary Education/Gymnasium</th>
<th>Vocational Upper Secondary Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfectly Suits Me</td>
<td>39 (19%)</td>
<td>14 (21.2%)</td>
<td>10 (29.4%)</td>
<td>63 (20.7%)</td>
</tr>
<tr>
<td>Suits Me</td>
<td>131 (63.9%)</td>
<td>43 (65.2%)</td>
<td>20 (58.8%)</td>
<td>194 (63.6%)</td>
</tr>
<tr>
<td>Hardly Suits Me</td>
<td>35 (17.1%)</td>
<td>9 (13.6%)</td>
<td>4 (11.8%)</td>
<td>48 (15.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>205 (100%)</td>
<td>66 (100%)</td>
<td>34 (100%)</td>
<td>305 (100%)</td>
</tr>
</tbody>
</table>

$\chi^2 = 2.444; \ p = 0.655$

Table 5 shows that there was no statistically significant difference ($p>0.05$) between assessments of appropriateness of module structures collected from students of different schools. The module structure was satisfactory for most of the students. Table 6 illustrates that students in all years of study also felt that the modules suited them, with Third Year students reporting that the modules suited them most often (n=113 or 69.3%).

**Table 6: Satisfaction with Module Structure by Year in School (N=305)**

<table>
<thead>
<tr>
<th>Degree Of Satisfaction</th>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfectly Suits Me</td>
<td>12 (18.2%)</td>
<td>4 (12.1%)</td>
<td>31 (19%)</td>
<td>16 (37.2%)</td>
<td>63 (20.7%)</td>
</tr>
<tr>
<td>Suits Me</td>
<td>40 (60.6%)</td>
<td>18 (54.5%)</td>
<td>113 (69.3%)</td>
<td>23 (53.5%)</td>
<td>194 (63.6%)</td>
</tr>
<tr>
<td>Hardly Suits Me</td>
<td>14 (21.2%)</td>
<td>11 (33.3%)</td>
<td>19 (11.7%)</td>
<td>4 (9.3%)</td>
<td>48 (15.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>66 (100%)</td>
<td>33 (100%)</td>
<td>163 (100%)</td>
<td>43 (100%)</td>
<td>305 (100%)</td>
</tr>
</tbody>
</table>

$\chi^2 = 19.930; \ p = 0.003$

Table 6 also shows that there was a statistically significant difference $\chi^2 = 19.930; (p = 0.003)$ between the assessments of appropriateness of module structures collected from students of different years of study. The majority of the third year students stated that the structure of the
modules “hardly suits me.” These were the students of Dvojezična srednja šola in Gimnazija Lendava who participated in a more general Module 1.

**Appropriateness of complexity level of instruction**

In this section, we present analyses of the questions that asked students to note their perception of the modules’ complexity. Table 7 reports students’ perceptions by school type. The majority of students (280 or 91.8%) perceived the module complexity to be appropriate.

**Table 7. Students’ Perceived Complexity Level of Modules by School Type (N=305)**

<table>
<thead>
<tr>
<th>Perceived Complexity Level</th>
<th>Type Of Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Upper Secondary Education/Gymnasium</td>
<td></td>
</tr>
<tr>
<td>Too Low</td>
<td>8 (3.9%)</td>
<td>9 (3%)</td>
</tr>
<tr>
<td>Appropriate</td>
<td>185 (90.2%)</td>
<td>280 (91.8%)</td>
</tr>
<tr>
<td>Too High</td>
<td>12 (5.9%)</td>
<td>16 (5.2%)</td>
</tr>
<tr>
<td></td>
<td>205 (100%)</td>
<td>305 (100%)</td>
</tr>
</tbody>
</table>

Table 7 shows that there was no statistically significant difference ($\chi^2=3.052; p=0.549$) in satisfaction with the complexity level of instruction in regard to school. The complexity level of the module was appropriate for most of the students. Table 8 illustrates students’ perceptions of complexity by year in school. Again, students in all years perceived the module complexity to be appropriate.

**Table 8. Students’ Perceived Complexity Level of Modules by Year in School (N=305)**

<table>
<thead>
<tr>
<th>Perceived Complexity Level</th>
<th>Year In School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
<td>Second</td>
</tr>
<tr>
<td>Too Low</td>
<td>2 (3%)</td>
<td>3 (9.1%)</td>
</tr>
<tr>
<td>Appropriate</td>
<td>56 (84.8%)</td>
<td>28 (84.8%)</td>
</tr>
<tr>
<td>Too High</td>
<td>8 (12.1%)</td>
<td>2 (6.1%)</td>
</tr>
<tr>
<td></td>
<td>66 (100%)</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>

The $\chi^2$ test ($\chi^2=14.835$ in $p=0.022$) indicates that there was a statistically significant difference between different years of study according to their satisfaction with the complexity level of instruction. The satisfaction level increased with year of study. High school students of 3rd and 4th year of study find the level of complexity of the modules appropriate more often than the students of 1st and 2nd year of study. The highest percentage of the 1st year students (12.1%) which find the level of complexity too high must be pointed out. This could be due to the fact that in the 1st year of study, groups are more heterogeneous according to prior-knowledge of KIZ. On the other hand, in the 3rd and 4th year of study, differences are becoming smaller because of the unified high school education system.

**Students’ Evaluation of the Quality of Instruction.**

In this section, we present analyses of the questions that pertained to the questions. Table 9 presents, by type of school, students’ perceptions of the quality of instruction. Most students found the instruction quality good (49.8%) and very good (41.0%).
Table 9: Student Perceptions of Quality of Instruction by Type of School (N=305)

<table>
<thead>
<tr>
<th>Quality Of Instruction</th>
<th>General Upper Secondary Education</th>
<th>Technical Gymnasium/Technical Upper Secondary Education</th>
<th>Vocational Upper Secondary Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>103 (50.2%)</td>
<td>30 (45.5%)</td>
<td>19 (55.9%)</td>
<td>152</td>
</tr>
<tr>
<td>Very Good</td>
<td>85 (41.5%)</td>
<td>30 (45.5%)</td>
<td>10 (29.4%)</td>
<td>125</td>
</tr>
<tr>
<td>Excellent</td>
<td>17 (8.3%)</td>
<td>6 (9.1%)</td>
<td>5 (14.7%)</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>205 (100%)</td>
<td>66 (100%)</td>
<td>34 (100%)</td>
<td>305</td>
</tr>
</tbody>
</table>

$\chi^2 = 3.262; \ p = 0.515$

Almost 91% (n=277) felt that the instruction was good or very good. The least number of students (n=28) in any type of school rated the instruction as excellent. Table 9 also shows that there was no statistically significant difference ($\chi^2 = 3.262$ and $p = 0.515$) in students’ evaluation of the quality of instruction with regard to the type of education. Table 10 shows students’ perceptions of quality of instruction by their year of study (year in school).

Table 10. Student Perceptions of the Quality of Instruction by Year in School (N=305)

<table>
<thead>
<tr>
<th>Quality of Instruction</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>30 (45.5%)</td>
<td>22 (66.7%)</td>
<td>78 (47.9%)</td>
<td>22 (51.2%)</td>
<td>152 (49.8%)</td>
</tr>
<tr>
<td>Very Good</td>
<td>33 (50%)</td>
<td>9 (27.3%)</td>
<td>69 (42.3%)</td>
<td>14 (32.6%)</td>
<td>125 (41%)</td>
</tr>
<tr>
<td>Excellent</td>
<td>3 (4.5%)</td>
<td>2 (6.1%)</td>
<td>16 (9.8%)</td>
<td>7 (16.3%)</td>
<td>28 (9.2%)</td>
</tr>
<tr>
<td>Total</td>
<td>66 (100%)</td>
<td>33 (100%)</td>
<td>163 (100%)</td>
<td>43 (100%)</td>
<td>305 (100%)</td>
</tr>
</tbody>
</table>

$\chi^2 = 10.240; \ p = 0.115$

According to the $\chi^2$-test, there was no statistically significant difference between instruction quality evaluations of students by year of education ($\chi^2 = 10.240; \ p = 0.115$). It is worth pointing out, however, that the fourth year students evaluated the instruction with the highest mark (excellent) more often than the students of lower years of study.

Evaluation of the Usefulness of Education Module Content

An analysis of high school students’ evaluation of the usefulness of module content was carried out through questions in the second section of the survey. As Table 11 shows, the majority of students in any type of school (n=197 or 64.6%) reported that they would be able to use the module content.
### Table 11: Students’ Evaluation of the Usefulness of Module Contents by Type of School

<table>
<thead>
<tr>
<th>Usefulness</th>
<th>General Upper Secondary Education/ Gymnasium</th>
<th>Technical Upper Secondary Education/ Technical Gymnasium</th>
<th>Vocational Upper Secondary Education</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I haven’t received any new information.</td>
<td>9 (4.4%)</td>
<td>1 (1.5%)</td>
<td>0 (0%)</td>
<td>10 (3.3%)</td>
</tr>
<tr>
<td>I will be able to use some of the acquired knowledge and information.</td>
<td>46 (22.4%)</td>
<td>7 (10.6%)</td>
<td>6 (17.6%)</td>
<td>59 (19.3%)</td>
</tr>
<tr>
<td>I will be able to use most of the acquired knowledge and information.</td>
<td>134 (65.4%)</td>
<td>45 (68.2%)</td>
<td>18 (52.9%)</td>
<td>197 (64.6%)</td>
</tr>
<tr>
<td>I will be able to use all of the acquired knowledge and information.</td>
<td>16 (7.8%)</td>
<td>13 (19.7%)</td>
<td>10 (29.4%)</td>
<td>39 (12.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>205 (100%)</td>
<td>66 (100%)</td>
<td>34 (100%)</td>
<td>305 (100%)</td>
</tr>
</tbody>
</table>

χ² = 20.842; p = 0.002

The χ²-test (χ² =20,842 P=0.002) showed that there was a statistically significant difference in students’ evaluation of usefulness of acquired module contents by type of education. The expectations of vocational upper secondary education students were mostly met; on the other hand, the expectations of gymnasium students were not. The outcome could be a consequence of the timing of their visit. Gymnasium students are involved in education at the UKM in the end of the school year whereas other students visit the UKM during the year and are, therefore, more motivated. Table 12 depicts students’ perceptions of usefulness by year in school (year of study).

### Table 12. Students’ Evaluation of the Usefulness of Module Contents by Year in School

<table>
<thead>
<tr>
<th>Usefulness</th>
<th>Year in School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
<td>Second</td>
</tr>
<tr>
<td>I haven’t received any new information.</td>
<td>1 (1.5%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>I will be able to use some of the acquired knowledge and information.</td>
<td>13 (19.7%)</td>
<td>10 (30.3%)</td>
</tr>
<tr>
<td>I will be able to use most of the acquired knowledge and information.</td>
<td>39 (59.1%)</td>
<td>20 (60.6%)</td>
</tr>
<tr>
<td>I will be able to use all of the acquired knowledge and information.</td>
<td>13 (19.7%)</td>
<td>2 (6.1%)</td>
</tr>
<tr>
<td>Total</td>
<td>66 (100%)</td>
<td>33 (100%)</td>
</tr>
</tbody>
</table>

χ² = 26.495; p = 0.002

A statistically significant difference in the students’ evaluation of the contents by year of study was shown by the χ²-test (χ² = 26.495; p = 0.002). Frequencies indicated that none of the 4th year students evaluated the module contents as not helpful, i.e., “I haven’t received any new information” and, furthermore, the 4th year students perceived that their expectations fulfilled to the greatest extent (“I will be able to use all of the acquired knowledge and information”). Year of study may have a relationship with 4th year students’ evaluation of the usefulness of the contents because at this point in their schooling they are confronted with a current topic or problem that they are expected to solve and for which they will be assessed or graded.
Conclusion

Prior research has demonstrated that academic libraries have strong potential to offer high school students access to the skills, resources, and strategies that they need to be successful researchers and lifelong learners. The University of Maribor Library created modules for upper school students to help them make the best use of library services and resources for their needs. This paper presented the results of a series of questionnaires on which students provided an evaluation of those modules. Based on the results of this empirical research we conclude that:

- The structure of the information literacy training modules for high school students are appropriate for the majority of participants;
- The complexity level of the modules are more appropriate for students of 3rd and 4th year of study than for the students of 1st and 2nd year of study;
- Most students found the instruction quality good or very good; and
- The vocational upper secondary education students assess the module contents useful more often than the gymnasium students. Also, 4th year students find the module contents useful more often than 1st and 2nd year students.

In light of these conclusions, we feel that the research also suggests the following implications for policy and practice for academic librarians who wish to work with high school students:

1. **Adjust the complexity level of the modules according to the needs of the students of the 1st and 2nd year of study.**

   The students of the 1st and 2nd year of school expressed that the complexity levels of the modules are too high. Even though this could be the consequence of heterogeneous groups, the complexity level of the modules could be adjusted by using programmed form of education by implementing the e-classroom Moodle.

   Students could benefit from a programming model that is systematic, gradual, and based on a step-by-step learning. Basic unit of this program is a segment. If the students resolve the segment correctly, they are linearly promoted to the next segment. On the other hand, they received appropriate information according to the mistake they made in segment 1. Students with better knowledge are able to skip certain levels. This model enables optimum progress of each individual; however, caution is required because programming excludes teamwork activities like cooperation, mutual help and discussion (Žagar, 2011). A combination of face-to-face and e-learning would contribute to the reduction of differences in knowledge and skills of heterogeneous groups;

2. **Adjust the level of usefulness of the module contents to gymnasium students.**

   Due to the fact that gymnasium students represent the population which will continue education, we are facing a task to adjust current education praxis to the needs of general upper secondary education students. The time frame of education is an important factor, therefore an implementation of modules will not be carried out in the months when the education interest level of students is low;

3. **Adjust the level of usefulness of the module contents to 1st and 2nd year students.**
Even though we are convinced that the curriculum, which motivates students and makes them appreciate libraries, influences the students’ evaluation of the usefulness of the contents, we recommend a higher level of correlation with the subjects they will be graded for.

Based on these facts, we can conclude that a special module with appropriate content and complexity level should be created for students of higher years of study and students from remote areas.

4. Librarian training for the quality pedagogical work in the framework of the education modules.

Alongside the concrete suggestions mentioned in the research, there are some other relevant solutions. Information literacy training modules should be offered to students also in the form of e-classrooms, e.g. Moodle (Rice, 2006; Cole, 2005), which are more flexible in space, time, pace, and content of education (Boelens, 2007).

In order to offer optimal progress possibilities to all students, we suggest an introduction of individual form of education for students that do not fall into the majority (“I haven’t received any new information” and “I will be able to use all of the acquired knowledge and information”). This suggestion is based on the Guidelines of Europe’s New libraries Together in Transversal Learning Environments (ENTITLE) (2009) which point out that the most efficient method of training is “individual education”. The UKM executes it with assistance of librarian tutors on the postgraduate level of education. It provides enhanced understanding and motivation. However, this category of education requires additional financial resources for its execution and the coordination of library, school and students.

According to the results of a survey conducted by the Slovenian Science Foundation (2010), 93% of Slovenian high school students use Internet as a scientific source although they are aware that information of different quality and reliability can be found. For this reason, we are considering to implement an education module for assessing the quality criteria for information gained on internet: availability and usefulness of a web page, identification of a source and document, identification of the author, authority of the author, structure of information, relevance and the purpose of the content, validity of the content, accuracy and balance of the content, navigation inside the document, quality of the connection from the point of view of aesthetics and affection (Wilkinson, Bennet and Oliver 1998; Herring, 2011). The UKM could complement its Program of Information Literacy Training for High School Students with a knowledge test prior and post training. This practice would allow the effect of the information literacy training module could be measured (Karshmer and Bryan, 2011).

The purposes and goals of the education for 21st century are determined by the information society in which we live - the information itself and our needs regarding it are key factors. Education programme involves cooperation between the university library and school libraries, enriching the educational process, as well as interest activities, lifelong education, learning to learn and general personal growth. With good infrastructure, with the support of education institutions (management of the library and high school principals, financiers) and good communication among the protagonists (students-teachers-librarians) of the education process, we are a step away from achieving the goals of the education for 21st century.
References


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