

USING A PRE- AND POST-SURVEY METHOD TO ASSESS THE EFFECTIVENESS AND USABILITY OF AN ONLINE INFORMATION LITERACY TUTORIAL

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INTRODUCTION

One of the trends typical of today's academic library is the growing preference for electronic access to library resources and services (Rowlands, et al, 2008; Smith 2003). As libraries deploy their resources and services online, information literacy instruction to patrons at a distance remains both a challenge and a priority. A scan of academic library websites and professional literature (Ganster & Walsh, 2008; Betty, 2007; Green et al, 2006) will quickly reveal that the online tutorial has been one of the enduring methods of information literacy instruction for about two decades. However, despite the proliferation of these tutorials, there has not been as much written in the literature about their effectiveness. Many questions on the usability and effectiveness of many of the tutorials are yet to be answered. This and other libraries (Silver & Nickel, 2005) are attempting to answer these questions.

VIRGINIA TECH INFORMATION SKILLS MODULES (ISM)

The University Libraries at Virginia Tech provides information literacy (IL) instruction in a variety of ways including face-to-face classroom instruction, online credit instruction, online research guides and tutorials. The Information Skills Modules (ISM) located at: <http://info-skills.lib.vt.edu/>, support some of these IL efforts, and are aligned to the ACRL Information Literacy Standards for Higher Education. The key purpose of creating these modules, according to Margaret

Merrill, a librarian in the University Libraries and lead designer in the creation of the modules, was "to teach students to think their way through the information research process."

PURPOSE OF ASSESSMENT

So far there has not been any comprehensive evaluation of the extent to which the ISM are effective in improving users' information literacy skills. Therefore, the purpose of this evaluation was to determine the effectiveness of the University Libraries' Information Skills Modules in fostering information literacy skills and competencies among users in a course setting. The evaluation was formative in nature. Therefore, the information contained in this report will be used in the future to make decisions about revision and marketing of the ISM to optimize their use.

RESEARCH QUESTIONS

The key questions driving the assessment were:

1. Does the ISM accomplish the stipulated learning objectives?
2. Does the design of the ISM facilitate usability?
3. How can the ISM be enhanced?

METHODOLOGY

A component of the AAEC 5104 course, Introduction to Research in Agricultural Economics, taught by the Librarian for Agriculture and Life Sciences, was the basis for this assessment. The study took a mixed methods approach to assessing the ISM.

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Sample

The study's participants were made up of a purposeful sample of all thirteen graduate students in the AAEC 5104 class. Following appropriate IRB authorizations and permission of the course professor, the students in the course were all invited to participate in the pre-survey and post-survey. The librarian, who regularly collaborated with the course professor, taught the library research component of the course using the ISM as a textbook. The students were asked to take the pre-survey a week before the library research component was taught. They were not provided with any feedback on whether or not their answers were correct. They were later asked to take the post-survey using a similar instrument a week after the library research component.

Data Collection and Analysis

Overall, the data collection and analysis included:

1. Identification of a class that uses ISM in a course setting (purposeful sample)
2. Use of an online survey instrument, Survey@vt.edu, to conduct a pre-survey and post-survey based on ISM learning objectives
3. Use of an identical instrument for both pre-survey and post-survey in order to measure the difference caused by the instruction intervention
4. Inclusion of an additional section in the post-survey to provide qualitative data about the modules
5. Export of data from Survey@vt.edu to SPSS for analysis
6. Reporting of frequencies and descriptives
7. Hand-coding and analysis of qualitative data section
8. Analysis of results of two supplemental class quizzes on the ISM

STUDY LIMITATIONS

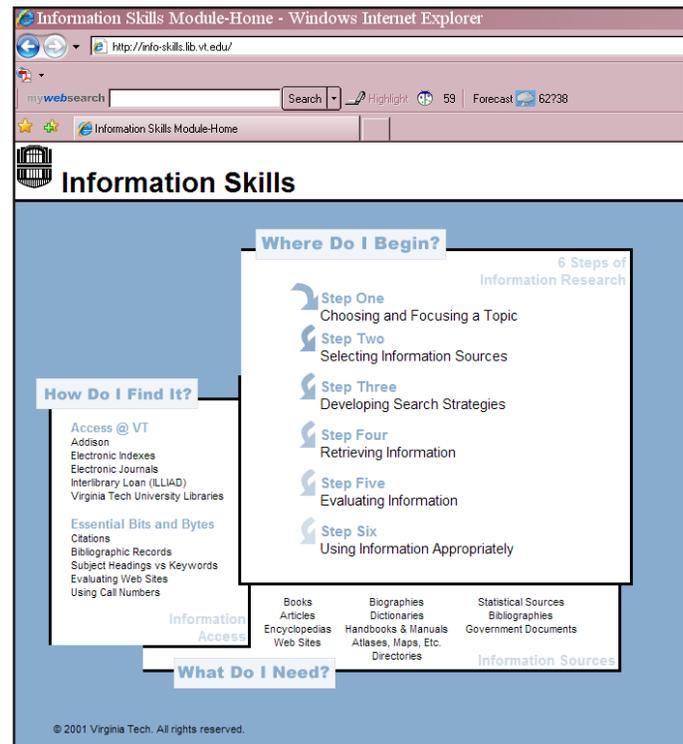
This assessment was designed to evaluate the ISM effectiveness when used in a course setting with a librarian as coach. However, the ISM is also designed for independent use as needed. Therefore, the results from this assessment do not necessarily reveal potential issues when used independently by students. Furthermore, although all the students in the class were used for this study, the sample size was still too small to increase the confidence in the statistical significance of the findings. Therefore, the reporting for the quantitative section is limited to frequencies and descriptives.

FINDINGS AND DISCUSSION

Effectiveness of ISM in meeting learning objectives

Questions in the pre-survey and post-survey instruments addressed specific selected learning objectives in

the ISM. Each of the questions was based on a specific learning objective stated in the respective module. Not all modules were tested in the pre- and post-survey. The evaluation focused on Modules 1, 3 and 5, as these were the modules covered in the AAEC 5104 syllabus.



The survey instruments for gathering the quantitative data consisted of two types of questions. The first type asked students to answer using a four point Likert scale. For example, "I know how to use a thesaurus to develop a search strategy." (strongly agree, agree, disagree, strongly disagree). The second type of question consisted of actual exercises asking students to select/write the right answer(s). The Likert type questions helped assess the students' perceptions of their abilities, while the exercises helped assess their actual abilities. Both types of questions were analyzed using SPSS.

The questions for gathering qualitative data sought to capture feedback on use and usability of the ISM. These were included as a separate section of the post-survey and were coded and analyzed manually.

Learning objective: Strategies for focusing a research project

This learning objective was tested by several of the survey questions. The pre-survey and post-survey responses show an improvement in the students' understanding of strategies for focusing a research project after the ISM workshops. Although these results were largely based on the students' self-reported abilities, they reflect a measure of improvement in their perceived abilities, in particular, students' ability to determine when their research topic was too narrow or too broad. The results reflect an increase in the correct answers from a mean of 2.75 out of a possible score of 4, in the pre-survey to 3.54 in

the post-survey.

The pre-survey results also indicate that the majority of the participants (91%) did not know how to expand a research topic chronologically, with only 9% responding positively to the question. However the post-survey shows the reverse - that 91% of the students thought they could expand a research topic chronologically.

Learning objective: Writing a topic statement

In terms of the learning objective addressing students' ability to write a topic statement or thesis statement, the results indicate that while half the students said they did not know how to write a thesis statement in the pre-survey, all of the students said they could (agree/strongly agree) write a thesis statement in the post-survey.

Learning objective: Identifying primary and secondary concepts and their relationship

The ability to identify the primary and secondary concepts of a topic, as well as the relationships between the concepts was tested by two of the survey questions. The results show that by the end of the ISM workshops all (100%) of the students agreed or strongly agreed that they knew how to search for information that examines multiple concepts of a research topic and, how to build a concept table that identifies key concepts in a research topic.

Learning objective: Listing keywords, synonyms and/or related terms for concepts

This tested for the ability to list keywords, synonyms and/or related terms for concepts. While 33% of the students disagreed with the statement that they knew how to search for information that examines multiple concepts of a research topic in the pre-survey, all (100%) the students agreed or strongly agreed with the same statement in the post-survey.

Learning objective: Writing search statements

Two questions tested for the ability to develop a search strategy. The findings show that 92% of the students got the right answer in the pre-survey, while 100% got the correct answer in the post-survey. Furthermore, in terms of using a thesaurus to develop a search strategy, 84% of the students responded that they disagreed or strongly disagreed with the statement that they could use a thesaurus to develop a search strategy in the pre-survey, while only 9% still disagreed with the same statement in the post-survey.

Learning objective: Identifying the correct criteria for evaluating information

In terms of the ability to identify the correct criteria for evaluating information, when one compares the scores of the pre-survey with those of the post-survey, there is a significant improvement. While in the pre-survey only 8% of the students scored 6/6, in the post-survey 45% scored 6/6. Similarly, while 0% students scored 5/6 in the pre-survey, 27% scored 5/6 in the

post-survey. The lowest score in the pre-survey was 1/6, while the lowest score in the post-survey was 4/6.

Learning objective: Identifying sources that help to evaluate information sources

The ability to identify the correct sources that help evaluate information was assessed. The results also show that the scores in the post-survey were slightly better than the scores in the pre-survey with the mean score of 2.25 in the pre-survey compared to a mean score of 3.5 in the post-survey, where the maximum score was 4.

All the learning objectives that were assessed in this evaluation indicated an improvement between the pre-survey and post-survey, the margins of improvement varied from objective to objective. The overall trend suggests effectiveness of assessed ISM modules in meeting the stipulated learning objectives.

Furthermore, the findings above are corroborated by the results of two quizzes that were administered during the ISM workshops. The class quizzes tested the actual demonstration of abilities cited in the ISM learning objectives when used in a classroom setting. While these two quizzes were not an integral part of the initial assessment process, they mirrored the goals of this evaluation project in that they were given at the beginning and at the end of the ISM workshops segment, and were made available for analysis. The first quiz was given on the first day of the ISM workshops, while the second quiz was given on the last day of the workshops. When the results of the quizzes are compared, the scores of the second quiz administered during the last class reflected a modest improvement over the first scores administered during the first class.

Usability of ISM

Usability of the ISM was evaluated using open-ended questions. The data from the students' responses to the question about awareness of the modules showed only two students had prior knowledge about the ISM. When asked about the overall experience of using the modules, ten out of eleven students gave positive comments. Only one student had positive feedback that included a somewhat negative comment, stating that the ISM was "useful but if I need help I'll ask a librarian, I don't have time to focus on things like this."

Only one out of eleven participants stated that the modules were not easy to use. Furthermore, when participants were asked what they liked about the ISM, a variety of responses were received including:

"I liked the interactive terms that brought up more information if I needed it, but allowed me to skip over it if I didn't"

"I liked the fact it exists as an option that I can utilize"

"It gave a lot of good information that I did not

already know”

“The link to various information. An example is the link to the concept map”

“I don’t have to read them all. I can go to the section I need”

Other things that participants liked included the structure and organization of the modules. A number of benefits of using the ISM were also cited in response to question on benefits derived from using the modules, including:

“My greatest benefit was the Boolean operators and related search strategies. That is something I’ve always wondered about but never had formally explained to me. This will help me to focus, broaden, or redirect my future searches.”

“I am more confident that I will be able to find information pertaining to my thesis”

“How to research better”

“How to think about research”

“I got new tips on how to conduct library research”

When asked whether they would recommend the ISM to others, six participants responded that they would recommend it to other students. Two participants stated that it would depend on the situation, while two skipped the question. One participant provided detail, stating that “yes, not all of the information is relevant or useful to every person, but it is a great resource that should be accessed at different times, by different people when they need help with various issues.”

Suggested enhancements

Six participants responded that they did not like the length of the modules. They used words like “length,” “too long,” “lengthy,” “too long and boring,” “they could have been condensed a little more, sometimes I get too overwhelmed when reading when I see that there are so many slides.” One participant not only indicated that they did not like the length, but also the fact that it was required to attend the workshops on the modules.

Most of the comments about what the participants would change in the ISM related to length of the modules. Words used include “length,” “summarize,” “reduce text,” “make modules shorter.” Other comments were about location of the modules – some participants suggested making them easier to find on the library website. One participant suggested “Format – a more interesting presentation.” One comment presented a sentiment on usefulness of the modules, stating that “most of the young students (age 30 and less) know far more than just the basic information about using the computer for information search.”

CONCLUSIONS

Based on the above data and findings, the following conclusions were drawn:

1. The post-survey reflected some improvement over the pre-survey, both in terms of the self-reported abilities, and the actual abilities as measured by the results from the exercises. Therefore the selected modules are effective in meeting stipulated learning objectives
2. Although the current design of the modules facilitates usability, they are too lengthy and monotonous

RECOMMENDATIONS

Based on the above findings and conclusions, the following are recommended for the VT University Libraries:

1. The ISM should be revised for brevity and presentation
 2. The ISM should be located where they are more accessible on the VT library website
 3. The library should actively market the ISM to increase awareness of their availability
 4. For future assessment:
 1. The components of the ISM that were not evaluated should also be evaluated
 2. The ISM should be evaluated for their effectiveness in non-classroom settings
 3. The ISM should be evaluated using a sample of freshmen (the primary target of the ISM)
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Evaluation of the Virginia Tech Library's Information Skills Modules

Pre-survey instrument

Please complete this survey **BEFORE** you read or use the Information Skills Modules

1. I know how to determine when my research topic is too narrow or too broad

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

2. If my research topic is too narrow, I know to broaden it to include related terms

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

3. If my research topic is too broad I know how to narrow the research topic to get it more focused

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

4. I know how to search for information that examines multiple concepts of a research topic

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

5. I know how to expand a research topic Chronologically

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

6. I know how to write a thesis statement for a research topic

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

7. Developing research questions helps focus a research topic

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

8. I can list the 5 basic steps that a researcher should follow to find the sources with needed research information

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Agree			Disagree	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

9. If I am looking for popular opinion, the source I would use is (click as many as apply)

<input type="checkbox"/>	Atlases	<input type="checkbox"/>	Encyclopedias
<input type="checkbox"/>	Books	<input type="checkbox"/>	Government Documents
<input type="checkbox"/>	Dictionaries	<input type="checkbox"/>	Handbooks
<input type="checkbox"/>	Newspapers	<input type="checkbox"/>	Periodical articles
<input type="checkbox"/>	Websites	<input type="checkbox"/>	Manuals

10. When searching a database, Keyword searching is the same as Subject searching

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

11. The six basic criteria for evaluating information are (Check six correct items):

<input type="checkbox"/>	Authority	<input type="checkbox"/>	Coverage
<input type="checkbox"/>	Accuracy	<input type="checkbox"/>	Publisher
<input type="checkbox"/>	Number of references	<input type="checkbox"/>	Currency
<input type="checkbox"/>	Length of document	<input type="checkbox"/>	Format of source
<input type="checkbox"/>	Objectivity/point of view/bias	<input type="checkbox"/>	Audience

12. I know how to build a concept table that identifies key concepts in a research topic

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

13. I know how to use a thesaurus to develop a search strategy

Strongly Agree	Agree	Disagree	Strongly Disagree	Additional Comments
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Evaluation of the Virginia Tech Library's Information Skills Modules

Post Survey

About two weeks ago, you completed a pre survey about the Library's Information Skills Modules. Now that you have had a chance to use the modules, we would you to provide us with some feedback by completing this survey.

Part 1

EDITOR'S NOTE:

Questions 1-13 were re-asked (see Pre-survey Instrument) along with the following:

Part 2

Additional Questions

1. Did you know about the ISM before this course?

2. What was your overall experience using the ISM in this course?

3. Was the ISM easy to navigate? (i.e. finding information or moving within and across modules)

4. Was the ISM easy or difficult to use? (usability)

5. What did you like about the ISM?

6. What didn't you like about the ISM?

7. If you had to change something about the ISM, what would it be?

8. List the benefit you feel you have derived from learning/using the ISM?

9. Would you recommend the ISM to other students?

10. Do you have any other comments or suggestion for enhancing the ISM?
