Driving Google
Assessing Information Literacy through Affective Measures: A Report
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Abstract

One of the hallmarks of scholarly dialogue throughout the world is the ability to analyze information through critical examination. Consequently, information literacy – which is proficiency in assessing print, audio-visual, and electronic materials – is crucial for any educational institution. Of the many electronic searching opportunities, the Google Search Suite is particularly relevant to information literacy because of its ubiquitous presence and wide variety of diverse resources. However, without the skills to navigate the multiple platforms and to further evaluate the materials generated by the search engines, many students will only tap a fraction of Google's power and usability. This state of affairs, in turn, impairs their experience as a researcher. Using affective learning assessment measures, this paper examines the factors that increase student confidence in their own search skills, and suggests that fostering confidence – rather than strict accuracy – is more effective for one-shot instructional sessions.

Introduction

The learning environment of the Driving Google Instructional Unit consisted of five elements: the students; the physical location; the assignment which required Google-specific resources; the instructors; and the instructional materials. Student participants in the Driving Google instruction session were enrolled in Psychology 409a: Driving Psychology, and taught by Professor Leon James. Dr. James taught from a remote location through the virtual world Second Life, while students attended class in the computer lab within Crawford Hall. Being a 400-Level course, many of the students were (at least) juniors in their undergraduate degree. Their assignment, referred to as Report One, required multiple sources from different venues. For example, students were required to
retrieve books from the institution’s library through the open access catalog, called UH Voyager.

For the Google Search Suite, students were required to cite two sources from six different Google platforms: Advanced Web, Scholar, Books, News, Groups, and Blogs. However, the Driving Google instruction unit was a one-shot opportunity, and limited to the length of one hour. Because of the time constraints, the instructors decided to focus on four of the six platforms – with the hope that students could apply what they learned from the instructional unit to the last two platforms on their own. Thus, the instructors focused on the following platforms: Advanced Web, Scholar, Books and News.

The Driving Google instructors were Rebecca Marrall, Kim Okahara, and Sean Thibadeaux. These instructors had no prior formal teaching experience, and were enrolled in a Library and Information Science class entitled “Teaching Information Literacy.”

Finally, the instructional materials were a series of exploratory exercises – in worksheet form – for students to use while navigating the Google Search Suite. These worksheets numbered five in total: four platform-based search exercises, and a one-minute writing exercise, in which the students were asked to report their experience with the Driving Google instruction unit.

The worksheet design process was heavily influenced by the concept of discovery learning. In their text Motivating Students in Information Literacy Classes, authors Trudi E. Jacobson and Lijuan Xu state that discovery learning is an exploratory process that gives students the opportunity to informally learn about a topic (pg. 75). Due to the restricted time inherent in most library instructional units, and the impossibility of memorizing an entire electronic resource within that time, the instructors decided to show the Psychology
409a students that the Google Search Suite was capable of so much more than the basic search interface. Thus, all of the worksheets directed students to “explore” or “examine” or “look for this element” – with the aim of discovery rather than memorization.

As mentioned before, the students received five documents: four worksheets, and a one-minute writing exercise that asked students to report on their experience with the Driving Google unit. For the post-unit assessment measure, the instructors selected the one-minute writing exercise. Because the exercise worksheets offer a primarily quantitative assessment – accurate, inaccurate, or somewhere in between – the instructors wanted to examine the exercises to assess the affective (in essence, the qualitative) aspects of the instructional unit.

**Methodology**

The instructional setting has already been described on page four. However, more discussion is needed on the instructional goal. Created to guide the ethos and design of the Driving Google instruction unit, the instructional goal is as follows:

*The Google Platform offers a wide variety of functions for gathering diverse resources. PSY 409a students will be able to use Google effectively for research and successful completion of Report One. After the session, students will be able to identify and apply advanced Google functions to capture results relevant to their information needs.*

With this aim, the instructors designed a one-minute writing exercise for students to report their experience with the instruction unit. Designed to measure the affective experience rather than test the accuracy of their answers, the exercise consisted of the following statement: “Please take a minute to write down how you feel about your Google searching skills after having participated in this instructional session.” The question stemmed from the Affective-Cognitive-Sensorimotor taxonomy, and based on the
understanding that students learn most effectively when all three aspects are engaged. While the worksheets focused on cognitive and sensorimotor skills, the one minute writing exercise was designed to bring in the last element of taxonomy in effort engage in full spectrum learning. The hypothesis, though never formalized, was that students would recognize improved confidence in their search skills by taking a moment to reflect on their instructional experience.

The instructors presented the one minute writing task shortly after the final worksheet, Google News, was finished. The student demographic was made up of seventeen students (n=17). Nine students identified as male (m=9) and eight students identified as female (f=8). The ranking used to codify the results was generated through the discussion between the three Driving Google instructors. Ultimately, we decided to measure instructional effectiveness through keywords, or statements, found within the student responses, and accord them a negative, neutral or positive rating. For example, the following response would generate three positive responses and one neutral response:

“I found this instructional session very helpful (positive). I am now confident (positive) in my research skills in Google and I can now use these skills effectively (positive). This session has opened new doors to research (neutral).”

The keyword ratings for every student response were decided through mutual agreement after much discussion. After the final assessment, the instructors tallied the keywords in each category (positive, negative, and neutral). Once the instructors had a final set of numbers, they were able to determine the ratio to which the categories were inter-related. There was some concern that the instructors would, between themselves and through natural optimism, rate the positive keywords more frequently than neutral or
negative. As a test run, the three instructors individually evaluated a student response in effort, and found that each instructor assigned similar ratings. For example, two instructors assigned three positive ratings, while one instructor assigned two positive ratings to the statement above. Therefore, the instructors decided to approach a mutual agreement to each student response.

Results

Examining the results yielded both expected and unexpected results. Of the seventeen respondents (n=17), there were thirty-nine positive statements (81.25%), six negative statements (12.5%), and three neutral statements (6.25%) – which culminated in a total of forty-eight statements. The majority of Psychology 409a students self-reported high confidence in their Google search skills, while a few registered concerns about being able to remember what they learned.

The high percentages of positive statements in the affective one-minute writing task were gratifying to the instructors. However, when the instructors compared the self-reported affective answers to the actual answers on the Google Platform worksheets, some discrepancies occurred. For example, both Respondents One and Nine rated their confidence in searching the Google Advanced platform as a ‘5’ – the highest level of confidence provided. But only Respondent One answered all the questions on the worksheet correctly; Respondent Nine made some glaring errors. This discrepancy begs the question of whether accuracy or confidence is a more important result in instructional sessions.
Discussion

The results of the affective measures undertaken during the Driving Google instructional unit seem overwhelmingly positive, it’s important to discuss the many variables that can influence student responses. Though the one minute exercise was designed for students to complete individually at a specified time, the writing task was part of a packet distributed at the beginning of the Driving Google instruction unit. In addition, each student completed the exercise worksheets at their own rate – and frequently moved on to the next section before the instructors would encourage them. Because of the varying speeds of worksheet completion, some students had access to the one minute writing exercise before other students, and thus had more time to think about their responses than other students. This may be a factor to consider while measuring the impact of the results.

Sample size is another concern about the Driving Google affective measurement results. The total sample size is seventeen students (n=17), well below the standard minimum of thirty participants (n=30) required by most scholarly establishments for statistical relevance. In addition, the student sample was a “convenience sample” – a group of participants already selected and provided to the instructors. Thus, the absence of random sampling – another tool endorsed by scholarly institutions – adversely affects the statistical relevance of the results.

Another factor to consider, though much less easy to measure, is based upon the Hawthorne Effect. The Hawthorne Effect, named after the Hawthorne Works factory and coined by Henry A. Landsberger in 1955, is a reactivity phenomenon that occurs when subjects in an experiment yield increased results because they are being studied (and are aware of the scrutiny), rather than any manipulation of a variable. While the instructors
taught the Driving Google unit, they circulated through the room and interacted with students via a one-on-one basis. Thus, the students were aware at some level of being monitored by “authority figures,” and may have increased their engagement, or manipulated exercise responses and self-assessments in reaction to being monitored.

A further consideration is the instructional sequence. The Driving Google unit was the second among four one-shot instruction units – the first being the University of Hawai’i Voyager unit. Because the students had participated in an instructional unit prior to the Driving Google workshop, the students had practiced responding to one session of information literacy. In short, the students knew what to expect when the instructors arrived, and more importantly, how to report their findings on the worksheets. Thus, their perceptions of information literacy or of their own searching skills may have been altered by previous practice. A combination of the Hawthorne Effect and the instructional sequence could have impact upon the qualitative relevance of the results.

Finally, the events in the forty-eight hours prior to the instruction unit have an immeasurable effect on the student participants. Lack of sleep, bad news, low blood sugar from lack of proper nutrition – all of these factors can adversely impact a student’s performance during an information literacy workshop. Thus, it’s important to recognize that the participants’ perspectives and attitudes vary largely due to different experiences prior to instruction.

**Conclusions**

The affective assessment measures from Driving Google’s one minute writing task demonstrates that students have self-reported increased searching skills and improved self-confidence when navigating the Google Search Suite. While there are factors that
reduce the statistical relevance of these findings (please see “Discussion”), it nevertheless remains evident that students reported positive feelings for the workshop as a whole. When this knowledge is compared to the discrepancies between the Google News results and the self-reported one-minute writing task, it begs a further question: Does accuracy within information literacy, while very important, mean more than how a student feels about their information literacy skills?

Accuracy in information literacy – indeed, in just about anything – is very important. However, accuracy also takes practice and is nearly impossible to achieve during a one workshop session. Improved confidence in one’s own ability to navigate a search interface is a much more reasonable goal for a one time workshop. Thus, for one-shot instructional sessions, it is important for instructors to engage the students’ affective learning centers. Increased confidence about their search skills, regardless of how accurate said search skills are, may encourage the students to access search interfaces frequently – through which they can strive for accuracy.

For future students who enroll in the Teaching Information Literacy course, and participate in a “themed” instructional sequence (i.e., a series of units for a particular class, focusing on one aspect per team), it would be behoove all students to spend more time collaborating with other teams. If each team knew what the other teams were doing, it would create a streamlined instructional sequence for the students. Furthermore, strong collaboration would present an opportunity in which the instructors could build upon, and reinforce, search skills. In addition, generating usability tests for all segments of the instructional design process can only improve the final product for students.
Appendix A: Bibliography

ACS Outcomes, as well as the SAOAC (Situation, Ability, Object, Action, Constraints) framework, are taken from Dr. Diane Nahl’s Handouts for Lectures for LIS 665 at the University of Hawaii at Manoa, Spring 2010. Accessed 11 April, 2010. The document can be found at the following URL: http://www2.hawaii.edu/~nahl/665/665-Handout-S10.html


Professor Leon James’ requirements for Report One. This document is necessary for understanding the Instructional Goals of the Driving Google Unit. Accessed 11 April, 2010. Instructions can be found at the following URL: http://www.soc.hawaii.edu/leoni/leoni/leonpsy31/409a-g31-report1.htm
Appendix B: Handouts & Assessments

One Minute Writing Task:

Please take a minute to write down how you feel about your Google searching skills after having participated in this instructional session.

Answer: Answers will vary, and are subject to qualitative analysis.

Total Responses:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Respondents</td>
<td>17</td>
</tr>
<tr>
<td>Positive Statements</td>
<td>39</td>
</tr>
<tr>
<td>Negative Statements</td>
<td>6</td>
</tr>
<tr>
<td>Neutral Statements</td>
<td>3</td>
</tr>
</tbody>
</table>

Affective Responses: Statistics
Average Confidence Ratings by Google Platform (Self-Reported):

<table>
<thead>
<tr>
<th>Platform</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Advanced</td>
<td>4.147058824</td>
</tr>
<tr>
<td>Google News</td>
<td>4.240196078</td>
</tr>
<tr>
<td>Google Books</td>
<td>4.178104575</td>
</tr>
<tr>
<td>Overall Class Average</td>
<td>4.303922</td>
</tr>
</tbody>
</table>

Bar Chart of Average Confidence Ratings: