Leveraging Visual Literacy to Engage and Orient First-Year College Students

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Introduction
Incoming students often leave library orientation sessions feeling overwhelmed and overstressed: the library has become one more intimidating obstacle to them. Other times, they are bored and disengaged, failing to retain crucial information that can be drawn upon when needed. Seldom do they leave confident and knowledgeable about resources and services offered by the library, and this does not need to be the case. Visual literacy and the language of visual culture can be leveraged to engage students and improve library orientation sessions through an activity called a visual scavenger hunt.

The visual scavenger hunt was first designed for use in the First-Year Seminar (FYS) in Journalism & Mass Communication at South Dakota State University (SDSU) in the fall 2014 semester. In the spring and fall 2015 semesters, it was revised, updated, and implemented in general sections of the FYS. This activity was then revamped for use in the FYS at Stephen F. Austin State University (SFA) in fall 2017 and 2018. Designed to employ the pedagogies of active learning and peer teaching, as well as visual literacy, the session's goal, articulated to students at the beginning of each session, is simple: “Orient [them] to the resources offered by [the] Library and increase [their] comfort level with the library building and librarians.” Student and instructor response has been positive, and assessment data indicate the visual scavenger hunt is a successful alternative to traditional library orientation.

Literature Review
Visual Literacy
Visual literacy is still a relatively new term and concept, having been coined and defined within the last half-century:

Visual Literacy refers to a group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterworks of visual communication.

In essence, though, visual literacy is to visual language what literacy is written language. Humans begin learning to read images from the time they can see, and without realizing it, have become relatively proficient

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in their culture's visual language by the time they begin their formal schooling. For example, in many western cultures the color red indicates danger, arrows are used to signify direction, and 2-dimensional drawings are used to refer to 3-dimensional objects. Mastery of visual literacy skills goes far beyond these simplistic symbolic relationships, and it is important that any gaps in students' knowledge be addressed by updated higher education curricula. The basic skills of reading visual language, though, can be leveraged to help undergraduates process and retain information by removing library jargon from the equation and activating their existing visual literacy schema.

**Learning Theories**

The visual scavenger hunt is built upon two fundamental theories of learning, Lev Vygotsky's Social Development Theory and Albert Bandura's Social Cognitive Theory. Vygotsky theorized that learning is inherently social and that mediators, which can be either people or structured activities, are essential to the learning process. The scavenger hunt, itself a form of scaffolding, acts as a mediator for student learning, but the students also function as mediators for each other's learning. None of the students come into the class knowing everything, but they do each know something. First in their small groups and later as a class, they take turns supplying missing pieces of information and modeling strategies, problem solving abilities, and communication skills: together they accomplish more than any one could alone, allowing each to work within their zone of proximal development and learn from the experience. The enactive experience of engaging in the visual scavenger hunt builds skill, which only develops from the accommodation of sensory feedback from enactive experience, and provides a foundation of success for building self-efficacy. This is balanced by the vicarious experience from listening to their classmates, which allows them to quickly gain a broad base of knowledge about the library.

**Methodology**

**Activity Design**

The first step in designing the visual scavenger hunt was to identify items in the library that students might find interesting, useful, and/or necessary to know about. A card depicting the item and its location was developed on a half-page, letter-sized template in a desktop publishing program. Instead of traditional indications of location, collection, room name, or call numbers, the item's location was indicated by a series of visual cues. The pictures were arranged from top to bottom and left to right, with the first picture indicating the floor on which the item was located. Subsequent pictures indicated important landmarks and signs passed on the way to the item, and the final picture was an enlarged photo of the item itself (Fig. 1).

The cards were divided into eight packets, each containing three or four unique cards. During the identification process, the items selected for inclusion divided logically into three categories: resources (e.g., books, government documents, periodicals), tools (e.g., scanners, 3-D printers, collaborative displays), and spaces (e.g., comfortable couches, group study rooms, individual study pods). Each of the eight packets included a card from each of the item categories. The cards selected for each packet also represented items located on three different floors of the library, requiring SDSU students to visit all three floors of the library and SFA students to visit three of the four floors library. The final item included in each packet was a printed sheet of instructions (Fig. 2).

During each session, students were introduced to the activity's goal and presented with the activity instructions orally and in writing. Students were instructed to find the items depicted in their group's activity packet and digitally submit, via email or through the online application Padlet, a photo of themselves with each item. They were additionally asked to note where it was located, consider when and why they might need to use the item, and contemplate how it might contribute to their success. Students were then divided into groups of two or
FIGURE 1
Sample visual scavenger hunt activity cards

FIGURE 2
Sample visual scavenger hunt activity packet contents

SFA 101: Exploring the Library

Equipment Needed per Group:
- Activity Packet
- Digital Camera (Mobile Phone or other)

The Task:
- Explore all four levels of the R.W. Steen Library with your group and locate the items and places pictured in your packet.
- Snap a picture of a member of your group with each of the items as you find them (everyone should appear in at least 1 picture!) and upload them to Padlet.

Use this URL to post to Padlet:
https://padlet.com/sfa101exploringthelibrary

- Consider and discuss in your group the following questions about each item:
  - What is it?
  - What is located near it?
  - Why do you think it is located where it is?
  - When and/or why might you use it? (Try to think of at least 3 examples!)
- Return to the LINC Classroom after about 15 minutes prepared to give a short (2 minute) group presentation on what you found out.
three and given an activity packet; the number of groups in each class, therefore, was dictated by the number of students in attendance. After completing the scavenger hunt, students returned to the classroom and presented on what they found, with their uploaded photos serving as visual aids for their classmates.

Participants
Participants were students enrolled in a total of 47 sections of an FYS at SDSU and SFA between 2014 and 2018. Sections were selected for inclusion by their instructor's decision to schedule a library orientation session. All students who attended class on the day of the library session participated in the visual scavenger activity. They were primarily undergraduates enrolled in their first semester, although some upper level undergraduates and transfer students were included.

Assessment Design
After the sessions, the uploaded photos were each assigned a unique identifier that indicated university, semester, course, section number, group number, and card number. They were first reviewed to determine whether students had successfully completed the task of finding the item and uploading the picture. If items were not where they belonged, the task was marked as successful if students successfully located where the item should have been and uploaded a picture. A task success rate was computed from these data for assessment. It should be noted, however, that because the photos were used as evidence of success, this is a conservative measure that underestimates the true rate at which students successfully located their items.

A second review of the photos was conducted to determine whether a photo could be assigned scores for qualities of positive and negative affect exhibited by students. A photo was considered scorable if at least half of a student's face was visible. Scorable photos were then assigned 5-point Likert scale score for the ten positive and ten negative affect markers of the Positive and Negative Affect Schedule (PANAS). PANAS was designed as a self-report measure of mood, and its use by an observer to score the perceived emotions of participants is unconventional. However, an existing instrument could not be found that was accurate, reliable, non-invasive, did not distract from the activity itself, and provided for multiple measures throughout the activity. Additional research on the accuracy and reliability of this adaptation of the PANAS should be done, but it provided an admirable start on developing the needed instrument and sufficed in this study.

Hypotheses
Three hypotheses were formulated for the visual scavenger hunt assessment data.

Hypothesis 1
- Null Hypothesis: The task success rate for each subsequent semester will equal the benchmark established during the first three semesters. ($H_0: SR_{Semester} = SR_{BM}$)
- Alternative Hypothesis: The task success rate each for subsequent semester will be different from the benchmark. ($H_1: SR_{Semester} \neq SR_{BM}$)

Hypothesis 2
- Null Hypothesis: The new cumulative task success rate established each semester will equal the benchmark established during the first three semesters. ($H_0: SR_{Cumulative} = SR_{BM}$)
- Alternative Hypothesis: The new cumulative task success rate established each semester will be different from the benchmark rate. ($H_1: SR_{Cumulative} \neq SR_{BM}$)
**Hypothesis 3**
- Null Hypothesis: The average positive and negative affect scores will be equal. ($\text{PA}_{\text{Avg}} = \text{NA}_{\text{Avg}}$)
- Alternative Hypothesis: The average positive and negative affect scores will not be equal. ($\text{PA}_{\text{Avg}} \neq \text{NA}_{\text{Avg}}$)

**Results**
Between fall 2014 and 2018, a total of 281 small groups completed the visual scavenger hunt, successfully completing 792 tasks and yielding 631 scorable photos.

A benchmark success rate of 90.05% was established by averaging the success rates for the 67 groups completing this activity during the first three semesters (fall 2014, spring 2015, and fall 2015).

<table>
<thead>
<tr>
<th>Semester</th>
<th>Sections</th>
<th>Groups</th>
<th>Successful Tasks</th>
<th>Scorable Photos</th>
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<tbody>
<tr>
<td>Fall 2014</td>
<td>1</td>
<td>8</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Spring 2015</td>
<td>5</td>
<td>26</td>
<td>67</td>
<td>44</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>5</td>
<td>33</td>
<td>90</td>
<td>81</td>
</tr>
<tr>
<td>Fall 2016</td>
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<td>40</td>
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<tr>
<td>Fall 2017</td>
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<td>243</td>
<td>213</td>
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<tr>
<td>Fall 2018</td>
<td>15</td>
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<td>185</td>
</tr>
<tr>
<td></td>
<td>47</td>
<td>281</td>
<td>792</td>
<td>631</td>
</tr>
</tbody>
</table>

**Hypothesis 1**
A one-way between groups ANOVA revealed no significant difference between the benchmark success rate established during the first three semesters (fall 2014, spring 2015, and fall 2015) and the success rates for the fall 2016, 2017, and 2018 semesters [$F(3, 277) = 1.27, p = .29$]. As a result, the null hypothesis was not rejected, and the mean success rates for fall 2016, 2017, and 2018 and the benchmark success rate were considered equivalent.

**Hypothesis 2**
This hypothesis must be subdivided into three parts, requiring the mean cumulative success rate calculated after the fall 2016 ($n = 107, M = 0.90, SD = 0.21$), fall 2017 ($n = 193, M = 0.92, SD = 0.19$), and fall 2018 ($n = 281, M = 0.93, SD = 0.18$) semesters to be independently compared with the benchmark success rate. Three independent sample $t$-tests were performed, and a statistically significant difference was not found between the benchmark and the fall 2016 ($t = -0.09, p = .93$), fall 2017 ($t = -0.72, p = .47$), or fall 2018 ($t = -1.15, p = .25$) semesters. As a result, the null hypothesis was not rejected, and the cumulative task success rate was held to be equivalent with the benchmark.
Hypothesis 3

The perceived PANAS markers of positive affect (PA) and negative affect (NA) for each scorable card were averaged, and the average PA ($M = 2.87, SD = 0.67$) and NA score ($M = 1.12, SD = 0.11$) scores were found to be moderately, inversely correlated, $r = -0.58, p < .000$. This indicates that a higher PA score is associated with a lower NA score, and vice versa. A paired samples $t$-test also indicated a statistically significant difference between average PA and NA scores ($t_{630} = 59.21, p < .000$). In this case the null hypothesis was rejected in favor of the alternative hypothesis: the PA and NA scores were not equal.

Discussion

Although the semesterly and cumulative success rates both increased from the benchmark and the previous semesters, the increase did not rise to the level of statistical significance. The insignificant change is likely due to chance, which corresponds with the causes of task failure identified in a user experience review. The two most likely barriers to success were minor variations in the library, such as moved furniture and equipment, misshelved books and other resources, and altered signage, and variations in the speed and availability of the wireless network, which prevented students from uploading their photos: both issues are a product of chance. Another potential barrier is participating students’ attitude and emotional state (e.g., illness, low mood, lack of interest) on the day of the activity. However, there is insufficient evidence to confirm this supposition, precisely because the photos that might have supported it are missing. Because variations in success rate are due to chance, a success rate of approximately 90% is expected in future iterations of the activity, unless substantial changes are made to the design.

As expected, students’ PA scores were significantly higher than NA scores, confirming feedback provided informally by instructors. Adapting the PANAS to scoring by an observer, however, requires additional work for it to become a useful measure in library instruction. The PA markers of the PANAS scale are appropriate and expected within the context of a classroom (e.g., interested, alert, attentive), while many of the NA markers (e.g., guilty, ashamed, afraid) would be alarming. As a result, the distribution of PA scores is relatively normally distributed, while NA scores skew quite negatively (fig. 3 & 4).

| FIGURE 3 |
| Distribution of average positive affect scores |

![Histogram of average positive affect scores](image-url)
A supplemental scale for neutral affect, which would account for less extreme emotions, such as boredom and disinterest, would help the observer more accurately capture the affect markers demonstrated by students. Additionally, a self-reported indicator of mood from the students would replace some of the context missing from the photos, which renders students’ affect difficult to interpret. For example, a student may appear inattentive in a photo because s/he felt bored or because s/he was caught unawares by the camera. Many students have fun projecting different attitudes and emotions in their pictures, and even a short comment from them would allow the observer to more accurately interpret their affective response.

Conclusion

The visual scavenger hunt is an effective and engaging orientation for incoming students. Based on the pedagogies of active learning and peer teaching, this activity leverages their fluency in visual language to help them overcome the barrier of library jargon and focus on what they are seeing in the library. Students respond enjoy it, as indicated by significantly higher PA scores, and leave with a broad understanding of how the library can help them succeed.

Endnotes

1. Special thanks to Dr. Rebecca Scoggin McEntee, now at The University of Mary Hardin-Baylor, for the opportunity to work with her students.
8. Bandura.

**Bibliography**


