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Reconsidering Literacy

Audrey Powers
University of South Florida, apowers@usf.edu

Marc Powers
University of South Florida, mpowers@usf.edu

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Audrey Powers, University of South Florida, apowers@usf.edu

Marc Powers, University of South Florida, mpowers@usf.edu

Abstract

Literacy, until recently, was defined as the ability to read printed text and to understand the nuances of both the form and content of that printed text. More recently there has been a focus on subsets of literacy—data literacy, numeracy, visual literacy, media literacy, and so on—that recognizes the means of communicating ideas and facts are not limited to the printed text and that there are multiple means which may be more powerful ways of communicating in our world. In recent years, higher education has been redefining what it means to be educated—from a focus on specific bodies of knowledge, or disciplines, to a focus on developing and mastering skills for varying modes of inquiry.

Simultaneously, there has been a growing focus on expanding how students and faculty communicate knowledge—what was once strictly the term paper approach is being replaced by the oral presentation, the poster session, or the artistic response.

In a world where ideas are more readily communicated via social media such as YouTube, Instagram, Facebook, and Twitter, the ability to accurately assess additional modes of communication is critical.

This paper will explore different subsets of literacy, describe a method for developing mastery of those literacies in higher education, and advocate for academic library professionals to become specialists focused on literacies as much as, if not more than, on content.

Introduction

The traditional definition of literacy according to the Oxford English Dictionary is the quality, condition, or state of being literate; the ability to read and write (https://www.oed.com/view/Entry/109054?redirectedFrom=literacy&). In 2003 UNESCO began to promote literacy as a human right. Their definition of literacy is the "ability to identify, understand, interpret, create, communicate, and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goal, to develop their knowledge and potential, and to participate fully in their community and wider society" (https://en.wikipedia.org/wiki/Literacy).

Literacy according to both definitions is based on the post–printing press assumption that the best means of disseminating information and ideas was through written text; however, a popular formula for oral communication attributed to Albert Mehrabian proposes that our understanding of meaning and emotion is based only 7% on the text, 38% on the tone and music of the voice, and 55% on body language (https://en.wikipedia.org/wiki/Albert_Mehrabian).

While the percentages may not be accurate, the influence of voice and movement are accepted as playing a significant role in our understanding of meaning and emotion. The continued use of the formula, which has been discredited by researchers, is due to its popular use by public speaking trainers and acting coaches. Anecdotally, this is a constant point of contention with graduate students in English literature who complain, particularly in performances of Shakespeare, that the actors are always *interpreting* instead of playing the role as written. The actors typically respond that that is impossible; that they are playing it as written, but with their voices and their bodies, which makes it an interpretation.

Today we communicate in many different ways. Ideas are communicated via YouTube, Instagram, Facebook, LinkedIn, SnapChat, Tumblr, Reddit, Quara, TikTok, Vimeo, and Twitter. Social media includes social networking sites, social review sites, image sharing sites, video hosting sites, community blogs, and information exchange sites. As a result, the ability to assess various modes of communication is important.

The definition for literacy in the new millennium should be about how humans process and evaluate

information from multiple contexts, not only print materials, and the mastery of multiple literacies is crucial. The current focus is on the ability to understand and accurately interpret graphs and charts, photographs, and other visual media. This has led to the development of subsets of literacy such as data literacy, digital literacy, numeracy, media literacy, information literacy, computer literacy, and visual literacy. However, there is an equally significant need to be able to interpret how sound, movement, and space are utilized in the communication of ideas.

Higher education is in the process of being redesigned from focusing on specific bodies of knowledge or disciplines to mastering skills associated with varying modes of inquiry. For example:

- Expanding the ability to communicate knowledge from traditional term papers to oral presentations, poster sessions, YouTube videos, and artistic responses

- Developing job skills

- Expanding practice-based learning and with that the growth of badging

- Assessing the value of a degree program based on the average income of graduates

- Developing interdisciplinary or multi-disciplinary degrees and certificates to address current trends in the job market

- Reconsidering the value of the humanities and arts in higher education (the STEM vs. STEAM argument)

The curricula in most disciplines have been redesigned to address these concerns. As a result, general education curricula and assessment are now focusing less on the traditional liberal arts content-by-discipline approach and more on the development of knowledge-based skills.

For academic librarians, the questions become: Do our collections support the new paradigm? What should our focus be? Should we be focused on the mastery of content, the mastery of knowledge-based skills, or the mastery of literacies?

In an age where interdisciplinary study is growing, mastery of multiple literacies in multiple contexts is crucial. Knowledge-based skills center on developing the ability to employ a variety of methods, and demonstrating that through the successful achievement of student learning outcomes. The Association of American Colleges & Universities has developed extensive value rubrics (https://www.aacu.org/value-rubrics) primarily for knowledge-based skills, and also includes a few literacies, although it is interesting to note that the focus of the outcomes for the literacies is on the demonstration of skills rather than the development of conceptual understanding (https://www.aacu.org/value/rubrics/inquiry-analysis).

The teaching of literacies should emphasize the development of more profound information gathering and understanding techniques. As with textual literacy, in all literacies, the ability "to read" and "to write" are intricately connected. Traditionally, across all disciplines, textual literacy has been a common thread, and to a varying degree, each discipline includes additional literacies.

Beyond the literacies previously noted, there are many others being promoted today, such as:

- Cultural literacy

- Geoliteracy

- Science literacy

- Statistical literacy

- Emotional literacy

- Financial literacy

- Gender literacy

- Civic literacy

The primary purpose of this paper is to promote the four literacies that predate text as a means of communicating ideas: visual literacy, aural literacy, kinesthetic literacy, and spatial literacy.

Visual Literacy

Visual literacy is the ability to interpret, negotiate, and make meaning from information presented in the form of an image, extending the meaning of literacy, which commonly signifies interpretation of written or print text. Visual literacy is based on the idea that pictures and their meaning can be "read" and understood. The basic objective elements are line, shape, form, value, space, texture, color, composition, and perspective. The subjective elements have to do with interpretations of the subject matter, the context in which the image is seen, and the viewer's emotional state and depth of knowledge.

The introduction to ACRL's (Association of College and Research Libraries) Visual Literacy Standards for Higher Education states,

> the importance of images and visual media in contemporary culture is changing what it means to be literate in the 21st century. Today's society is highly visual, and visual imagery is no longer supplemental to other forms of information. New digital technologies have made it possible for almost anyone to create and share visual media. Yet the pervasiveness of images and visual media does not necessarily mean that individuals are able to critically view, use, and produce visual content. Individuals must develop these essential skills in order to engage capably in a visually oriented society. Visual literacy empowers individuals to participate fully in a visual culture. (Hattwig, 2011)

In *Beautiful Evidence*, Edward Tufte (2006) noted the importance of putting visual elements in context. For example, in 1953 when James D. Watson and Francis Crick identified the structure of DNA (Figure 1), they constructed a model that included a label with a measurement scale of 0–10 angstroms. An angstrom is a unit of length used to express wavelengths and interatomic distances.

Explanatory images accompanied by a measurement scale assist with the understanding of the image and turns a piece of visual information into evidence. In contrast, an image viewed on social media that was taken with a laser-scanning microscope by Igor Siwanowicz (2016) shows the details of a diving beetle's foot (Figure 2). While most striking are color and line, all of the elements of visual literacy are represented in this image (color, form, line, shape, space, texture, and value). However, a measurement scale was not given for this image. A beetle's foot is 20 micrometers, which is equivalent to the diameter of a human hair (17–181 micrometers). A label showing a measurement scale would have been helpful as in the image in Figure 1.

Aural Literacy

Aural literacy focuses on the language of sound, which conveys emotional, cultural, and intellectual meaning through objective, structural features such as:
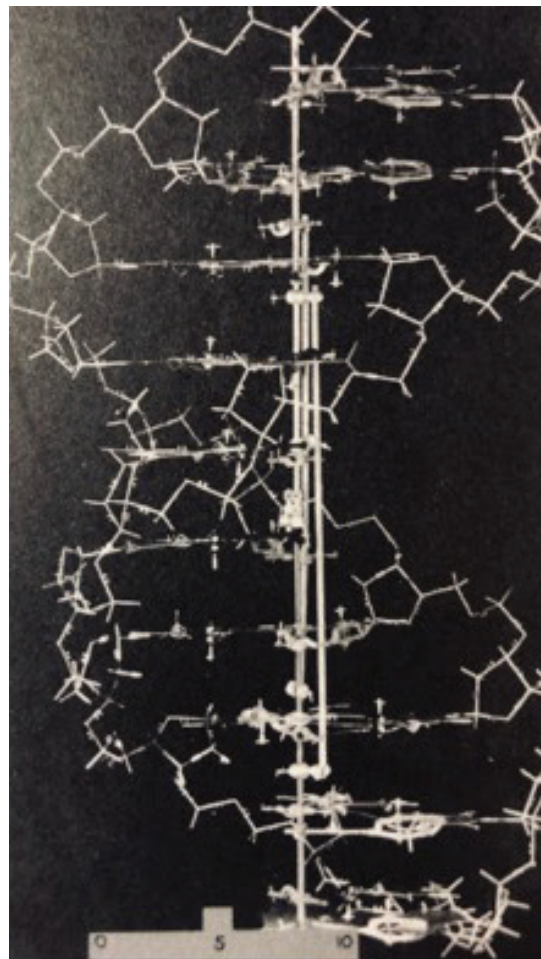
- Tempo
- Mode or scale

Figure 1. DNA model. James D. Watson, *The Double Helix* (New York, 1968).

- Loudness
- Melody (the linear succession of tones)
- Rhythm (the recurring pattern / beat)

And also through subjective elements:

- Performative features (who is performing, what is their level of virtuosity, range, and emotional connection to the material?)
- Listener features (what their emotional state is at the time of hearing, their intellect as well as their foreknowledge of what they are hearing, and their expectations)
- Contextual features (of time, place, and circumstance, which express cultural, social, and historical ideas, as well as external events).

Figure 2. Acilius diving beetle male front tarsus (foot) 100x. Photograph by Ignor Siwanowicz, 2016.

When the movie *Jaws* was released in 1975, the simple two-note motif at the beginning created a sense of danger, and its increase in tempo established a sense of impending doom, all before the shark was seen for the first time. That haunting music was subliminally heard by beachgoers that summer who stayed out of the water in droves while scanning the horizon for a fin. Thirty years later, *Jaws* composer John Williams was conducting the Boston Pops, cued the bassoon, and when the two-note motif was heard, there was a growing ripple of laughter in the audience; listener and contextual features had transformed the meaning of the motif.

Kinesthetic Literacy

As the cartoon in Figure 3 clearly communicates, kinesthetic literacy may be one of the more difficult to understand. Kinesthetic literacy focuses on the language of movement, which conveys emotional, cultural and intellectual meaning through objective, structural elements:

- Weight
- Time
- Space
- Flow

"Say what's on your mind, Harris—the language of dance has always eluded me."

Figure 3. New Yorker cartoon by Robert Mankoff. Published January 14, 1991.

These elements were codified in the 1930s as a means of notating dance, but also were used in factories to match a worker's natural movement quality to the efforts required for specific physical tasks. Later actors employed Rudolf Laban's efforts to establish physicalization and vocalization of characters (speaking is a physical action; what is heard is aural).

Choreographers also employ linear sequence and rhythm as objective elements. The same subjective elements in aural literacy apply to kinesthetic literacy—performative, listener (viewer), and contextual features. Choreography is an intentional activity (intentional defined as "with meaning"); it results in meaningful movement that is capable of communicating life issues.

Revelations, a dance choreographed by Alvin Ailey, premiered 60 years ago, (https://www.youtube.com/watch?v=tNqaixKbrjs), and included aural, visual, and kinesthetic elements from the preceding 200 years of American history. It remains contextually relevant in Alvin Ailey American Dance Theatre's repertoire today and epitomizes the African American experience.

Spatial Literacy

The Seattle Public Library's Central Library (Figure 4) is a 363,000-square-feet, 11-story glass and steel structure in downtown Seattle. It can house 1.5 million resources and has 400 computers. Over 2 million people visited the first year.

In the process of its design, the library leadership and architects considered many elements. How does

Figure 4. Images of the Seattle Public Library available in *C is for Crank* (blog) and *Friends of the Seattle Public Library Blog*.

space syntax, or the spatial configuration, affect a person's aesthetic and emotional appraisal? Space syntax quantifies inhabited space by exploring spatial configuration and social meaning, and is a good predictor of human patterns of movement (Kuliga, Dalton, & Hölscher, 2013).

How was wayfinding in the new library studied? Does wayfinding matter?

In this case, participants were asked to choose adjectives that described their aesthetic and emotional experience. Adjectives such as impressive, creative, stimulating, and innovative were used to describe their experience, but some people said it was inconsistent, overwhelming, frustrating, intimidating, and stressful (Kuliga et al., 2013, pp. 77:8–77:9).

There are multiple variables to be considered for spatial literacy, again, both objective and subjective:

- Cultural and social meaning
- Human and environmental interaction
- Selection and arrangement of environmental characteristics
- Complexity
- Legibility and coherence (order, organization, and mystery—a sense of the unexpected)

Transliteracy

Transliteracy refers to a collection of literacies that become interconnected and virtually inseparable in a field of study. Theater, for example, typically employs seven literacies:

- Textual (the old-school literacy)
- The four literacies essential to communication:
  - Visual
  - Aural
  - Spatial
  - Kinesthetic
- Two additional literacies that are currently being proposed:
  - Historical
  - Cultural

The more each of these are developed, the more profound the understanding of the meaning is on an intellectual, spiritual, and emotional level. The difference in understanding the meaning of any work of art and the ability to discuss or communicate that is based on what literacies have been developed. Are these relevant to other disciplines and are they relevant to everyday life? Probably.

We are bombarded by information in all five of these forms of communication and we are affected by them, but on a conscious level can it be discerned how and why that information is affecting us, or is the effect only subliminal?

In the 1950s Howard Johnson's restaurants with their distinctive orange roofs sprang up everywhere, and

were recognized by travelers as a place to eat with a known menu and known quality. Subliminally, orange equaled trustworthy food. As fast-food places—McDonald's, Burger King, Hardee's—took over, they incorporated both yellow and red in their signs (the two colors that combine to make orange, put together fast for your convenience) with the added subliminal effect that people get hungry when they see those colors together.

Interdisciplinary Literacies

How are interdisciplinary literacies going to be implemented in our information literacy curricula?

Several years ago, faculty members from various units on the University of South Florida campus partnered with the Honors College to devise a curriculum for all freshmen in the required Acquisition of Knowledge course. A variety of studios were developed: a Perception Studio, a Performance Studio, and an Information Studio. Other studios have subsequently been added: a Self and Community Interpretation Studio, a Public Discourse Studio, and an Emotion and Empathy Studio assignment.

The Information Studio includes online modules and learning activities prior to class, which teach students to navigate the website, find their librarian, locate subject guides, and identify scholarly articles. However, now the proposal is to partner with teaching faculty to develop curricula and co-teach information literacy in conjunction with other literacies. In this context, teaching information literacy and visual literacy during the in-class Information Studio to a cohort of medical humanities students was feasible. After reviewing rudimentary information about conducting a literature review, two hands-on activities took place that were collaboratively developed with the Acquisition of Knowledge Medical Humanities instructors and the librarian. An article analysis through visual observation of nine scholarly articles from a variety of disciplines was undertaken and discussed. Students were asked to consider:

- Types of articles
  - ◦ Discipline(s)
  - ◦ Research/project types (e.g., theoretical vs. empirical)
  - ◦ Style of writing
  - ◦ Overall outcomes (e.g., qualitative vs. quantitative)

- Overall composition
  - ◦ Main framework/flow
  - ◦ Main components
  - ◦ Research methodology (e.g., conceptual, field-based, case studies, etc.)
- Presentation tools
  - ◦ Statistical data
  - ◦ Diagrams
  - ◦ Storytelling (e.g., review, narrative, rhetorical, visualized, etc.) (Sakai, 2019)

For the second activity, students completed Database Searching Worksheets for their research topics, which included:

- Identifying keywords
- Writing a search statement using Boolean logic
- Determining databases to search in based on the disciplines of their research topics

The students were asked to look for scholarly articles with embedded visuals that told their research story and supported their research topics. Ideally, in the future students will locate scholarly articles and then create their own original visuals to support their research.

From Teaching Information Literacy to Teaching Literacies

How do academic libraries move from teaching information literacy to teaching literacies? How should our collections support teaching literacies?

One of the strategic directions in the University of South Florida Tampa Library is to incorporate additional literacies into the information literacy curricula and increase the reach of our instructional efforts. The intent is to work with faculty and other campus partners to expand the focus of information literacy instruction to include other visual, data, quantitative, and media literacies within the ACRL framework using a variety of platforms (online, video, and face-to-face) to reach a wider undergraduate population (Nash, 2019).

The proposal is for librarians to co-teach with instructors in other disciplines in a 1.5-hour literacy workshop. Students would complete a quiz and a project

Database Searching Worksheets

Start Your Research Here

<u>Do this before you start your research</u>
Brainstorm with yourself
Identify potential research topics
Write down relevant words, acronyms, and synonyms
Define concepts using keywords
Identify keywords in the literature

<u>Develop a research statement</u>
Draft a concise sentence describing your research topic.
Convert your research statement into a search statement.

Example:
Does music affect cognition in children or adolescents, but not adults?

Highlight the terms you will want to use in your search:
Example:
Does <mark>music</mark> affect <mark>cognition</mark> in <mark>children</mark> or <mark>adolescents</mark>, but not in <mark>adults</mark>?

Write a search statement:
Example:
(Music AND cognition) AND (children OR adolescents) NOT (adults)
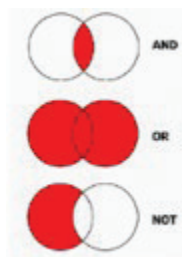
<u>Test your search</u>
Determine if your search results are accurate
Narrow or broaden your search
Use a Thesaurus or Subject Terms to identify the appropriate words to use in that database
Try different concepts, ideas, search terms, and databases

<u>Other</u>
Use the HELP feature in the databases
Use the references in good articles you found to locate other articles that this author used
Use the Cited Bys to find other articles that cited this author

Boolean Operators

_____

AND
Music AND Cognition

AND finds all articles about "Music" and all articles about "Cognition."
The results give you only articles about music <u>and</u> cognition.
AND narrows your search.

OR
Children OR Adolescents

OR finds all articles about "Children" and all articles about "Adolescents."
The results will give you all articles about both children and adolescents.
OR expands your search.

NOT
(Children OR Adolescents) NOT Adults

NOT finds all articles about "Children OR Adolescents," but eliminates articles about "Adults."
NOT narrows your search.

DATABASE SEARCHING WORKSHEET

• Briefly describe your research topic.

• List several keywords that define your topic. Include words, phrases, acronyms, and or synonyms.

• Boolean operators are used to combine search terms. Using the keywords that you identified, write a search statement that defines your research topic.

	AND		**OR**		**NOT**	
music	AND	cognition				
		children	OR	adolescents		
					NOT	adults

• List the databases that may have the information you are looking for.

• Search the databases you identified. Write down the names of the databases searched, the terms you used, and the number of relevant citations and/or articles you retrieved.

Figure 5. Images from a worksheet explaining database searching. (Audrey Powers, 2019.)

to earn an Open Badge in Badgr. The Literacy badging program would have common themes threaded throughout the literacies and a student could select multiple literacies to earn badges. Partnering with instructors who employ various literacies in their courses, a badge would be earned when the student has taken the workshop and one of the courses employing that literacy is completed. Encouraging students to explore multiple literacies would enable a student to earn a Multiliteracy Badge.

Conclusion

We have recognized and rationalized the necessity of developing a method to teach the pretextual communication literacies, and to develop collections of both textual and nontextual items that support and expand the understanding of those literacies. What resources need to be available? What should the library collection look like? How do we teach students to use them and who should be teaching them?

The next stage of this plan, to teach students to be multiliterate or transliterate, will require a thorough exploration of the structure and purpose of the academic library. This is an exploration into what may result in a radical paradigm shift in the way we educate students in the process of acquiring, evaluating, and using information.

References

Albert Mehrabian. (2019, November). In *Wikipedia*. https://en.wikipedia.org/wiki/Albert_Mehrabian

Alvin Ailey American Dance Theatre. (1960, 2016). *Revelations* [Video]. YouTube. https://www.youtube.com/watch?v=tNqaixKbrjs

Association of American Colleges & Universities (AAC&U). *Inquiry and analysis VALUE rubric*. Retrieved November 22, 2019, from https://www.aacu.org/value/rubrics/inquiry-analysis

C Is for Crank [Blog] and *Friends of the Seattle Public Library Blog*. Retrieved October 20, 2019 from https://thecisforcrank.com/ and http://architectuul.com/architecture/view_image/seattle-public-library/1109

Colossal. Retrieved October 12, 2019, from https://www.thisiscolossal.com/2016/10/insect-microscopy-igor-siwanowicz/

Hattwig, D., Burgess, J., Bussert, K., & Medaille, A. (2011, October). *ACRL visual literacy competency standards for higher education*. http://www.ala.org/acrl/standards/visualliteracy

Kuliga, S., Dalton, R. C., & Hölscher, C. (2013). Aesthetic and emotional appraisal of the Seattle Public Library and its relation to spatial configuration. In Koo Shin (Ed.), *Space Syntax Symposium 9th: Proceedings of 9th International Space Symposium*, 77:1–77:17. Seoul: Sejong University Press.

Laban, R., & F. C. Lawrence, F. C. (1974). *Effort*.

Mankoff, R. (1991, January 14). *The New Yorker Magazine*. Retrieved October 12, 2019 from https://cartoonbank.com/

OED Online. (2019, September). *Literacy* [Webpage]. Oxford University Press. Retrieved November 22, 2019, from https://www.oed.com/view/Entry/109054?redirectedFrom=literacy&

Powers, A. (2019). Database searching worksheets. Information Literacy class handouts.

Siwanowicz, I. (2016). The extraordinary details of tiny creatures captured with a laser-scanning microscope [Photograph], 100x. *Colossal*. https://www.thisiscolossal.com/2016/10/insect-microscopy-igor-siwanowicz/.

Tufte, E. R. (2006). DNA model: James D. Watson, *The Double Helix.* In E. R. Tufte, *Beautiful Evidence*. Cheshire, CT: Graphics Press.

Wikipedia. (2019, November). *Literacy* [Webpage]. https://en.wikipedia.org/wiki/Literacy

Watson, J. D. (2006). DNA model. In E. R. Tufte, *Beautiful Evidence.* Cheshire, CT: Graphics Press.