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# Paradigm Shift, Expansion, and Inclusion: Visual Literacy Research for the Field of Information

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## Abstract

*In addition to the continuing call for the inclusion of visual literacy into the curriculum for library and information science education, a paradigm expansion in research to develop and lead an interdisciplinary research advancement is a pressing task. The proposed paradigm shift in research results from the shift in the nature of information from text-based to visual information. Such a paradigm shift requires expanding research methodologies and theoretical frameworks. At the same time, paradigm inclusion is needed to invite and embrace interdisciplinary research and diverse research methodologies and theoretical frameworks to study visual information. This paradigm shift, expansion, and inclusion empathize with the social construction of knowledge/meaning in the studies of visual information by communities of users/viewers/readers.*

**Keywords:** visual literacy, paradigm shift, paradigm expansion, paradigm inclusion, information research, social construction of knowledge, ACRL Visual Literacy Competency Standards, Framework of Visual Literacy for High Education

## Introduction

The field of information is an interdisciplinary study with theories and practices focusing on "the origination, collection, organization, storage, retrieval, interpretation, transmission, transformation, and utilization of information" (Borko, 1968, p. 3). "The field of information went through its first significant paradigm shift in the 1980s, changing from a system orientation focus to a user-centered focus (Dervin & Ninan, 1986). Following this shift, a new paradigm emerged as Nardi and O'Day (2000) called for computer scientists and software engineers to design systems as information ecologies that connect people, information, technology, and their practices in context. In 2008, Marchionini (2008) indicated that information scientists should adopt an ecological framework. Fidel (2012) also advocated an ecological framework to conceptualize the engagement between information behavior and information practice.

Nevertheless, at present, it remains questionable whether the transition to an ecological perspective of human information interaction has successfully taken place." (Tang, 2020,2019a-b). Researchers in the information field have been applying various research methods to study information-related issues. Successful research methods include experimental design, content analysis, citation analysis, surveys, interviews, action research, observational research methods, visual research methods, and others. Researchers use these methods in quantitative and qualitative approaches to examine the information-related concerns or problems by applying theoretical frameworks in cognition, behavior sciences, constructivism, interpretivism, poststructuralism, postmodernism, and other theoretical dimensions. Meaningful theoretical frameworks have been applied to support these research methods.

The proposed paradigm shift focuses on the information nature shifted from textual information to visual information. The paradigm expansion focuses on expanding existing research methodologies and theoretical frameworks to support this paradigm shift. The paradigm inclusion invites interdisciplinary research and embraces diverse research methodologies and theoretical frameworks to study visual information. This paradigm shift, expansion, and inclusion empathize with the social construction of knowledge/meaning in the studies of visual information by communities of users.

The information field is in the midst of advances in technology, internet access, and the rise of the pervasive visual information world. Visual information flows freely in this flat world without boundaries or structures or in various/different shapes and formats (Ma, 2015). When text-based or textual information is visualized, the meaning of the information becomes the center of research. When meaning becomes elusive or a shared process/activity in working with visual information, the social construction of knowledge/meaning

has become essential to a new research paradigm. Research methodologies need to focus on the encoding and decoding processes to allow the social construction of knowledge/meaning for visual information by communities of users, which is a key concept of this article and research endeavor. This social construction of meaning/knowledge is based on communities of readers/viewers/users/patrons who create meaning. When meaning is created and constructed/deconstructed by readers/viewers/users/patrons in a shared community, research methodologies and theoretical frameworks to study meaning construction are critical and essential to the success of such a research process.

### **Significance of the Social Construction of Meaning**

Although some research in the information field has focused on visual information, little research has paid attention to the meaning construction of visual information by communities of users. For this article, the focus is on the social construction of the meaning of visual information research. Such a research endeavor invites and addresses some of the following research concerns.

- What happens when data and text-based or textual information is visualized? The social construction of knowledge/meaning will become the center of visual information research.
- When data/information is visualized, data/information becomes a visual text. A visual text invites communities of readers/viewers/users to interact with the visual text to construct meaning. A visual text is the result of a behavior with intent, and it is not neutral. Meanings are socially constructed.
- When text-based or textual information is visualized, research methodologies must be developed to study the social construction of knowledge/meaning.
- When text-based or textual information is visualized,
  - research methods of visual information-seeking behavior have to be developed for the social construction of knowledge/meaning.
  - research methods of organizing information, indexing, and information retrieval have to be developed for the social construction of knowledge/meaning.
  - research methods, information representation, or information visualization have to be developed for the social construction of knowledge/meaning.
  - research methods of information instruction have to be developed for the social construction of knowledge/meaning.
  - research methods of collection management and policies have to change for the social construction of knowledge/meaning.
  - research methods of interface design for information systems have to be developed for the social construction of knowledge/meaning.
  - the research methods of information visualization have to be developed for the social construction of meaning.
- When visual information may not be quantifiable, quantitative research methods may or may not be sufficient or applicable for most of the research on visual information, new and different research methods, and direction need to develop and lead.
- How do communities of the readers/viewers/users extract meaning from visual texts encoded by the authors/designers/libraries?
- How do the communities of readers/viewers/users create meaning while interacting with the visual texts?
- How will researchers approach the above sample of concerns of visual information research?
- What theoretical framework(s) and research methods will be appropriate to carry out visual literacy research for the field of information?

The information field has dramatically embraced the world of visual information. Historically, visual literacy research started in the mid 1960s. The author started to introduce visual literacy to the information field in 1993. A review of some definitions is necessary for the readers.

### **What is Visual Literacy?**

John Debes' offered the following definition of the term:

"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." (1969)

### **Definitions of Social Construction of Meaning in Visual Literacy Research for the Field of Information Research**

Research in meaning construction in this visual information world is a paradigm expansion that requires particular research methodologies and theoretical frameworks to support such research undertakings. In the publication in 2015 (Ma, 2015, p. 2-6), Ma provided the following definitions in the research model to study meaning construction to facilitate reading and understanding of the key concepts.

The author/designer/librarian/information professional is defined as the creator of a text. Text or visual text has two meanings. The first meaning is the physical or visual text one works with. Such a text is a communication created by the author/designer, carrying socially and culturally encoded messages that readers/users of different communities may understand and interpret in various ways. The encoded messages can be decoded or interpreted by the members who share the same membership in the same community. The second meaning is consideration of the socially constructed meanings by the reader/user and the community of readers/users as a text or discourse.

In the field of library and information science, the text refers to documents, monographs, or journals that are in print or digital formats. Text is in contrast to a visual image/object, digital visual surrogate, or visualization in other forms.

A reader is someone who interacts with the visual text. In library and information science, it refers to the library user or patron.

Reading In library and information science, reading is understood as user information-seeking, searching, and information query formation processes. In visual literacy research for information studies, reading is also the process of creating meaning while interacting with a text/visual text. Visual texts contain socially and culturally encoded symbols and signs, which remain dormant until they are received by the reader/user/viewer. It is the reader/user/viewer who creates their meaning.

A community of readers/users/patrons could be a group of people who share similar cultural, social, economic, professional, geographic, and other positions. For example, communities of readers/users familiar with the same culture can read the text and share ideas with members from the same community.

In library and information science, the community of readers/users/patrons refers to the community concerned with service and/or the community of users that share similar cultural, social, economic, professional, geographic, and other positions.

Intertextuality suggests that certain meanings of one text are created only by the existence of related texts (De Vaney, 1987). Brenda Marshall (1992) notes that "intertextuality is precisely a momentary compendium of everything that has come before and is now. Intertextuality calls attention to prior texts in the sense that it acknowledges that no text can have meaning without those prior texts, it is space where 'meanings' intersect" (p. 128).

In the library and information science field, intertextuality refers to particular meanings or interpretations of one information search strategy or metadata construction or subject analysis created only by the existence of other documents or texts.

Visual intertextuality suggests that the availability or accessibility of related visual texts constructs particular meanings of one visual text. Meanings are constructed from a visual text in conjunction with the socially

situated viewers. Viewers create meanings when they interact with the visual texts through visual intertextuality. (Ma, 2013)

In the field of library and information science, visual intertextuality refers to certain meanings or interpretations of one information search strategy or metadata construction or subject analysis, which are created only by the existence of other visual documents, objects, surrogates, or visual materials.

Encoding means precisely that --selecting the codes which assign meanings to events, placing events in a referential context that attribute meaning to them (fictional codes perform this work too; it is not limited to the codes of "actuality" and naturalism). (Hall, 1973).

In the field of library and information science, encoding refers to the information storage process where meanings are assigned. Encoding means assigning codes and meanings to metadata in the organization of information, subject analysis, data structure, database design, interface design, information systems, and information storage.

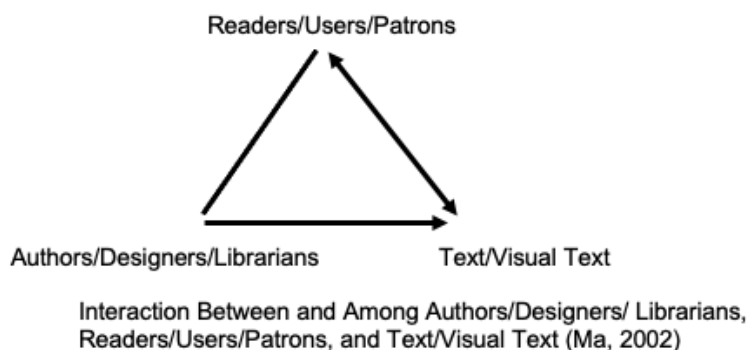
Decoding is defined as meaning which is decoded by the receiver. For a visual text, one needs to be taught and guided to decode visuals correctly. One aspect of visual literacy is interpreting and creating meaning from the stimuli surrounding them.

In library and information science, decoding is defined as the process of information retrieval. The user/patron formulates information retrieval strategies to search for information either by him/herself or with the assistance of an intermediary information professional. For example, the reference information professional usually assists with the decoding process, and it happens with a reference interview.

Codes are syntax patterns created by the conventions of production that are repeated daily. The syntax patterns or codes are culturally constructed. They need to be examined for paradigmatic meanings.

In the field of library and information science, such codes frequently appear in metadata schemas, codes for the organization of information, data structures, search structures/options, interface designs, and other related areas.

**Figure 1**  
*Research Design Model*



The model shown in Figure 1 explores the relationships between and among the authors/designers/librarians, text/visual text, and communities of readers/users/patrons in the interaction of a visual text. In this model, the critical and social construction of meaning/knowledge by users/patrons/readers/viewers are based on communities of users/patrons/readers/viewers rather than an individual's cognition or constructive or social constructive knowledge. That is the essence of research methodology and theoretical framework to study the social construction of knowledge/meaning in the visual

information world by communities of users. For the paradigm expansion in research of information fields, a research model like this allows for ascertaining the social construction of meaning created by authors/designers/librarians, communities of users/patrons/readers, and visual texts. The following research examples illustrate how this research model works.

## **The Expansion of Theoretical Framework(s) for the Social Construction of Meaning/Knowledge**

### **1. Paradigm Expansion: The Library is a Semiotic Construct**

Semiotics is one of the theoretical frameworks that are appropriate for visual literacy research of the information field. The library is a semiotic construct. Library operations are semiotically defined; for example, reference services, access services, archival services, technical services, main entries, added entries, access points, description, tagging, manifestations, expressions, attributes, AACR2, RDA, ISBD, MARC tags, fixed field, variables, and many other library terms/signs/images and concepts. The author applies semiotics to study icons on library websites in 1996 and 2006. Ma used the semiotics theoretical framework to support the research design of icon studies on the World Wide Web. The research stated that "Semiotics is the theory of signs. As Eco explains, semiotics' studies all cultural processes as processes of communication' (Eco, 1979, p. 8). Ann DeVaney's semiotic model for analyzing social and cultural issues in educational television is used for the study. This model was based on the theories of Ferdinand de Saussure, Roland Barthes, and Christian Metz, who emphasize that knowledge is socially constructed through language and communication systems. In other words, meaning is socially and culturally built. The concept of the sign contains two aspects: signifier, which is the soundimage, and signified, which is the concept. For example, the relationship between the concept of a 'book' (the signified) and the soundimage made by the word 'book' (the signifier) forms a sign.

'Signs are further organized into systems of meanings or codes' (Muffoletto, 1994, p. 302). Semiotics, like structuralism, studies the relationship between form and meaning. 'Signs are assigned meaning based on historical patterns of use that are recognized within social/cultural groups. These patterns of use are called codes.' (Pomper, 1988, p. 18). A sign comprises two types of meanings: syntagmatic and paradigmatic. Syntagmatic meaning refers to the meaning that is assigned based on syntax or based on the relationships among signs. Paradigmatic meaning is derived from other systems or codes. The icons on the homepages of the WWW carry meaning dependent on the syntax of their use. They also carry paradigmatic meanings derived from other systems or domains." (Ma, 1999, p. 235). This research is an example of using a semiotic theoretical framework to study visual information. A follow-up study was published in 2006.

Another research published in 1999 by Ma and Diodato presented how semiotics can be used as a theoretical framework to study traditional indexing principles for icons indexing the library websites for retrieval. Icons are both indexing devices and signs. They are visual forms of knowledge representation. The researchers "examine icons as visual form of knowledge representation (the structure and features of the icons) to determine how icons are representative of the information to which they are linked. The investigators assessed how each icon on the selected library website satisfied the chosen indexing principle" (Ma, 1999, p. 181).

Does semiotics allow the social construction of knowledge? It has its limitation of structuralist view to limit knowledge representation on form in its visual text.

### **2. Paradigm Expansion: Theoretical Framework for the Concept of Library Users: Communities of Library Users**

In 2015, through a series of talks and presentations, Lorcan Dempsey popularized the views of Douglas Zweizig who had urged library staff to think about the library in a new way: think of the library in the life of the user, not the user in the life of the library (Zweizig, 1973) (Bedi and Webb, 2020, p. 127).

Libraries have been evolving in this visual information world in the user's life. Visual literacy has been playing an increasingly important role in enriching libraries in the life of the user. In the visual information world, the expanded theoretical framework to support Dr. Zweizig's views of "the library in the life of the user" will be the expanded concept of "the library in the lives of communities of users." This expanded view

is especially meaningful in the visual information dynamics and the changing diverse world to focus on the library in the lives of diverse communities of users. When the library shifts its services to the communities of users in the visual information world, the encoding and decoding processes of visual information are also expanded and shifted. At the same time, communities of library users create meaning and construct meaning in the decoding process of library operations and services.

This powerful theoretical framework allows researchers to study the relationships between and among communities of users, authors/designers/librarians/information professionals, and the visual texts in the meaning construction process.

The following publications provide examples of research to study the relationship between and among authors/designers/information professionals, users/viewers/readers, and visual texts. Based on the author's research on analyzing postmodern art by applying the theoretical framework of reader-response criticism (Ma, 1995), the research was conducted to examine the relationship between and among designers, text, and users of the Galter Health Sciences Library Web site. It asks such questions as "How do Web site designers construct their subject?" or, "Whom do the web designers think their users are?" The study ascertains the intentions of the designers of the GHSL Web site; examines the meanings made by the users through interviews; compares the similarities and differences of designers' intentions with their organization of knowledge represented in the GHSL Web site; and compares the similarities and differences between the designers' intentions and views of the users. A similar research design was used to study postmodern art, film, and data visualization (Ma, 1995, 2004, 2006, 2019).

The reader response theorists emphasize the relationship between the reader, the text, and the author. Unlike structuralist theorists, "all reader-response critics focus on readers during the process of reading" (Mailloux, 1982, p. 20). American reader-response theorist Stanley Fish departed from the phenomenological model of reader-response theory developed by Jauss to a social model. Conceptualizing that meaning is created by the reader in the reading process Fish extended his theory by examining the social construction of knowledge, which influences the reader's subjectivity. His concept of "interpretive communities" provides a basis for analysis of readers of different communities who share a community of interests (Ma, 2002, p. 531-532). "Communities of users are those who share membership in a social, economic, or another natural group, such as age, gender, race, and so forth, and whose interpretations are generally similar because of their membership. Agreement on interpretations may not be visible to group members. Still, the meanings of group signs and symbols have already been negotiated and renegotiated in its members' daily practices. (DeVaney, 1993, p.183) The library in the lives of communities of users in the visual information world remains an important part of information services and research. With the successful research effort to bridge visual literacy with information fields in these examples, the author has examined and developed a mapping of areas of information fields with visual literacy research areas in the hope that more research will be carried out. A list of definitions for the context of this article appears earlier in the article.

### **A Research Guide of Visual Literacy Research for the Field of Information**

For researchers, the author created and designed with revision of the Rubric and Mapping of Library and Information Science Curriculum with Visual Literacy Studies published by Ma in 2015 (Ma, 2015, p. 12-14). This Guide appears in a similar table format but differs in providing a research focus road map to hopefully facilitate or guide researchers to carry out and engage in the paradigm shift, expansion, and inclusion in research methodologies and theoretical frameworks to conduct research in visual literacy for visual information. The Research Guide is the original scholarship and research by the author based on her teaching and research in the visual literacy for information field since 1993. The categories of information studies (LIS Areas) are based on the current information field areas, though it is not an inclusive list of areas of information studies. The categories of Visual Literacy areas and Research Methods/Theories are based on author's many years of research and scholarly communication on visual literacy by the leading scholars in visual literacy. The author has done research since 1993 to examine library and information issues with theories and interdisciplinary research methodologies to carry out visual literacy and information studies. Pioneering research in visual literacy to address issues in the library and information science field using critical and cultural analysis, textual analysis, semiotics, postmodern theories, reader-response criticism, poststructuralism, the social construction of knowledge/meaning, and other social science research methodologies have shown successful research results by the scholars in the following Research Guide.



Many research areas in visual literacy for the information field need further research in the areas listed in the Research Guide below. The inclusion of interdisciplinary and new research methodologies will then advance research in visual literacy and the field of information. Traditional and current research methods and theoretical frameworks will continue to support the expansion of other research methods and theoretical frameworks to further research in visual literacy for information fields. These research methodologies and theories embrace and support the research of the social construction of meaning in the visual information world.

**Table 1**

*A Research Guide of Visual Literacy Research for the Field of Information Research--Visual Literacy Research Methodologies, Theoretical Frameworks, Suggested Scholars, and Publications.*

(This list of publications are not inclusive, but they serve as the foundations of visual literacy. There is no 2<sup>nd</sup> edition of Moore's book of *Visual Literacy: a Spectrum of Visual Learning*, but scholars in the book and listed in this Guide are recommended for the readers to follow from then to the present for their continuing research in visual literacy)

<b>Information areas</b>	<b>VL Area</b>	<b>Research Method/Theoretical Framework</b>	<b>Scholars/Publications</b>
Information Nature of Visual Information	Visual Literacy	1. Interdisciplinary studies 2. Foundations of visual literacy and theoretical framework.	Hortin, John. (1994, p. 5-29) Seals, B. (1994, p. 97-112) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023)
Nature of Visual Information Science	Visual Literacy	1. Interdisciplinary studies 2. Foundations of visual literacy and theoretical framework.	Barry, A.S.(1994, p. 113-132) Branden, R. (1994, p. 193-208) Burton, J.K. (1994, p. 65-83) Metallinos, N. (1994, p. 53-64) Miller, H.B. and Sewell, E. Jr. (1994, p. 135-161) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023) Stern, R.C. and Robinson, R. (1994, p. 31-51) Thompson, M. (1994, p.165-182)
Visual Information Theory Communication-Models	Visual Literacy	1. Interdisciplinary studies 2. Foundations of information studies and communication models 3. Theories and research methods in visual literacy and visual communication	Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023) Wisely, F. (1994, p. 85-93)
Visual Information Literacy/Equity	Visual Information Rich/poor	1. Interdisciplinary studies 2. Foundations of information studies on information policies on visual information	DeVaney, A. (1994, p. 355-379).

		3. Critical theories	Dervin, B., & Nilan, M. (1986). Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023)
Visual Information Policies	Encoding process  Visual Information Policies	1. Interdisciplinary studies 2. Foundations of visual literacy and theoretical framework.	Moore, D.M and Dwyer, F.M. (1994) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023)
Visual Information Collection Management	Encoding process	Critical theories in evaluating, identifying, collecting, and acquiring visual materials	Ma, Y. (1995) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023)
Visual Information Storage:  Cataloging Classification Metadata Indexing Abstracting	Encoding process	1. Critical theories` 2. Perception research 3. Visual cognition 4. Visual design 5. Evaluation of visuals 6. Cultural, political, social, and aspects of visuals 7. Ethical considerations of visuals 8. Technological aspects of visuals	Ma, Y. (1996, 1999). Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023)
Visual Information Retrieval	Decoding process	1. Decoding Process 2. Social construction of meaning 3. Semiotics 4. Cultural, political, social, and technological use of visuals 5. Information design 6. Critical theories for analysis/use of visuals	DeVaney, A. (1987,1993) Ma, Y. (1995, 1996) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023) Muffoletto, R. (1994, p. 295-310)
Visual Information Needs and Information Seeking Behavior	Decoding process	1. Decoding Process 2. Social construction of meaning 3. Semiotics 4. Cultural, political, social, and technological use of visuals 5. Information design 6. Critical theories for analysis/use of visuals	DeVaney, A. (1991, 2001) Fredette, B. (1994, p. 235-256) Griffin, R. (1994, p. 257-275) Ma, Y. (2002, 2006) Moore, D.M. (1994, p. 145-161) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023)
Interface Design  System design	Visual Literacy: Encoding process	1. Interdisciplinary studies 2. Foundations of visual literacy and theoretical framework.	DeVaney, A. (1990, 1993, 1991, 2000, 2001) Ma, Y. (1995) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023)

			Knupfer, N. (1994, p. 209-231) Petersson, R. (2002, 2006) Saunders, A. (1994, p. 183-192)
Evaluation of Visual Information Systems	Decoding process	<ol style="list-style-type: none"> <li>1. Critical theories</li> <li>2. Critical use of visuals</li> <li>3. Perception research</li> <li>4. Visual design</li> <li>5. Evaluate visuals</li> <li>6. Information design</li> <li>7. Cultural, political, social, and aspects of visuals</li> <li>8. Ethical considerations of visuals</li> <li>9. Technological aspects of visuals</li> </ol>	<p>Bisplinghoff, G. (1994, p. 337-351) Couch, R. A., Caropreso, E.J., Miller, H. (1994, p. 277-294) Muffoletto, R. (1994, p. 295-310) Yeaman, A.R. (1994, p. 311-336) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023). Pettersson, R. (1993, 1997). Ma, Y. (2015)</p>
Research Methods	Research Methods	<ol style="list-style-type: none"> <li>1. Interdisciplinary studies</li> <li>2. Social construction of knowledge/meaning</li> <li>3. Critical theories</li> </ol>	<p>DeVaney, A. (1994, p. 355-379) DeVaney (2001) Dwyer, F.M. (1994, p. 383-401) Ma, Y. (2015) Moriarty, Sandra, E. and Kanney, Keith (Retrieved on May 18, 2023) Nichols, R. (1994, p. 369-379)</p>

### Conclusions

Seeing a visual or a visual text does not automatically ensure that one will learn from it or become visually literate. Research in visual information has confronted and challenged the information profession with the constant creation of meaning via metadata, presentations/representations of knowledge, visual navigation, visual interconnectivity, visual intertextuality, and a spectrum of visual information seeking behavior and services as a postmodern enterprise instead of a traditional static enterprise. Researchers are urged to embrace critical theories toward decoding the meaning of visuals while carefully encoding record knowledge for diversified dimensions. Visual literacy prepares information researchers to study and lead in research of the social construction of knowledge/meaning in this visual information world.

The proposed paradigm shift, expansion, and inclusion do not exclude but expand the traditional research methods and theoretical frameworks. It introduces new research methods and theoretical frameworks of visual literacy research to the information field. We not only can continue to use the social science research methods and other interdisciplinary research methods of quantitative and qualitative approaches but also innovate, expand, and include new and different research methods and theoretical frameworks to conduct and support the research of visual literacy and information. Such advancement of research will enhance information field research, education, and professional services in this visual information world. This research paradigm shift focuses on expanding from text-based information research and its services to a paradigm expansion and inclusion of visual information research methodologies, theoretical frameworks,

advancements, and embracement of an interdisciplinary spectrum for research opportunities to establish a critical and social construction of knowledge by examining the encoding and decoding of the meaning construction process in the visual information world.

When esoteric theories used in visual literacy research are introduced to an applied field like information and library science, it takes time and effort for new or different research methodologies to be developed, evolve, and mature. When a paradigm shift and expansion are introduced, it will take time to establish itself. There will be little literature to form a body of scholarly communication to begin or establish the new research base. Citation analysis at that point or for a while will not be meaningful or applicable, or noteworthy until intellectual communities become sizable and establish themselves for consistent research foundations and communities. For scholars pioneering in this paradigm expansion and shift, there may be little citation analysis to indicate their leading scholarship to be cited or measured by citation analysis until such pioneering research has formed a big enough intellectual community or established standards in these new research areas. In fact, actual research goes beyond citation analysis. Authentic researchers conduct research to advance knowledge, enrich education, solve problems, and share scholarship. Visual literacy for information research is an example of a paradigm expansion and inclusion of different research perspectives and methodologies.

In 2015, the author responded to the ACRL Visual Literacy Competency Standards for Higher Education in the special edition of *the Journal of Visual Literacy*. This article further supports its implementation for its research realm of the 2011 ACRL Visual Literacy Competency Standards for Higher Education and the *2022 Framework of Visual Literacy for High Education*. The current and future publications resulting from these standards/framework have started to create a body of literature to add to the existing literature of visual literacy and/or ACRL Visual Literacy Competency Standards for an expanded understanding of visual literacy and interdisciplinary research, support, and appreciations of visual literacy and the ACRL Visual Literacy Competency Standards for Higher Education and the *2022 Framework of Visual Literacy for High Education*.

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