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MEASURING VISUAL LITERACY ABILITY IN GRADUATE LEVEL PRE-SERVICE  
TEACHERS

By

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Dissertation

presented in partial fulfillment of the requirements  
for the degree of

Doctor of Education  
in Curriculum and Instruction

The University of Montana  
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August, 2013

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## **ABSTRACT**

Farrell, Teresa, Ed.D., August 2013

Curriculum and Instruction

Measuring Visual Literacy Ability in Graduate Level Pre-service Teachers

Chairperson: Dr. Marian J. McKenna

The field of visual literacy has been active since its inception in 1969 by John Debes and members of various fields of study such as science, mathematics, psychology, education, and the arts forming the International Visual Literacy Association (IVLA). Recognizing that modern society is increasingly visual by nature, and with the advances in digital technologies, visual literacy is becoming an area of critical importance in education. Although much work has been done within the field to define it and to establish a firm theoretical base, the area of assessment has been somewhat limited until Avgerinou (2001) developed a means by which to categorize specific skill sets associated with three distinct areas of visual literacy (VL) ability: Visual Information, Intellectual Skill, and Cognitive Strategy. Avgerinou's VL Index is the basis for a national study to measure the visual literacy ability of graduate level pre-service teachers. This descriptive study is preliminary study to investigate the measurement of VL ability across the United States in order to establish a baseline VL ability measure from which to make vital decisions in the purposeful training of visual literacy within teacher preparatory programs and professional development within school districts. This study describes the mean performance levels of 125 participants collected from a randomly stratified national population within five of the six regional accrediting agencies for public higher education. The measures of central tendency and variance for the individual skills within the Avgerinou (2001) VL Index indicate a need for growth, in particular, in the intellectual skills of concrete concepts, defined concepts,

and higher order rules. The implications of these findings emphasize the need for more development in critical engagement with visuals especially as it applies to Common Core State Standards assessments, consumer-driven marketing and power roles, and new modes of digital authorship in a media-saturated society.

## DEDICATION

*The Lord is my strength and my song;  
He has become my salvation. (Psalm 118:14, RSV)*

Jehovah Jireh, Jehovah Shalom, my Source, and my Comforter: without You my labor is fruitless. I am grateful to You for this journey and for all that I have learned along the way. Thank you for providing this opportunity and for staying near through it all. You are the reason I am here today and the reason why I do what I do.

My husband, my friend, my love: you stepped in when you knew I needed support, and you provided clarity when I needed it the most. Thank you for your patience, your comfort, and your humor through so many years. I look forward to the next chapter we will write *together!*

My children, my joy, my delight: you endured many times of compromise, but you nevertheless have always been ready to provide me with energy and love. Thank you for all of the time you sacrificed. It is my hope that you will see the lasting value of these past few years and that I have provided you a legacy that you can be proud to own.

My father, my guide and example: I so wish you were here to share this moment in time. I know that you would be so proud of the work I have done and will continue to do. My mother, my support and encourager: you have been a consistent example of faith to me, and I so appreciate how you continue to point me to my Source when I get distracted!

My siblings, and my friends: you provided words, prayers, smiles, hugs, food, and encouragement. Without you, this road would have been so much harder. Thanks for standing with me and for interceding.

You all have shaped the person I am, so this work must be dedicated to you all! May you be blessed for the blessing you have been to me. Thank you.

## ACKNOWLEDGMENTS

I am thoroughly indebted to my chair, Marian J. McKenna, for her dedication to this study. Despite her retirement, she elected to see me through to the end of my doctoral program, and I am so very grateful. Her mentorship as my advisor helped to support my broad scope of interests in literacy, media, technology, theatre, and communication, which have blended together beautifully into my pursuit of visual literacy as a dissertation focus. Her excitement to learn about this topic through my endeavors has fueled my passion as well.

Thanks to David Erickson who was my first point of contact at The University of Montana and my staunch advocate as a graduate student. I am grateful for his guidance and support as I moved from student to colleague as an adjunct professor at UM, and I continue to look to him as a colleague as I have moved into a position as an assistant professor. I appreciate his candor and his push to make me consider perspectives and possibilities I might not have considered.

Thanks to Courtney Stewart for agreeing to journey with me through this process after knowing me for such a brief period. I respect his insight and devotion to the research process as well as his skill in the area of quantitative research. He has been a wonderful guide and seemed to have a clear understanding of where I needed to head with my descriptive study.

Thanks to Richard Hughes for giving me the amazing opportunity to join forces with the Media Arts graduate students in one of the most enjoyable and eye-opening courses of my graduate experience. Moreover, thanks for engaging with my passion for promoting the philosophy that American K-12 education needs to be current, exciting, creative, and forward thinking. I appreciate his vision and how he has provided me with a much deeper understanding of the complexity of the visual arts as technological advancements increase exponentially.

Thanks to Heather Bruce for taking the time to engage with me on a personal level in order for us to become friends and colleagues. I so appreciate how she challenged me to look beyond my limited perspective into a space where larger societal issues are at stake. Thanks for pushing me to dig deeper and to explore unfamiliar voices.

Thanks to Maria D. Avgerinou for allowing me the opportunity to implement her VL Index and for sharing her unpublished work to help me in understanding how to best employ the instrument. Thank you for our continued journey together through our common interest of visual literacy.

Thanks to my friend and colleague, Kim Reiser, for allowing me to bounce ideas around and for providing me with resources along the way, and thanks to my other colleagues at the former College of Technology who lent their support throughout my two years as an adjunct faculty member.

Thanks to my colleagues at Eastern Oregon University who have supported my efforts through their provision of time for me to focus towards my study, and for their moral support as well. Thanks to those who agreed to distribute my survey to the 1144 in the participant pool and special thanks to those who participated in this study to help me gain a preliminary understanding into the status of VL ability in this sample.

Thanks to the IRB at The University of Montana for their assistance in this process, and thanks to the faculty and staff at The University of Montana for contributing to my success as a doctoral candidate.



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## Chapter One: Introduction

*If the invention of moveable type created a mandate for universal verbal literacy, surely the invention of the camera and all its collateral and continually developing forms makes the achievement of universal visual literacy an educational necessity long overdue.*

--Preface to *A Primer of Visual Literacy*  
by Donis A. Dondis (1973)

The year is 2004. The course is English Composition (WRI 121). The assignment is straightforward: View and choose any Dorothea Lange photograph, and write a visual analysis. The results are mediocre at best, but why should that come as a surprise to me, the instructor? Consider that in my own graduate studies I have been asked to write a visual rhetorical analysis, and I could produce no better than a “B” on the first draft of my own paper, even though I knew exactly what was expected of me. I know that a visual rhetorical analysis must address the basic tools of visual composition (light, line, symmetry, focus, etc.), but I feel inadequate to analyze a visual image, because I never learned those basics. Why would I have learned them when I never had an interest in photography, and I never took a course in it? Why then should I expect my freshman composition students to be able to write a visual analysis? Moreover, why should I even think that I am justified in handing out such an assignment? If I haven’t learned it, how can I teach it? Why do future teachers need these skills and abilities? Such is a major question we are facing in the classroom today. This question is readily apparent at the collegiate level, and it is necessary to address it and to equip our teachers in K-12 to ready their students in the area of visual rhetorical analysis. How have we gotten to this critical stage in education where we are not meeting the literacy needs of our students in an increasingly demanding visual realm? Such questions deserve thoughtful analysis, and such questions were the impetus for this study.



## Statement of the Problem

Countless studies have been conducted, and books/articles have been written addressing the area of visual literacy and its growing importance in our culture (Avgerinou, 2007; Braden, 1992; Dondis, 1973; Fredette, 1992; Hortin, 1992; Seels, 1992; Silverblatt, 2008). The International Visual Literacy Association (IVLA) was founded in 1969 by John Debes and others (from various disciplines such as science, psychology, art, and education) who had a desire to join their efforts to further this area of research. Recognizing that modern society is increasingly visual by nature, and with the advances in digital technologies, visual literacy is becoming an area of critical importance in education. Much has been written concerning a definition of the term *visual literacy* as well as the various theoretical frameworks that contribute to the understanding of this complex subject. Researchers have also discussed how visual literacy can be interpreted in multiple ways depending upon the definition of *image* being addressed. These definitions will be clarified further in this study.

Startling statistics show that students today are not the same as students from just 20 years ago as they are engaging in:

over 10,000 hours playing videogames, over 200,000 emails and instant messages sent and received; over 10,000 hours talking on digital cell phones; over 20,000 hours watching TV (a high percentage fast speed MTV), over 500,000 commercials seen—all before the kids leave college. (Prensky, 2001)

Considine, Horton and Moorman (2009) are very articulate in discussing what is lacking in the education of students and how teachers can intervene. They identify the millennial generation using Prensky's term "digital natives" which describes how at ease this generation is in a digital environment. Although they may be able to use digital tools in a fluent manner, Considine, Horton and Moorman (2009) indicate that these digital natives lack the critical engagement with

media to allow them the ability to “interrogate media texts along with the context in which they are both created and consumed” (p. 472). This same phenomenon was noted by Postman (1985). Postman posited that the general public does not critically engage with the discourse of television. He maintained that television is a vehicle for entertainment, but it is being used to try to market advertising, journalism, and education, which do not share the same discourse. In light of visual literacy, a similar phenomenon exists: young people are bombarded by images, through television and other visual technologies, and produce images regularly without giving particular credence to the various types of discourse related to images.

This belief, that there is a gap in students being critically engaged with visual images, is also voiced by Bleed (2005). Bleed noted that:

A shift to a new form of literacy is required for three reasons....the changing nature of the younger generation...the adoption of technology that supports the 21<sup>st</sup>-century skill sets....[and] the desire to create artistic work, tell stories, and combine human interactions. (p. 3)

So what is happening in the current K-12 educational system? A national study, conducted by Coleman (2010), surveyed 388 teachers in the public elementary system and identified the instructional practices of these teachers which involved graphical representations. Those practices listed as “frequently employed” were “pointing to or referring to graphical representations in books....the use of Venn diagrams....using web diagrams....[and] having children explain the concepts or objects shown in the graphical representation” (p. 210). None of the activities mentioned in the study involved critical engagement with the discourse of the images. A similar situation was identified by Robertson (2007) in a central Kansas secondary school system. Teachers there were reticent to use visuals in their classrooms as they had not

been trained in their use. Those who did use them did not engage their students in a manner consistent with becoming critical thinkers about the images.

Merely using non-print materials in the classroom is not enough to satisfy proper development in visual literacy. Students must understand the message of visual images and be able to select visual images that communicate their purpose to their selected audience in order to enhance their learning and develop the types of literacy demanded of people living in the 21<sup>st</sup> century. (Robertson, 2007, pp. 4-5)

A study by Thomas (2010) emphasized the role of the teacher in helping students to gain visual literacy skills. “Teachers need to model how to question the assumptions embedded in images and the written word. Introducing children to a visual art perspective encourages aesthetic response, one that allows the individual to become aware of, appreciate, and reflect on art” (p. 9).

At issue, then, is the preparation of pre-service teachers as well as those currently practicing in the field. Thomas (2010) notes that

Teachers have to be informed on how to integrate the visual arts across the curriculum. Starting with teaching important modes of thinking such as viewing, imagining, and inventing, then teachers can potentially begin by modeling and teaching the text-illustration connections to beginning readers. (p. 9)

While this seems simple enough, Robertson (2007) points out a major hurdle:

While English/language arts teachers are familiar with traditional literacy—comprehending and creating alphabetic text—they have less practice with visual literacy—comprehending and creating visual text. As a result, the English/language arts teacher may wish to leave instruction in visual literacy to the visual arts teacher. Yet, the visual arts teacher has little background in literacy, particularly as it pertains to rhetoric—

the ways in which a message is conveyed or created so that it will bring meaning to a particular audience. Therefore, the visual arts teacher may feel inadequate to help students understand how images fit into the paradigm of rhetor, audience and text because most visual arts teachers' training has been largely in aesthetics rather than rhetoric. (pp. 3-4)

A significant study conducted by Avgerinou in 1999 (published in 2007), advanced the field of visual literacy by producing an actual system for categorizing the skills needed to become visually literate. States (45 currently) using the Common Core State Standards have adopted standards that include visual literacy skills. Although Avgerinou's index has been developed and standards require educators to teach visual literacy skills, very little has been done to prepare educators already in the field, as well as pre-service teachers, to adequately transfer their knowledge of these skills to their students in the K-12 system.

### **Purpose**

In order to have a more accurate understanding of any needs that may be present regarding visual literacy (VL) and how it relates to pre-service teachers, a study must be done to measure their current understanding of VL. Avgerinou (2007) has provided an instrument which requires the participant to identify, interpret, assess, and apply VL skills and abilities. The purpose of this quantitative descriptive study was to measure the VL abilities of pre-service teachers in order to inform the researcher what need may exist for VL training in pre-service teacher education programs.

### **Research Question**

The research question in this study was: How visually literate are graduate level pre-service teachers in engaging with still images? By using Avgerinou's index, this study hoped to uncover areas of strength and/or weakness within the sample population to better understand the

current state of VL in our nation's pre-service teachers and to have a basis for making further inquiry into specific curricular choices that may be made in pre-service training and professional development.

## **Definitions**

For the purposes of this study, the following definitions were used:

*Image.* Mitchell (1986) discusses the complexity of this term as he envisions it as a “family” of distinct branches. He defines *image* as “likeness, resemblance, similitude” (p. 10). This definition is much too general and must be narrowed to one or more of the branches he identifies as follows:

- 1) Graphic—pictures, statues, designs
- 2) Optical—mirrors, projections
- 3) Perceptual—sense data, “species,” appearances
- 4) Mental—dreams, memories, ideas, fantasmata
- 5) Verbal—metaphors, descriptions

Certainly mental imagery is a normal part of our human existence, but the measurement of this type of activity would require a separate index devoted towards what happens in the brain during this type of cognitive activity. For the purposes of this study, the branches that were included are graphic, optical, and perceptual (as it applies to understanding what is represented graphically). Therefore, an image is a physical likeness which is perceived through vision. A *still* image (which was the focus of this study) is a static image.

*Pre-service teacher.* A university student who has completed a majority of coursework in the field of education (elementary education or secondary area of study) and is specifically being trained as a future educator. Generally, pre-service teachers are participating in field

experiences which place them in schools under the supervision of classroom teachers and university representatives.

*Visual literacy.* In 2001, former IVLA president, Maria Avgerinou, used John A. Hortin's definition, "a group of largely acquired abilities, that is, the abilities to understand (read), and to use (write) images, as well as to think and learn in terms of images" (Hortin, 1994, p. 25), in the IVLA's brochure. This is the definition that was the basis for the following analysis.

*VL index.* Dr. Maria D. Avgerinou was an Assistant Professor of Educational Policy Studies and Research at DePaul University when this study began, and is currently a faculty member at Hellenic Open University, Greece. One of her areas of focus is the Development, Applications, and Assessment of Visual Communication/Literacy, Visual Learning and Visual Thinking Skills in (a) K-12, and (b) Higher Education instructional contexts. Dr. Avgerinou's unpublished dissertation focused on the development of a definition, categorization, and means to test VL skills and abilities of post baccalaureate students. In 2007, she published her categorization of abilities needed to measure a person's visual literacy. The three categories she identified are visual information, intellectual skills, and cognitive strategy (p. 46). This categorization and the skills associated is the VL index (See Appendix A).

### **Delimitations**

The scope of this study only included pre-service teachers in the United States who have the ability to see with their eyes. These pre-service teachers were enrolled in a graduate level teacher preparation program in an accredited public institution of higher education.

## **Limitations**

This study was limited by the Avgerinou instrument and its ability to measure the identified skills. It was limited by the survey software provided through SurveyMonkey.com in terms of how the instrument could be presented, and it was also limited by the technological abilities of the participants and their consistent use of email, as it was delivered electronically. Another limitation was the willingness of the university professors/staff who were acting as intermediaries to deliver the instrument to their students via email/Learning Management System.

## **Significance of the Study**

This study was intended to be a starting point. As technology advances exponentially, it has become clear that a choice must be made to at least find out where graduate pre-service teachers are currently in terms of their visual literacy abilities. This study did not propose that there is a particular level of VL ability which will warrant specific actions to be taken; rather, it was meant to provide a baseline from which to further investigate VL ability levels. One can assume that the more visually literate a teacher is, the better he/she will be able to teach VL abilities to his/her students. These students will, in turn, become more visually literate. Why does this matter?

Consider the consumer-based philosophy of the American landscape, and that media uses rhetorical strategies with all ages of viewers to ensure continued sales and high profit margins. Consider that ownership of visual texts is no longer for those who have gone through rigorous training and years of practice. Now, virtually anyone can take a photo or create a film and publish it for the world to view. No longer are we solely focused on students as viewers, but we must engage them in understanding what it means to be an author, and the responsibility of

ethical authorship. Consider that the media has power to categorize and to demoralize. It has the power to shape our view of the world. Consider that multi-modal texts are becoming the trend in the classroom as educators embrace the available technologies and their students' needs to be engaged with their learning. Finally, consider the Common Core requirements that are being adopted by state legislatures and the move towards VL requirements in higher education. All of these considerations were explored in more depth in chapter two.

The results of this study have shed light on whether or not teacher education programs across the United States need to educate their students in the area of visual literacy. Once teacher preparation programs have a clearer picture of how students are scoring in this area and why the study of visual literacy is so important, a dialogue can begin in the area of how the curriculum offered may be modified to meet the needs of the students. This study could also be the springboard for school districts to offer adequate training to their teaching staff.



## CHAPTER TWO

### LITERATURE REVIEW

*To be sure, there are still readers and there are many books published, but the uses of print and reading are not the same as they once were; not even in schools...*  
--*Amusing Ourselves to Death*  
by Neil Postman (1985, p. 28)

Although there is dispute among experts in the field of visual literacy in regards to whether or not visual communication must be rooted in a language system, the researcher has chosen to consider that visual literacy has a basis in language; therefore, in order to establish a framework for this study, a bridge between language study and visual analysis must be made. The International Visual Literacy Association (IVLA) has created a repository for all of the scholarly articles and studies written within its membership. Each author has also contributed his/her suggested authors to round out not only the names associated with the field, but their works as well. This repository has been organized with a taxonomy by Moriarty and Kenney. In their introduction to the taxonomy, Moriarty and Kenney (n.d.) discuss who the seminal authors are for this field of study. The taxonomy is organized into 12 areas: basic visual communication references, general theory/philosophy, bio/physical factors and processes, psychology, education, audience factors/effects/responses, art/illustration, communication studies, cultural/critical studies, professional practice/disciplines, history, and research/methodology. The topics explored include a theoretical framework grounded in a communication theory model, the difficulty in defining *visual literacy* as well as *image*, how language and images are connected, the components of visual analysis, the discourse of images, and visual literacy in the realm of education. In order to have a better understanding of the researcher's approach to the field of

visual literacy as it applies to this study, a discussion of the theories undergirding the study must ensue.

### **Development of Theoretical Framework**

Using a language base approach, two areas of theory are drawn upon: communication theory and rhetoric. Communication theory provides a basis for understanding the interactions between the image and the viewer while rhetorical theory provides a basis for understanding the depth of analysis necessary to approach the concept of what it means to be visually literate. Both are necessary to the foundation of this study.

The 1955 Harvard lectures by J.L. Austin, published posthumously under the title *How to do Things with Words* (1975), purported the concept of words as *performatives*. That is, by uttering the words, the words themselves performed a task, such as in saying “I do” at a wedding ceremony. By uttering the words, the bride and groom became joined. Austin’s discussion went further into the beginnings of the communication process between the speaker and the listener. He defined levels of meaning naturally associated with specific categories of performatives: verdictives, exercitives, commissives, behabitives, and expositives (p. 151). In 1995, Gould built upon Austin’s concept and defined three parts to the process of sending and receiving a message: locutionary (as Austin posited), illocutionary (as implied in the categories Austin created), and perlocutionary. To link these terms to the communication process is not difficult. In the communication process, the speaker has a message to deliver to a listener. This message is delivered orally through words and vocal expression as well as through non-verbal methods of facial expressions and gestures. The message is received by the listener, but is understood through the listener’s own biases and ability to understand (Lucas, 2001, pp. 16-18). In the Gould (1995) model, the words spoken are locutionary. How the speaker intends to deliver the

words is illocutionary, and is dependent upon not only the words chosen, but the way in which those words are delivered. How the listener receives the words (whether in line with the speaker's intent or not) is perlocutionary.

Related to this theory is that of the artist and his/her work. The image is itself locutionary—it speaks. The artist had a specific idea (whether conscious or not) when creating the image. This idea was illocutionary, but not necessarily with the same intent as in speaking. In the process of communication, messages are sent and received to achieve understanding (O'Connor, 1988, p. 3). An artist isn't necessarily trying to communicate a message to an audience; however, those viewing an image can have a response to that image, which is perlocutionary. Often in the humanities, students are asked to respond to a text or an image and to decipher the author's/artist's intent. Although this is an activity that certainly helps students to critically analyze and to support their opinions through "evidence," it does not necessarily help to ascertain the illocutionary meaning. Whether or not the illocutionary can be clearly mined from the text/image (it seems that this could only be done if the author/artist were able to verify it), it is the perlocutionary (response of the reader/viewer) that must become the primary focus of VL teaching and analysis.

When focusing the idea of interaction with an image to the response or perception of the viewer, a limitation is imposed. This limitation is similar to the observation by Postlewait (1992) regarding the limitations of using narratives to understand history: "we cannot comprehend or represent it fully....Only by moving around, shifting our perspectives, can we see the heterogeneous aspects of it" (p. 365). This *shifting around* also hearkens to the theory of phenomenology as discussed by States (1992). States uses the example of Reinach's (early 1900s) semester long study of a mailbox to make his point: "the fact that you can never see *all* of

a mailbox raises the imponderable question of the frontality of everything in the world before the eye of consciousness” (1992, p. 371). When asking students to become visually literate this sense of “frontality” must be introduced to aid in their understanding that they have only one of countless perspectives. It is also this frontality that presents a significant challenge when trying to teach and assess visual literacy. This is especially true when considering the work of cubists such as Picasso and Braque, which is discussed further in the section regarding the still image as it relates to motion.

### **The Visual Literacy Framework**

Although there is much written on this topic and much debate over several areas of visual literacy (e.g., definition, interpretive systems, and language base) this review will not include most of the historical arguments, but will choose representatives to summarize those areas. This review will also not include, or will limit, visual literacy theory that does not apply directly to still images as there is a great wealth of literature written on moving images which has limited significance to still imagery.

**Defining visual literacy.** The IVLA has spent a large portion of the past 43 years working towards a definition for the term *visual literacy*. It seems like an inordinate amount of time to spend on defining a term; however, Seels (1994) and Mitchell (1987) both address the complexities of this particular field of study and why coming to a definition is not an easy process. It may also be observed that since the members of the IVLA come from a variety of disciplines including the arts, sciences, and social sciences, the perspectives from these various areas of study have a significant impact upon a multiplicity of “frontal” views of VL and what it means. Consensus is difficult to achieve with such diverse thinking.

Due to the struggles between groups who would tie visual communication closely to verbal/linguistic communication and those who would not, coming to an agreement regarding terminology has also not been an easy process. Seels (1994) points to the philosopher Susanne Langer's observation that verbal language is "sequential" while visual language is "simultaneous" (p. 101). Langer (1957) uses specific examples to make her point. She takes the sentence "Brutus killed Caesar," and compares its meaning to "Caesar killed Brutus," or "killed Caesar Brutus" and notes how language relies upon the order of words to give a sentence meaning (Kindle loc. 963-66). The order of words as well as the order of sentences can give temporal meaning to events, while images do not have the same capability. Langer (1957) states that,

painting, being static, can present only a momentary state; it may suggest, but can never actually report, a history. We may produce a series of pictures, but nothing in the pictures can actually guarantee the conjunction of their several scenes in one serial order of events. (Kindle loc. 957-59)

In order for a series of images to have a time-order sense, Langer posits that word captions must be used to provide that particular definition. Braden (1994), one of the foremost early writers of the IVLA, emphasizes how visuals and words may be dependent as well as independent upon one another.

Braden (1994) first places visuals into the following categories:

- **Static visuals** include pictures and other printed or projected images
- **Dynamic visuals** include animation, video, and film
- **Personal visuals**, a subset of dynamic visuals, include pantomime, sign language, body language, and gestures. (p. 195)

He then categorizes verbal elements into two classes of written/static verbal elements (including numbers and mathematical symbols) and spoken/dynamic verbal elements (including audio as well as animated text) (Braden, 1994, p. 195). These categorizations then lead to the relationship between verbal and visual elements. Using Wileman's Typology (1993), Braden shows how the verbal-visual relationship is laid out on a continuum (see Figure 1).

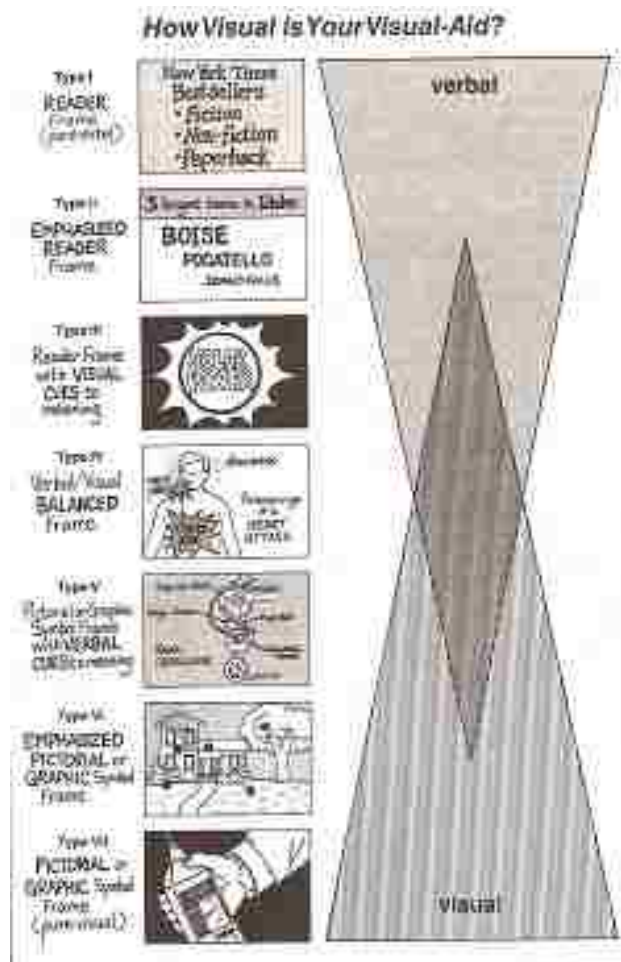


Figure 1. Wileman's Typology as used by Braden (1994, p. 198).

Braden (1994) also offers “five flexible guidelines” for determining when illustrations should accompany text:

1. The more unusual the object, the greater the need for illustrating it.

2. As the number of words needed to describe the object increases, so does the need to illustrate it.
3. As the number of points of similarity with a commonly known object increase, the need to illustrate an unknown or little known object decreases.
4. Even when understanding is not a critical issue, if the appearance of the object is an important characteristic, the reason for illustrating it increases.
5. If your instincts tell you that you can communicate your point better if your words are accompanied by an illustration, follow your instincts. (pp. 199-200)

Moreover, there has been dispute regarding the notion of visual literacy being a concept or a construct. Seels argues that because visual literacy has not been defined operationally, it cannot be considered a construct (1994, pp. 102-103). Seels (1994) does offer as a part of the working definition three areas to consider: visual thinking, visual learning, and visual communication. She also offers four possibilities for depicting the relationships between these areas as shown in Figures 2-5. Figure 2 offers a hierarchical structure of subcategories while Figure 3 shows what Seels terms a more “holistic” conceptualization (1994, p. 104). Figure 4 points to the internal and external processes involved in visual literacy, while Figure 5 displays it in much more of a communications framework between self and others.

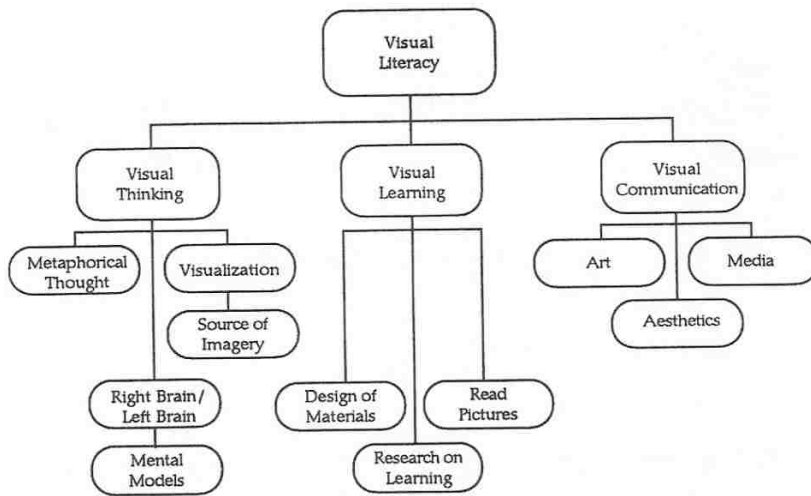


Figure 2. Relationship of areas of study in visual literacy (Seels, 1994, p. 105).

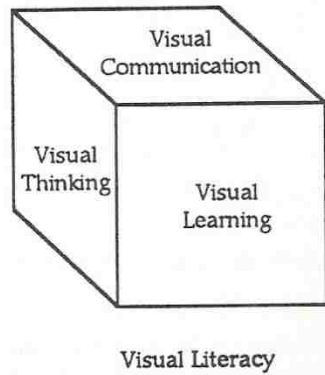


Figure 3. The visual literacy cube (Seels, 1994, p. 105).

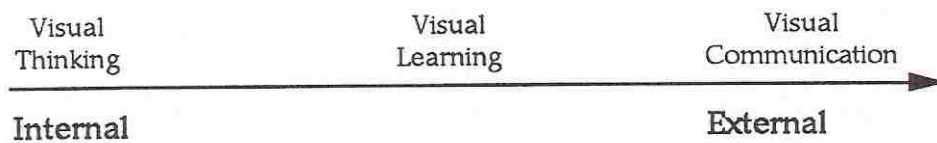
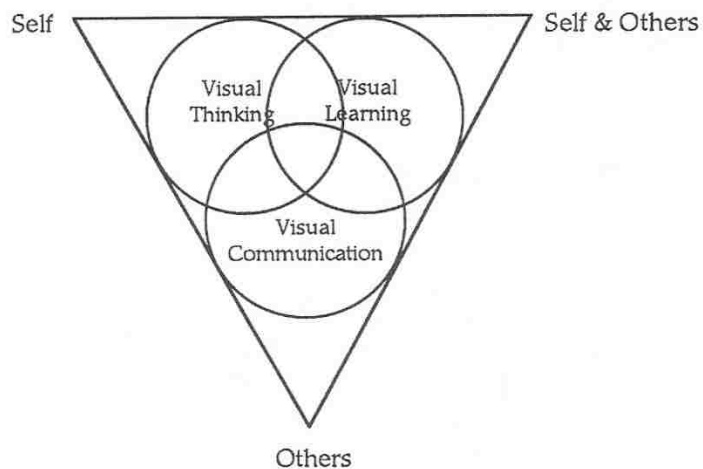


Figure 4. The visual literacy continuum (Seels, 1994, p. 106).





*Figure 5.* Directionality of visual literacy components (Seels, 1994, p. 106).

Seels (1994) offers the following definitions for these three areas: 1) “Visual thinking refers to visualization through images” (p. 106); 2) “[V]isual learning refers to the acquisition and construction of knowledge as a result of interaction with visual phenomenon” (p. 107); 3) “Visual communication...is using visual symbols to express ideas and convey meaning” (p. 108). Avgerinou (2007) created a Visual Literacy Index that has made progress towards the consideration of VL as a construct. The VL theory offered by Avgerinou and Pettersson (2011) builds upon this foundation and offers two more components: visual perception and visual language. These additions are indeed vital when breaking down such a complex phenomenon. Avgerionou and Pettersson (2011) advance a well-defined theory of VL. This purpose can be seen as a direct response to the issue raised by Kress and van Leeuwen (2006):

The problem we face is that literate cultures have systematically suppressed means of analysis of the visual forms or representation, so that there is not, at the moment, an established theoretical framework within which visual forms of representation can be discussed. (p. 23)

The theory by Avgerinou and Pettersson (2011) breaks down visual language (ViL) into its key premises: “1) Visual language exists; 2) Visual language is holistic; 3) Visual language must be learned; 4) Visual language may improve learning; 5) Visual language is not universal; 6) Visual language often needs verbal support” (pp. 5-6). This theory advanced by Avgerionou and Pettersson is also an extension of Avgerinou (2007).

**Avgerinou’s study and index.** The choice of using the VL index created by Avgerinou (2007) is clear-cut for two particular reasons: 1) It is designed specifically for individuals who have completed their undergraduate education, and 2) It is the only peer reviewed, publicly available instrument that has a convincing research basis to support its use. Avgerinou (2001) discusses the classification of her index as well as its design:

Regarding test classification, it should be observed that the test has been designed to serve as a *maximal performance* test....subjects are requested to do their best in order to obtain the highest possible score. By implication, the answers of those tests are mostly predefined....The VL test has been deliberately classified as an *ability* test. (pp. 36-37)

Because it is important to address inherent ability, Avgerinou stresses the reason for designing the instrument with graduate level education in mind:

the purpose behind this was to check the degree to which subjects had become visually literate without having received any systematic VL training. It was hypothesised that people had unconsciously developed a degree of VL skill, but that this was not enough to adequately equip them to fully function as members of today’s visual culture. (2001, p. 53)

Choosing specific items for measuring VL abilities was a careful process involving the review of a panel of experts.

Efforts were made to choose visuals on the basis of their frequent appearance in everyday life. A further criterion operating in item selection, referred to the amount of verbal or numerical information contained in the item. Good items were considered those with a minimum of verbal or numerical material. (Avgerinou, 2001, p. 54)

For an overall understanding of Avgerinou's items, please see Appendix B.

***Avgerinou's process.*** Avgerinou (2007) used both quantitative and qualitative measures in her study which would allow for "providing a more holistic understanding, but also to verifying and, thus, enhancing the credibility of research outcomes" (2007, p. 30). Her study was conducted internationally including sites in the Netherlands, the United States, and Belgium. Not only did she use an instrument to measure the VL abilities, she also used a questionnaire designed to measure participants' attitudes towards visual communication. The eleven identified VL abilities (visualization, critical viewing, visual reasoning, visual discrimination, visual thinking, visual association, visual reconstruction, constructing meaning, re-constructing meaning, knowledge of visual vocabulary & definitions, and knowledge of visual conventions) are all "focused solely on the VL reading/interpreting skills" (2007, p. 31). Due to the recommendation of panels of experts, visual memory was excluded as it was determined that either "Visual Memory was not a required ability to discriminate between Visually Literate and Illiterate subjects; or that it was so embedded in the general VL ability that it permeated and perhaps subsumed all other VL abilities" (2007, p. 32). She determined that further study would be needed to determine how visual memory functions.

***Avgerinou's measurements.*** Using Cronbach's Alpha, Avgerinou (2007) was able to examine each VL ability in order to determine the reliability of each set of items as they related to each ability. Table 1 shows the results of these calculations. Due to the fact that only one

Table 1

**Reliability Coefficient for Each of the VL Abilities (score%)**

	Number of Items	Cronbach's Alpha
Visualization	10	0.71
Critical Viewing	25	0.61
Visual Reasoning	12	0.69
Visual Discrimination	7	0.64
Visual Thinking	7	0.73
Visual Association	3	0.66
Visual Reconstruction	11	0.65
Constructing Meaning	1	-
Reconstructing Meaning	3	0.69
Knowledge of Visual Vocabulary & Definitions	11	0.69
Knowledge of Visual Conventions	12	0.54

*N.B. Reliability is assessed by means of Cronbach's Alpha Coefficient*

(Avgerinou, 2007, p. 33)

item was used for constructing meaning, this item was not calculated. Avgerinou (2007) also calculated how much emphasis each ability had on the overall test score using the Spearman Correlation Coefficient. Table 2 shows those calculations in order of contribution

Table 2

**Contributions of Each VL Ability (Score %) to Total Performance Score**

Knowledge of Visual Conventions	18%
Visual Association	19%
Knowledge of Visual Vocabulary & Definitions	24%
Reconstructing Meaning	26%
Visual Discrimination	30%
Visual Thinking	37%

Visual Reasoning	47%
Constructing Meaning	50%
Visual Reconstruction	56%
Visualization	58%
Critical Viewing	67%

*N.B. Contribution is assessed by means of Spearman Correlation Coefficient*  
(Avgerinou, 2007, p. 37)

from least to greatest. Two Focus Groups also gave feedback regarding the importance of each VL ability towards the VL index. Focus Group III comprised of IVLA members mainly from the disciplines of Art and Instructional Design gave the overall responses shown in Table 3. Avgerinou points out how these opinions match the contribution scores of Table 2. This pattern qualitatively justified the quantitative data.

When examining the Attitude to Visual Communication Questionnaire (ATVC), Avgerinou found that there was no apparent relationship between the ATVC and the Index, although she did note that:

familiarity with and positive attitude towards Visual Communication, does not necessarily entail capability of applying Visual Literacy in real contexts....if knowledge is not followed by and established through systematic training, it seems condemned to remain at theory level. Obviously, if this argument proves right in accounting for the aforementioned problem, then by implication the argument in favor of promoting VL training has found here a solid, unshakable ground. (2007, p. 40)

Table 3

**Focus Group III Results Regarding the Importance of each VL Ability for the VL Index**

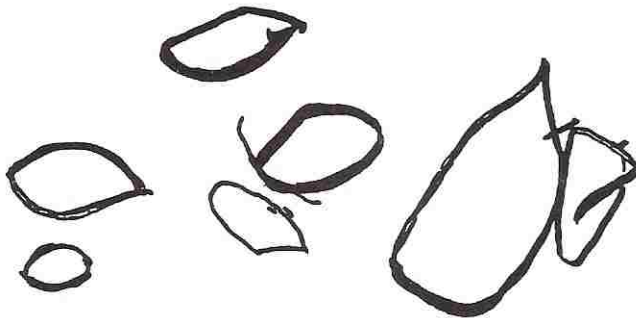
Knowledge of Visual Conventions	Less Important
Visual Association	Less Important
Knowledge of Visual Vocabulary & Definitions	Less Important
Reconstructing Meaning	Less Important
Visual Discrimination	Less Important
Visual Thinking	More Important
Visual Reasoning	More Important
Constructing Meaning	More Important
Visual Reconstruction	More Important
Visualization	More Important
Critical Viewing	More Important

(Avgerinou, 2007, p. 37).

Avgerinou (2007) described the most important limitation of her study as being that “the encoding aspect of the VL ability was not comprehensively represented in the index” since the focus was mainly towards “decoding, and thinking in terms of images” (p. 42). She also noted that more use of the index in more studies would help to determine generalizability of her results as she indicated that her sampling was small.

**Defining images.** When discussing the definition of images, it is natural that the concepts of symbols, icons, semiology, and semiotics will surface. Kress and van Leeuwen’s (2006) *Reading Images: The Grammar of Visual Design* is based in a social semiotics approach. Their approach differs from semiology in that semiologists attribute a specific meaning to a specific sign (image). Langer (1954) comments on the relationship “between a sign and its object” as being a means of pairing “that is to say, they stand in a one-to-one correlation. To each sign there corresponds one definite item which is its object, the thing (or event, or condition) signified” (Kindle loc. 768-69). Social semiotics allows for multiple meanings to be

derived from a single sign. Semiology sees these signs as comprised of forms (e.g., color, line, perspective) known as “signifiers” and their meanings known as “signifieds.” The social semiotics of Kress and van Leeuwen (2006) differs in that they see signs as a part of a process called *sign-making*. This process involves the creator choosing specific signs to represent ideas. The example they give is that of a three-year-old drawing a car by using circles to represent wheels. Figure 6 is the drawing produced by the child. The child chose a circle as a means to represent shape and motion while drawing a series to represent that the car has more than one wheel.



*Figure 6.* Drawing of a car by a three-year-old child (Kress & van Leeuwen, 2006, p. 7).

For Kress and van Leeuwen (2006), social semiotics is subjective (much like the “frontal” view of States (1992)) and based upon not only the “criteria aspect,” the individual’s choice of one overarching metaphor that best represents what the individual wishes to express, but it is also interpreted in multiple ways which are driven by the viewers’ culture-specific perceptions. This ties effectively to the locutionary (signified/meaning) and illocutionary (choice of signifier) theory of Gould (1995). The key difference between social semiotics and semiology is the idea of motivation. In semiology icons are representations of a likeness between a signifier and that which is signified, and a symbol is a signifier whose meaning has become common (Kress & van Leeuwen, 2006, p. 8). There is no particular motivation behind the icon or symbol; it is an

accepted form. This could be related to signs one would see on the street or to some religious symbols such as a cross, a hexagram, or an ichthys. Social semiotics begs the question: What did the creator have in mind?

Mitchell (1987) states that an image is firmly grounded in iconology—that which bears a likeness. He extends the idea of an image from the physical/tangible into the verbal and mental. Mitchell (1987) fits verbal and mental imagery into the social semiotic theory by being the means of linking the object or idea to be represented with an effective metaphor. He emphasizes the importance of understanding the complexities involved in understanding the meaning behind an image:

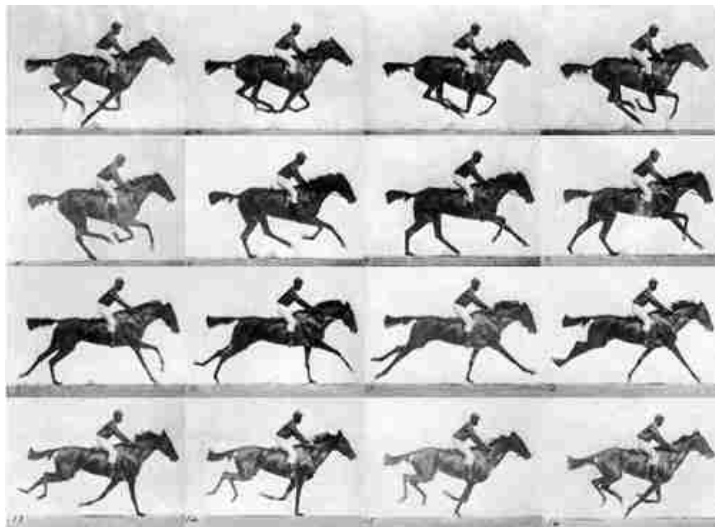
The picture of an eagle in Northwest Indian petroglyphs may be a signature of a warrior, an emblem of a tribe, a symbol of courage, or—just a picture of an eagle. The meaning of the picture does not declare itself by a simple and direct reference to the object it depicts. It may depict an idea, a person, a “sound image” (in the case of a rebus), or a thing. In order to know how to read it, we must know how it speaks, what is proper to say about it and on its behalf. (1987, p. 28)

***Still images versus moving images.*** In an age of Femto-Photography, where beams of light can be filmed and slowed to the point where one can view the dispersion of light as it moves through a container (Raskar, 2012), and an age of motion, the question arises regarding the reason for choosing to focus on still imagery as opposed to motion. The researcher has chosen to begin with the still image because it lends itself to a more limited perspective than motion. The number of variables associated with motion create a much more challenging canvas from which to measure perceptions. Part of this canvas is the addition of dramatic action which may involve vocal interpretation, musical accompaniment, non-verbal communication between



characters, lighting choices, setting, costumes, acting styles, script, etc. The skill set required to analyze dramatic action in a visual format is that taught by theatre, film, media, and dance programs. These skills are not necessarily learned in a traditional educational setting, and are not as readily taught as the analysis of a photograph, because of possible access issues. By beginning with the still image, applications can then be made towards motion.

Motion studies such as those performed by Muybridge in 1878 (see Figure 7) show the direct connection between frame-by-frame and continuous motion.

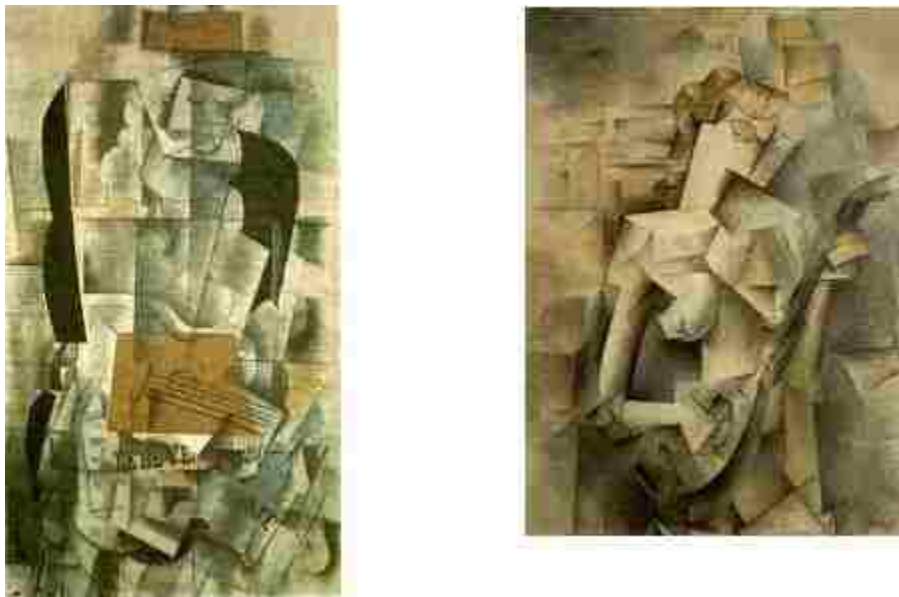


*Figure 7.* Muybridge Motion Study of 1878. (Retrieved from <http://www.mobilemashup.org>)

Sturken and Cartwright (2009) describe motion studies as “proto-cinematic” as they were the precursors to the development of the cinema (p. 187). Motion studies continue to be relevant in the field of media arts, and it must also be noted that cubism is directly related to motion and the cinema.

The art of cubism as it relates to the work of Picasso and Braque is really a means to express motion in a still image. The multiple perspectives present a sense of frame by frame

visualizations (See Figure 8). This is the result of cubism being born out of the early cinematic period. As both Picasso and Braque were avid cinema goers, they strove to employ a means to reproduce the effect of motion on a static canvas. Some of Picasso's paintings were his reproductions of scenes that he watched in the theatre. In the still image, the artist must show the facets of time at once while in film, the viewer is forced to wait while the story plays out. Picasso's work is seen as a negotiation between stasis and movement (Scorsese & Greenhut, 2008).



*Figure 8.* “Woman with a Guitar”—Braque, 1913 and “Girl with Mandolin (Fanny Tellier)”—Picasso, 1910. (Retrieved from [www.artchive.com](http://www.artchive.com) and [www.mdc.edu](http://www.mdc.edu))

**How language and images are connected.** Barthes (1968) makes plain the case that images and language are inseparable:

Where there is a visual substance, for example, the meaning is confirmed by being duplicated in a linguistic message (which happens in the case of the cinema, advertising, comic strips, press photography, etc.) so that at least a part of the iconic message is, in terms of structural relationship, either redundant or taken up by the linguistic system....it

appears increasingly more difficult to conceive a system of images and objects whose *signifieds* can exist independently of language: to perceive what a substance signifies is inevitably to fall back on the individuation of a language: there is no meaning which is not designated, and the world of signifieds is none other than that of language. (p. 1)

The reviewed authors are of a similar theoretical stance: language (verbal) and images have a significant connection to one another. Kress and van Leeuwen (2006) describe how verbal systems and visual systems have developed historically in both a traditionally accepted method (the development of an alphabet from visual representations) and an “unconventional” method where verbal and visual performed separate and definitive functions side-by-side (such as in the Aboriginal culture) (pp. 21-22). Dondis (1973), Postman (1985), and others have also traced historical developments of language and visual systems. It is generally accepted that the oldest form of a communications system known to man is that of images. These images have been traced to the 30,000 year old cave paintings discovered in France in 1994 (Dondis, 1973, p. 2; Faigley et al, 2004, p. 2). Oral culture then developed as a major mode of communication until the advent of the alphabet which allowed for oral messages to be conveyed through a series of visual symbols. After the development of mass print thanks to Gutenberg’s printing press of the 1450s, typography became the dominant indicator of literacy. Illustrations began to be combined with text to develop a type of “symbiosis” where visual and verbal became mutually supportive of one another (Braden, 1994, p. 193). The invention of the hand held Kodak camera by George Eastman in 1888 (“Photography,” 2012) changed image-making forever. Silverblatt (2008) describes photographs as almost “mystical” in that “a person achieves a measure of immortality through photographs” (p. 41). Now the masses would be able to produce photographs (although the cost and skill required to shoot and develop would prove somewhat limiting until the 20<sup>th</sup>

century). From still photography came the cinema and television, and in the latter part of the 20<sup>th</sup> century, the Internet allowed both image and text to be posted and delivered to the world.

These transitions in communication methodologies brought with them a certain amount of contentiousness. This contentiousness is based upon what is valued, and is typically related to how one defines intelligence. Postman (1985) and Kress and van Leeuwen (2006) remind their readers that these definitions are culturally specific: “Each culture conceives of it [truth] as being most authentically expressed in certain symbolic forms that another culture may regard as trivial or irrelevant” (Postman, 1985, p. 23). From the ancients, we can trace an opinion on this topic. For Greek philosopher, Plato, writing was a major shift away from the tradition of oratory. In his 7<sup>th</sup> letter, Plato discusses how knowledge is the fruit of naming an object, defining it, seeing an image of it, and experiencing the object itself. He warns of language, especially the written form, as limiting a person from truly understanding the thing itself: “For this reason no man of intelligence will venture to express his philosophical views in language, especially not in language that is unchangeable, which is true of that which is set down in written characters.” Similarly, we see a negative attitude towards images when compared to written text.

Stephens (2008) noted that the conflict between image and text became heated in the latter part of the 20<sup>th</sup> century: “...perhaps for the first time in human history—it began to seem as if images would gain the upper hand over words” (Kindle loc. 121-22). Although an avid reader, Stephens’ text is supportive of the image, in particular, moving images, but his points are well-taken:

Our eyes were selected over millions of years of primate evolution for their ability to notice, search, compare, connect and evaluate. Increasingly, in the five thousand years since the development of writing, they have been reduced to staring at letters of identical

size and color, arranged in lines of identical length, on pages of identical size and color. Readers, in a sense, are no longer asked to see; they are simply asked to interpret the code. (2008, Kindle loc. 1172-75)

Stephens also discusses how looking at pictures is thought of as a less cerebral exercise than reading classical writings. Kress and van Leeuwen (2006) concur. When developing a language base, children begin by drawing pictures to represent what they want to say since they have not mastered the skills necessary to write the words. Therefore, pictures are seen as a more primal or primitive means of communicating. This notion is extended into our definition of what it means to be literate. Kress and van Leeuwen note that:

one major and heavily value-laden distinction made by Western cultures has been that between literate (advanced) and non-literate (oral and primitive) cultures. No wonder that the move towards a new literacy, based on images and visual design, can come to be seen as a threat, a sign of the decline of culture, and hence a particularly potent symbol and rallying point. (2006, p. 17)

In order to break this cycle of contention, the complexity and value of visual literacy must become more widely known.

Langer (1957) argues a clear distinction between the verbal and visual systems of communication which makes it undeniable that both serve their purpose:

Visual forms—lines, colors, proportions, etc.—are just as capable of articulation, i.e. of complex combination as words. But the laws that govern this sort of articulation are altogether different from the laws of syntax that govern language. The most radical difference is that visual forms are not discursive. They do not present their constituents successively, but simultaneously, so the relations determining a visual structure are

grasped in one act of vision. Their complexity, consequently, is not limited, as the complexity of discourse is limited, by what the mind can retain from the beginning of an apperceptive act to the end of it. (Kindle loc. 1175-78)

This distinction of how we understand each of these symbol systems is critical to visual analysis.

**The components of visual analysis.** Visual analysis can be broken down in a myriad of ways. Van Leeuwen and Jewitt's (2001/2010) *Handbook of Visual Analysis* uses broad categories such as content analysis, visual anthropology, cultural studies, semiotics and iconography as a basis for their means of organization. Rose (2007) uses compositional interpretation, content analysis, semiology, psychoanalysis, and anthropological methods. Kress and van Leeuwen (2006) choose to use forms of representation such as narrative and conceptual as their basis while Dondis (1973) pares it down to the basic elements of visual communication and the syntax of visuals. Dondis is the most likely beginning point for the novice as her text was written "to construct a basic system for learning, recognizing, making, and understanding visual messages that are negotiable by all people, not just those specially trained, like the designer, the artist, the craftsman, and the aesthetician" (1973, p. x). True to her intent, her text is a primer as it walks the reader through each element and method of composition until a basic understanding is achieved.

**The discourse of images.** Although the elements and composition of images must be understood, perhaps more significant is the understanding of how images communicate—their method of discourse. When considering discourse, it is perhaps best to use the rhetorical triangle as a basis (See Figure 8a). The three points of the rhetorical triangle are the rhetor (author, speaker, artist), the audience (reader, listener, viewer), and the text (written, oral, visual) (Hesford & Brueggemann, 2007, p. 2).



Figure 8a. The Rhetorical Triangle (adapted from Hesford & Brueggemann, 2007, p. 2)

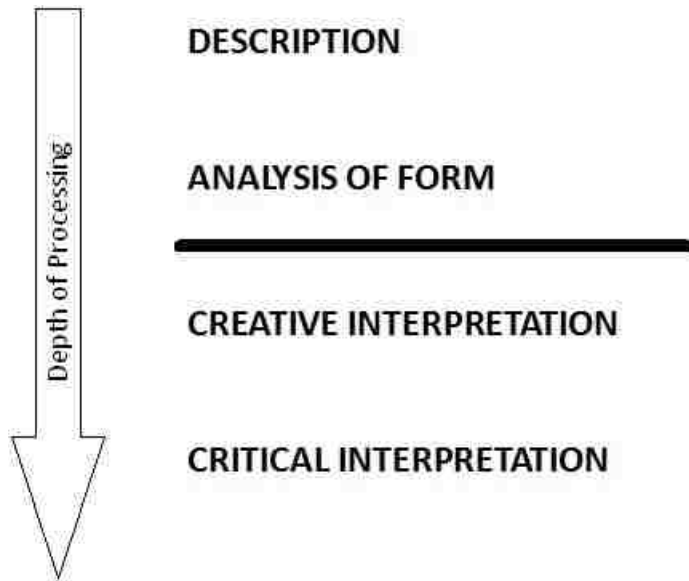
Because our sense of sight is automatic we tend to oversimplify our need to engage in visual discourse. “It all seems natural and simple and suggests that there is no need to do more with our abilities to see and to visualize than just merely to accept them as a natural function” (Dondis, 1973, p. 1). Dondis even furthers the gravity of the situation by reminding the reader of the situation of the arts in our educational system:

One of the tragedies of the overwhelming potential of visual literacy at all levels of education is the mindless, custodial-playtime function the visual arts serve in the curriculum and the similar state that exists in the use of media, cameras, film, [*sic*] television. Why, in the visual arts, all of them, have we fallen heir to an unspoken devotion to nonintellectualism? (1973, pp. 10-11)

Fredette (1994) furthers this concept by questioning the preponderance of visual stimuli on the walls of classrooms rather than careful and purposeful selection:

When you see what visuals are given prominence and when you see how teachers use visuals in their classroom you know something about the importance of visuals in that setting....I have wondered whether the cumulative impact on students of excessive visual noise in their learning environment should be studied. (pp. 235-237)

Fredette (1994) continues with a discussion of the purposes of various types of visuals and ends with her conception of how visuals must be approached with a sequence of processing skills as denoted in Figure 9. The two categories above the line are considered sense-data levels which



*Figure 9.* Levels of information to be sequentially addressed (adapted from Fredette, 1994, p. 252)

are readily accessible at the novice level. The two categories below the line are considered “response tasks” and “involve extracting symbolic (expressive) connotations from visual art objects, which requires the mental stretch called interpretation” (Fredette, 1994, p. 253). It is at these two deeper levels that Dondis (1973) would desire to have students spend most of their time, and it is here that rhetoric must be considered.

If the rhetorical triangle is used in speech and writing, it seems fitting that it should be included in any class using visual arts/images. At its most basic function, the triangle recognizes that in communication, there is an exchange of information. Silverblatt (2008) emphasizes that “Each medium (or particular application of the medium) is directed at a particular audience” (p. 52). This means that we must consider the media communicator (the rhetor) and his/her/its



intent. This, for Postman (1985), is critical to understand. “Each medium, like language itself, makes possible a unique mode of discourse by providing a new orientation for thought, for expression, for sensibility” (p. 10). Postman’s biggest argument is that the general public is being lulled into complacency regarding media messages, in particular, those messages coming through a television set.

Kress and van Leeuwen (2006) discuss at length the relationship (interaction) that exists between the producer of an image and the viewer. Even though a picture book may appear to allow the viewer absolute freedom in interpretation because of limited or non-existent words, the producer has actually designed the images in such a way that the viewer can actually be more limited in his/her interpretation. Much of this limitation deals with the “represented participants (the people, the places and things depicted in images)” (Kress & van Leeuwen, 2006, p. 114). The use of represented participant gaze, social distance from the represented participants and viewers, choices of perspective, and the use of vertical vs. horizontal angles, all have a significant impact upon the viewer’s interpretation of the image.

When thinking in terms of images, it is important to include the idea of nonverbal communication. Babies develop the ability to read the gestures and facial expressions of their parents and those around them before they learn how to speak. “Child development scholars would agree that visual communication skills...develop earlier than verbal skills in children.” (Moriarty, 1994, p. 15). Silverblatt (2008) shares that “nonverbal communication comprises 65 percent of all communication between people...media communicators should be aware that even subtle nonverbal expressions can have a powerful influence on the public” (pp. 193, 197).

Silverblatt (2008) also emphasizes that “Consumers of media must learn to use media in *combination* to take advantage of the distinctive attributes of each medium” (p. 39). Those

particular media addressed by Silverblatt are print, photography, film, radio, television, and digital media. He suggests using the senses, the pace of the presentation, the environment in which the medium is presented, the amount of time it takes for the information to be conveyed, and the route of the conveyance as a basic methodology for “assessing the characteristics” of each medium (2008, pp. 39-40). Silverblatt also includes a series of questions with which a viewer can interpret media messages by using media analysis. Here again we see an emphasis towards dramatic action as the media pushes the narrative format as a means to identify with the viewer/consumer.

**Visual literacy in education.** Seels (1994) discusses the history of how the IVLA came into being, and as a part of that discussion, she mentions why education has not been impacted significantly in the area of visual literacy. She points to the fact that a theory base and political base must first be established. Although a theory base has certainly been developed since she did her writing, more must be done in terms of operationalizing the specific components of VL and addressing how to teach and, in turn, assess these components in order for VL to become of political significance. In light of this, the United States has done little to advance the area of VL assessment. As a result of little being done in this area, Robertson (2007) notes that:

assessing visual literacy often consists of providing a visual prompt to which students respond in writing. While this type of assessment has some legitimacy, it does not get at the heart of visual literacy, which includes viewing, interpreting, and creating visual images. (p. 144)

Avgerinou (2007) has contributed to the beginning of assessment through her development of a Visual Literacy Index. Callow (2008) has also brought to light the work being done in the Australian school system. “In Australia, visual literacy is integrated in all literacy syllabus

documentation across states and territories” (Callow, 2008, p. 616). Callow focused on the elementary classroom. Even in the United States, the ACRL (Association of College and Research Libraries) has adopted their own Visual Literacy Competency Standards for Higher Education as of October 2011, and many states across the nation include work with multimodal texts as a part of their K-12 standards. The Common Core State Standards in Language Arts, currently adopted by 45 states (but not Alaska, Nebraska, Texas, Virginia, and Wisconsin) and 3 territories (Common Core State Standards Initiative, 2012) are quite explicit in their inclusion of VL. According to these Common Core State Standards, by grade 4, students are expected to:

4.RL.7 Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.

4.RI.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

4.W.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. (Oregon Department of Education, 2012)

By grade 8, students will be able to:

8.RL.7 Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.

8.RI.7 Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.

8.W.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

8.SL.2 Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.

8.SL.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (Oregon Department of Education, 2012)

By grades 11-12 students will be able to

11-12.RL.7 Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)

11-12.RI.7 Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

11-12.W.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

11-12.SL.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

11-12.SL.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. (Oregon Department of Education, 2012)

The ACRL Visual Literacy Competency Standards for Higher Education (2011) read as follows:

**Standard One:** The visually literate student defines and articulates the need for an image.

**Standard Two:** The visually literate student selects the most appropriate sources and retrieval systems for finding and accessing needed images and visual media.

**Standard Three:** The visually literate student interprets and analyzes the meanings of images and visual media.

**Standard Four:** The visually literate student evaluates images and their sources.

**Standard Five:** The visually literate student uses images and visual media effectively.

**Standard Six:** The visually literate student designs and creates meaningful images and visual media.

**Standard Seven:** The visually literate student understands many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media,

and accesses and uses visual materials ethically. (Hattwig, Burgess, Bussert, & Medaille, 2011)

Clearly, at each grade level, the standards are requiring students to be able to critically engage with visual images and to consider the discourse of various types of imagery. They are also being asked to consider what images will best suit their purposes as they author texts. These are not skills that are typically intuitive, and they must be taught with strategic planning in place, embedded into the curriculum, rather than as merely an add-on to the curriculum. Although the demand of the standards is a compelling argument, there are many other reasons when determining why educating students for VL is vital. Some of these reasons include consumerism, textual ownership/authorship, the power of media, and pedagogical use of multimodalities.

**Consumerism.** In our nation, marketing is a central focus of the economy. Silverblatt (2008) shares the following statistics:

The average American is immersed in advertising:

- U.S. spending [on advertising] in 2006 reached a record \$285 billion—the equivalent of \$950.00 for every person in the United States.
- An hour of prime-time network programming contains 18 minutes of advertising, [as compared to] 16 minutes in 2003 and 12 minutes in the 1980s.
- By the age of 65, the average American has seen two million TV commercials.
- American children are exposed to 40,000 ads per year.
- When *Dateline NBC* recently asked children to choose between a banana and a rock with a Scooby-Doo sticker on it for breakfast, nearly all chose the rock. (p.

265)

The Media Education Foundation (2008) also notes that marketers target kids with what they term a “360 degree immersive marketing” scheme, bombarding kids with “over 3,000 commercial messages every day” through various forms of media. Their goal is to turn children into life-long consumers. Since 1984, the Federal Trade Commission (FTC) has been powerless to regulate advertising to youth. As is spoken about by Pariser (2011), marketing agencies are employing the use of algorithms in order to make online consumer use personalized towards each consumer’s preferences. Silverblatt (2008) defines this as narrowcasting and notes that it “enables media communicators to tailor their presentations to the background and interests of particular subgroups” (p. 50). This trend is significant when marketing towards children and youth. Although such narrowcasting is troubling, perhaps what is even more concerning is the role which advertisers readily admit to using in order to persuade would-be consumers. “We must come into our customers’ homes and lives as understanding friends and remain as welcome guests because of the honesty and good grace with which we present ourselves” (as cited in Silverblatt, 2008, p. 268). Here we see the media communicator as a “friend” who understands “you” in order to sell the product. Kilbourne (1999) also emphasizes this pseudo-emotional bond between media communicators and consumers:

Advertisers exploit our very real human desires for connection, calmness, respect, and excitement. Every emotion is used to sell something. The cumulative effect of all these ads is to leave us romantic about objects and deeply cynical about humans. (Kindle loc. 131-33)

Schor (2004) emphasizes the cut-throat business of advertising, and the war terminology that is associated with this industry:



Those at whom ads are directed are “targets.” When money is committed to an ad campaign it is referred to as “going against the target.” Printed materials are called “collateral.” Impromptu interviews with consumers are “intercepts.” (p. 20)

Schor (2004) also points to the serious research completed by the advertising industry through anthropological and ethnographic means to “scrutinize the most intimate details of children’s lives” (p. 22). These advertisers will even go so far as to pay those adults considered the most trusted in children’s lives (pastors, coaches, youth workers) “to elicit information from them” (2004, p. 22). According to Schor, “Nickelodeon tells its advertisers that it ‘owns kids aged 2-12’” (2004, p. 20). These are strategies and tactics that need to be addressed through visual literacy studies.

**Authorship.** As students engage with creating texts in digital environments, the question of authorship also arises. In mash-up environments where visual images can be altered and posted, where is the line drawn regarding copyright and ownership? These are issues that must also be addressed in schools. Such skills are addressed in the 21<sup>st</sup> Century Skills published by the International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS·S) and Performance Indicators for Students. Digital Citizenship (skill set 5) is described as follows: “Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. a. Advocate and practice safe, legal, and responsible use of information and technology” (ISTE, 2012). Now, virtually anyone can take a photo or create a film and publish it for the world to view. No longer are we solely focused on students as viewers, but we must engage them in understanding what it means to be an author, and the responsibility of ethical authorship.

**Media power.** The way each person sees the world is the result of shaping that is done through internal and external processes. Internal processes include personality traits, while external processes are related to the people who have influence upon us as well as the environment around us. Understanding external processes of influence, in particular, the media, is important when considering the future of society. Tannen (1999) describes how the media has directly influenced the American culture towards an argumentative base. Steuter and Wills (2008) have also pointed to the use of visual images (photographs and political cartoons) to promote hatred and dehumanization. Such power must be addressed in order to educate young people to understand how easily they can be persuaded into believing something. This is perhaps the most compelling reason for addressing visual literacy.

Kilbourne (2010) attacks advertisers as contributors to the dehumanization of women through their use of objectification. This objectification has led young girls to believe that they must look like the picture perfect models in order to be valued. Kilbourne (2010) defines this as a “public health problem” as women are either starving themselves to try to look like the models in ads (which, by the way, are extensively Photoshopped and likely composites of several models) or they are obsessed with food as advertisers have distorted a woman’s relationship with food to be a replacement for an intimate human relationship. According to the video by Kilbourne (2010), “‘You have the right to be sexy’ really means you have the right to be an object, to be passive, to have your sexuality defined in a rigid, shallow, limiting and clichéd way.” This need to be considered “hot” becomes the focus of a woman’s/girl’s worth, and leads to depression, eating disorders, and low self-esteem. Advertisers’ objectification of men results in a sense of power, while objectification of women is seen as fragility and passivity; this also results in the polarization of men and women (Kilbourne, 2010). Kilbourne (2010) voices that

changes must be profound and global, and that we must see ourselves as citizens rather than as consumers. Citizens must reclaim the power for themselves, and this can be aided through the use of visual literacy.

*Pedagogical practices.* As educators continue to work towards providing an equal education for all students as required by No Child Left Behind (NCLB) enacted in 2001, they have developed strategies that not only provide for students of diverse backgrounds, but also provide a means for students to be more engaged with their learning. One of these strategies involves the use of multimodal texts. Multimodal texts employ the use of technologies that include still images, motion, sound, text, among others. The use of multimodal texts is a means “for merging what they [students] know about technology with what we [educators] know about what it means to read and write well” (Kajder, 2007, p. 215). Kajder (2007) uses blogs, wikis, video games, digital images, digital video, and podcasts with her students. Allowing students the opportunity to engage with technologies with which they are familiar outside of the classroom leads to more success inside the classroom. “Learning with multiple sign systems often helps even the least motivated and underachieving readers redefine their literate competence” (Alvermann, 2007, p. 26). Learning the sign systems of visual images along with other sign systems is necessary in the realm of multimodal texts. Not only is the understanding of the sign systems important, but also the ability to understand when and how to use each system to achieve the greatest impact. Kress and van Leeuwen (2006) echo the idea that multimodalities are important in education:

It is clear, we hope, that children actively experiment with the representational resources of word and image, and with the ways in which they can be combined. Their drawings are not just illustrations of a verbal text, not just ‘creative embellishment’; they are part of

a ‘multimodally’ conceived text, a semiotic interplay in which each mode, the verbal and the visual, is given a defined and equal role to play. (p. 113)

### **This Study in the Body of Literature**

From the literature, it is clear that visual literacy is a defined need in our educational system and society in general. It is also clear that the sophistication of visual literacy in this present age requires skills that must be developed systematically. Many models exist for understanding the components and discourse of visuals, but there is a limitation in the realm of assessment and understanding how best to train K-12 students to become visually literate adults. This study seeks to determine the visual literacy abilities of current future educators as a beginning point to guide in both teacher preparation and in identifying staff development for teachers in the classroom to support their growth in these two limited areas in the field of visual literacy.

## CHAPTER THREE

### METHODOLOGY

*...children very early on, and with very little help...develop a surprising ability to use elements of the visual 'grammar'—an ability which, we feel, should be understood better and developed further, rather than being cut off prematurely as is, too often, the case at present; and an ability that should also be available to adults.*

*--Reading Images: The Grammar of Visual Design  
By Gunther Kress and Theo van Leeuwen (2006, p. 20)*

In order to provide a descriptive snapshot of the current state of visual literacy in pre-service teachers in the United States, it is necessary to collect data from a varied pool of participants who come from graduate teacher preparatory programs across the nation. By taking a national sampling, it will more accurately depict a current view of the level of visual literacy inherent in the nation. This current view is a basis for understanding where the researcher may choose to go next to further the research into visual literacy training of pre-service teachers, as well as advise staff development programs.

#### **Research Design**

This quantitative descriptive study derived a data set of 755 institutions of higher education offering teacher preparation programs from data available through the U.S. Department of Education. When examining the list, it was apparent that some states have a very high number of programs offered (e.g., California and New York have 24 schools and 58 schools respectively, which is over 10% of the total number of institutions) while others offer very few programs. If a sample was drawn from the list as is, it would have been more probable to select an inordinate number of programs from only one state. A random stratified selection would assure a better probability of representativeness on a national level; therefore, this list was stratified by dividing the institutions into six groups according to the accreditation agency

overseeing each. The accreditation agencies are as follows: Northwest Commission on Colleges and Universities, Western Association of Schools and Colleges, North Central Association of Colleges and Schools, Middle States Commission on Higher Education, New England Association of Schools and Colleges, and the Southern Association of Colleges & Schools.

Figure 10 shows how these agencies are spread out across the nation.



*Figure 10.* Higher education accreditation agency distribution.

**Institution selection.** Institutions in each of the six areas were numbered, and three were randomly selected (through the use of Randomizer.org) from each area in order to create a total pool of 18. It was discovered through this process that although some of the institutions were listed as having graduate teaching programs, upon closer examination (which included webpage research as well as phone contact), some did not offer programs at the graduate level, some did not offer programs for pre-service teaching, and some listed were private institutions rather than public. This meant that the researcher had to continue randomly selecting from each region in order to get the 18 institutions that qualified for the study.

Initial contact with each institution was attempted after investigating the websites and determining a seemingly appropriate contact person at each site. Initially the researcher planned to contact a fulltime faculty member within either the literacy or language arts areas of focus, as it was thought that someone within that specific curricular area would be more likely to be interested in this particular study; however, as the researcher made phone contact, it became obvious that for many institutions it was more profitable to contact program coordinators or deans. Phoning and email were both used, and the communication mode settled upon was contingent upon the contact person. In many cases, email was the preferred mode. The contact person was provided a description of the study as well as a description of what his/her expectations were in order to secure his/her willingness to send a preliminary introduction email, the link for the electronic survey, and a thank you/reminder email to an email listing of eligible students within the program. This process led to two institutions electing not to participate. These were replaced through the same randomized selection process as described above. Several institutions were quick to participate in the study while others did not respond to either the phone messages left or the emails sent. For each original phone message left, a follow-up email was sent to detail the study and the researcher's needs. If no response was given by the end of a week's time, another phone call/email was initiated. Through this process, four of the institutions were no longer considered as participants. If time had allowed, these institutions would have been replaced; however, the spring calendar was now the consideration with many institutions ending their classes by the end of April or beginning of May. It was no longer an option to consider replacement. Another institution was withdrawn, after originally agreeing to participate, as the dean made the determination of non-participation.

A few institutions required some level of IRB process from a simple verification of the researcher's own IRB materials, approved by The University of Montana, to a more extensive process of actually requiring the researcher to complete their documents and submit them to their own IRB. This process cost the researcher two more institutions as their IRB process moved past the end of their students' term. Of the original 18 institutions, 10 were actual participants with the northeast, northwest, southern, western, and middle states regions being represented. The north central association was lost due to the IRB process delay.

**Data collection design.** A three-section survey administered by the researcher was used to collect data to attempt to answer the research question. The first section was a demographic survey to gain information regarding area of study, courses taken, age, gender, location of schooling, and level of schooling (See Appendix C). The last two sections of the survey were the two tests of Avgerinou's instrument. The three sections were copied for delivery through the use of SurveyMonkey.com, an online survey software program. As requested through The University of Montana IRB process, IP Address tracking was disabled in order to assure the participants the most anonymous reporting possible. This prevented the researcher from having any means to track the participants. The three sections were constructed by the researcher through original creation (demographic survey) as well as through adapting the electronic version of Avgerinou's instrument. Great care had to be taken to reproduce Avgerinou's instrument with as few alterations as possible. Avgerinou's original instrument was composed using PowerPoint for visual delivery and a traditional "paper" (whether delivered electronically or physically) response form which also contained some visual materials. SurveyMonkey.com does have some design limitations, but the researcher was able to make minimal alterations to the original content as shown in the following example.



*Original context:* The PowerPoint screen was blank, and the wording of the prompt was “You will be presented with two objects that are shown from an unusual angle. Can you identify them? (Please write your answers on the lines provided below.)” Presumably, the PowerPoint was then advanced to show the two objects.

*Altered context:* The objects were shown side-by-side in a single jpg file placed above the prompt with the wording of the prompt as “The two objects above are shown from an unusual angle. Can you identify them? (Please write your answers in the spaces provided below.)”

One significant alteration to Avgerinou’s instrument came with the deletion of the final prompt on the second test. This prompt required the participant to produce a drawing for evaluation. There was no way to reproduce this capability in the SurveyMonkey.com environment. This prompt is discussed further in chapter four.

Participants received the survey link via email/Learning Management System from the contact person within the academic institution and, using the link, were directed to the online site where they were able to complete it. The survey was described by Avgerionou as time-intensive (requiring approximately one hour to complete). The researcher conducted a trial run using two volunteers, and it was determined that the completion time was from 30-45 minutes. Although it was originally thought the researcher would suggest that the contact might offer an incentive (e.g., assignment credit in a class) for completion, this did not seem possible considering the varying means (i.e., office staff, faculty, program coordinators) through which the emails were dispersed. Therefore, the original concept of offering a survey completion screen with a date and time stamp (available for printing to validate students who had completed the survey) was no longer considered a valid means of incentive. This may have been a critical factor in the

response rate; however, the researcher did not feel that there was any recourse, in particular, because of the time constraint with students completing the term within a few weeks of the survey being sent out and some faculty members being reticent to participate. Asking for them to offer an incentive would have seemed inappropriate. It was deemed that having the personal contact from a faculty member or coordinator within the program (i.e., someone known to the students population) would enhance participation, and so the researcher did ask that each contact person supply a brief explanation to his/her students in the initial email to promote student participation. One such explanation read as follows:

Research is an important part of what professional educators do. My colleague at Eastern Oregon University is conducting research on pre-service teachers and their understanding of visual literacy. This is an opportunity for you to participate in education research and be part of this important inquiry process. The email from the researcher and the link for you to participate follows. (A. Jones, personal communication, April 25, 2013)

Support for this type of incentive over the use of extrinsic motivators such as money or points towards a grade is described by Nulty (2008): “thoughtful participation is best achieved by ensuring the survey is worth the students’ time, and that using extrinsic motivators may bias the sample to include more responses from those who need that form of encouragement” (p. 305).

This is the philosophy the researcher used when designing the pre-survey video as well.

Describing how student participation would influence the study was thought to be an intrinsic motivator. Even one respondent who did declare that the survey was getting too long (in one of the available text spaces) pushed through to complete it. The quality of responses from the respondents was therefore thought to be high due to the length of the survey and the time that had to be devoted to complete it.

## **Research Question**

The research study was designed to answer the core research question: How visually literate are graduate level pre-service teachers? Within the answer to this research question, the study shows the levels of visual literacy in the following categories as defined by Avgerinou's VL Index: 1) Visual Information, 2) Intellectual Skills, and 3) Cognitive Strategy. As a descriptive study, the researcher used the results of the survey to describe the literacy abilities of the participants and to determine the particular categories of weakness which should be specifically addressed through curricular design and/or specific training.

## **Population/Sample/Participants**

The population targeted for this study was graduate level pre-service teachers in the United States. The random stratified sampling was taken nationally from accredited teacher preparatory programs in public institutions of higher education. A sample of students selected from the final 10 participating institutions included 1144 participants. Participants were focused at either the elementary or secondary level. Due to the design of the survey (with two tests that both included items necessary for analyzing VL ability), the researcher determined that the final number of respondents must have completed a minimum of 50% each of sections 2 and 3 (Avgerinou's instrument) in order to be considered. This differed from the researcher's original concept of 80% overall completion (University of Texas, 2007), because the design of the survey constituted three sections of varying information. In 27 surveys, section 1 (demographic information) was completed in full while there was minimal/no completion of sections 2 and 3. The nature of this survey, in particular its unusual length, also made it difficult to discount respondents who skipped certain portions but completed others in a seemingly random pattern.

The initial email to participants included a video of the researcher introducing them to the study so that they would be aware that a survey link would be sent within the week. The video

also served as an attempt to be more persuasive in getting participants to complete the survey as it gave a face to the researcher. The use of a preliminary introduction has also been a means to increase response rate (University of Texas, 2007). The script from this video is provided in Appendix D. The response rate expectation for online surveys is generally accepted to be about 30% of the total requested surveys (Nulty, 2008; University of Texas, 2007). As this was a descriptive study, and no attempt was being made to make statistical generalizations, the 30% response rate was accepted; however, it was the researcher's intent to increase the response rate to as high as 40% through the use of the introductory video and a follow-up thank you/reminder email several days before the survey window of 7-10 days closed, as this practice has been shown to increase response rates up to double for surveys sent through email (Cook, Heath, & Thompson, 2000, p. 831). Originally, the researcher decided that should the response rate be lower than 30%, then an attempt would be made to add additional institutions through continued randomized drawing (beginning with one per region) until a 30% rate was achieved. This was not possible due to the time constraints of the end of spring term at the participating universities. Because of the time constraint and the unusual length of the survey, the researcher accepted the response rate of this sample with the caveat that the description would be more limited than originally thought.

### **Instrument**

The demographic portion of the survey was placed in front of Avgerinou's instrument. This demographic portion of the survey was included by the researcher to compare any possible correlations between the results of Avgerinou's instrument and various participant factors such as location, area of study, age range, gender, and previous/current experience in studying art/photography/media.

The 1999 dissertation study by Avgerinou was presented in 2001 to the International Visual Literacy Association (IVLA) and won the Braden & Beauchamp Visual Literacy award. She subsequently published a portion of her study in 2007 as “Towards a Visual Literacy Index.” Her study resulted in a map of three categories of skills (Visual Information, Intellectual Skills, and Cognitive Strategy) each containing specified abilities. Her categories and abilities break down as follows:

1) Visual Information

Abilities—Knowledge of visual vocabulary, Knowledge of visual conventions,  
Knowledge of definitions (sign/symbol)

2) Intellectual Skills

Discriminations

Abilities—Visual discrimination (shape, size, brightness), Visual reasoning,  
Knowledge of visual conventions, Visual association, Visual reconstruction,  
Closure

Concrete Concepts

Abilities—Knowledge of design principles and their use, Critical viewing

Defined Concepts

Abilities—Knowledge & understanding of the meaning of signs/symbols,  
Critical viewing

Rules

Abilities—Concentration, Observation, Visualization, Visual Reasoning,  
Verbo-Visual Association, Critical Viewing, Visual Memory

Higher Order Rules

Abilities—Visual Reasoning, Constructing Meaning, Verbo-Visual Association, Visualization

### 3) Cognitive Strategy

Abilities—Observation, Concentration, Visualization, Visual Thinking

This index of skills gives a clear basis for the assessment of visual literacy skills (See Appendix A).

Avgerinou's creation of the index involved the use of four focus groups and seven test administrations through a five stage process. The results were analyzed by a panel of VL experts to determine the validity of the instrument as well as the reliability. Reliability using Cronbach's Alpha was calculated to be 0.67. The instrument itself consists of two tests, one of which has a PowerPoint visual component to accompany it.

Permission for the use of Avgerinou's instrument was secured in May, 2012, through email correspondence. It was agreed that its use was to be contingent upon posting the copyright information whenever the instrument was used as well as sharing the data file and a final electronic copy of the completed dissertation

### **Data Collection/Analysis Techniques**

Data was collected by the researcher; the survey was administered through the online survey service SurveyMonkey.com, and analysis of raw data was conducted through initial researcher observation prior to calculating descriptive statistics (measures of central tendency and variability). Correlational statistics were also used to determine how the collected data correlated to the demographic information. An analysis of the levels of visual literacy skills in each area measured was also explored. Only *MS Excel* was needed in the data analysis. An alpha level of .05 was assumed for any correlational statistics used.

The results of this study will be used to further investigate what specific course of action might be taken to pursue the purposeful training of pre-service teachers in visual literacy. The data provide a beginning analysis of the relevance of VL skills and abilities to the future of the K-12 curriculum. Scores show room for growth in the area of analysis which is a crucial skill when interacting in a media-saturated nation. In particular, understanding the power of visuals in the realm of advertising to objectify is of primary concern. Weakness in graphical representation and interpretation is also foreboding in the shadow of the emerging Smarter Balanced assessments that states will be using as a part of the Common Core State Standards. Lack of understanding of signs, symbols, and compositional components will also affect the ability to author visual texts, which is of specific import in the online realm. The data also provide a basis for continued dialogue regarding the need and importance of visual literacy as a primary component of K-12 education.

## CHAPTER FOUR: RESULTS

*The call for educators to teach these multiliteracies and associated metalanguage to students assumes that teachers know why these concepts and skills are so crucial as well as what aspects and features of multimodal texts to teach and assess and how to assess students' understandings and skills.*

*--Show Me: Principles for Assessing Students' Visual Literacy*

*By Jon Callow (2008, p. 616)*

The trends in survey research indicate a decrease in survey participation among members of the American population, and this decrease is most evident in online survey research (Nulty, 2008; Sax, Gilmartin, & Bryant, 2003; Sheehan, 2006). Despite the trends, this study was designed as a survey in order to reach a national audience. The online design was chosen as the most cost-effective means to deliver the survey, and care was taken in the design and implementation in order to obtain the largest response rate possible. Although the desired response rate was not achieved, the results of this study show that this particular sample of participants is tightly clustered, and therefore, it may indicate that the scores of this sample are representative of other like samples across the nation. This study is not making any generalizations overall, but is showing that visual literacy is an area with room for academic growth across the nation.

### **Response Rate**

The response rate for this study originally was thought to be 13.3% as 152 total responses were collected. It can be surmised that although measures were taken to attract the largest response rate possible (i.e., personal contact through a known institutional representative, video introduction to the survey, a reminder email about the survey) that the time constraints of the end of spring term along with the length of the survey (35-45 minutes), were both factors in limiting



the initial rate. After closer inspection of how many of the initial surveys actually included both responses to the demographic portion as well as the test portion, the rate dropped to 10.9%.

Table 4 shows the second calculated response rate (broken down by participating institution) of 125 out of 1144 possible participants.

Table 4

*Secondary Response Rate by Institution*

<b>Institution Number</b>	<b>Regional Association</b>	<b>Number of Respondents</b>	<b>Response Rate</b>
1	Northwest	9/77	11.69%
2	Southern	7/67	10.45%
3	New England	1/14	7.14%
4	Northwest	6/175	3.43%
5	Western	20/154	12.99%
6	Western	1/26	3.85%
7	Southern	8/27	29.63%
8	Middle States	1/16	6.25%
9	Western	59/554	10.65%
10	Northwest	11/34	32.35%
Unidentified		2	N/A
<b>TOTAL RESPONSE RATE</b>		125/1144	10.9%

Note. This response rate was calculated after the initial inspection of collected surveys.

Once this secondary response rate was calculated, the researcher noticed that many of these

respondents had filled out the first two sections of the survey but had not continued through the third section. Also, a few had only filled out a few responses in sections two and three. It was then determined that only if a respondent had filled out at least 50% each of the second and third sections, would the survey be counted as a part of the overall survey analysis. This dropped the response rate for the overall analysis (final score) to 90/1144 or 7.87% as shown in Table 5.

Table 5

*Final Response Rate of Full Test Completers by Institution*

<b>Institution Number</b>	<b>Regional Association</b>	<b>Number of Respondents</b>	<b>Response Rate</b>
1	Northwest	8/77	10.39%
2	Southern	7/67	10.45%
3	New England	1/14	7.14%
4	Northwest	3/175	1.71%
5	Western	17/154	11.04%
6	Western	1/26	3.85%
7	Southern	8/27	29.63%
8	Middle States	1/16	6.25%
9	Western	35/554	6.32%
10	Northwest	8/34	23.53%
Unidentified		1	N/A
<b>TOTAL RESPONSE RATE</b>		<b>90/1144</b>	<b>7.87%</b>

Note. This response rate was calculated after the secondary respondents were re-examined for 50% minimum completion for each of sections two and three.

Although this response rate is low, the researcher felt that it was necessary to maintain the most accurate results by removing non-completers for the final score analysis. It is also noted that each of the participating institutions maintained some representation through this process, which was looked upon as a positive for describing this sample, as it was still able to provide a relatively even “national” snapshot (5 of 6 regions) rather than being limited to only one or two regions.

### **Scoring the Instrument**

Avgerinou provided a key to the instrument with which the researcher was able to assess the responses to sections two and three of the survey. Many of the items required a definitive response while others were more open-ended. The open-ended responses proved to be the most challenging to score; however, Avgerinou’s key did provide some clear distinctions and guidelines which aided in the scoring. It must also be noted that the instrument and key had some distinctive European spellings which may have affected a bias towards the expected responses, but the researcher tried to remain true to the original measurement. It became apparent through the scoring process that some items of the instrument proved to be more challenging than others. A more detailed analysis of each item category will follow. Once the final scores were totaled by adding up the points earned for each item, a percentage score was derived by using the total number of points possible. The total for each test of the Avgerinou instrument (sections two and three of the survey) was calculated along with the overall score. Because there were 125 respondents to the first portion of the Avgerinou instrument (test 1/section two of the survey) the measures of central tendency of this section using the 125 respondents was compared to that of the 90 respondents to note if there was a similarity between the two.

## Measures of Central Tendency

Before calculating the measures of central tendency, the researcher observed the final scores (as is a practice learned through research training) and noticed through this initial observation that there seemed to be a tendency towards scores in the mid-60s of the percentage scale. The high score was observed to be 80% with low scores in the teens up to 30s. After removing the incomplete respondents through the second review process, the measures of central tendency for only the test completers (those who completed the entire instrument) were calculated. Table 6 shows those results. Graphing a histogram of the percentage scores for test completers gives another conceptualization of this data set as shown in Figure 11.

Table 6

*Measures of Central Tendency and Variability for Survey Completers (Tests 1 & 2)*

Mean	0.66
Mode	0.69
Median	0.67
Standard Deviation	0.07
Range	0.38 to 0.80

Note. N=90

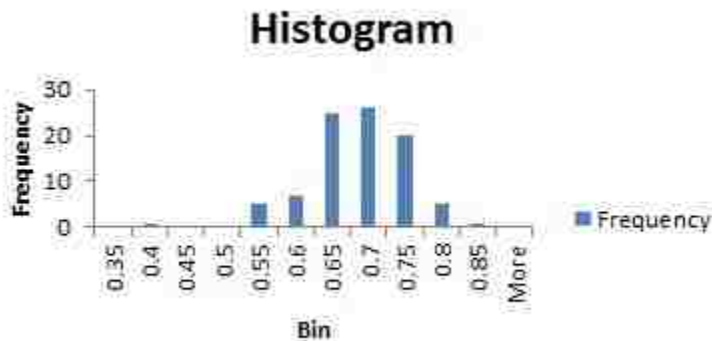


Figure 11. Histogram of final percentage scores of survey completers, N=90.

The researcher also questioned whether or not there was a similarity between those respondents who completed only section two of the survey (Test 1 of the Avgerinou Instrument) and those who completed both sections two and three. Part of the desire to understand any similarity was to determine whether or not to use the data collected from the 125 for individual test items. The measures of central tendency comparing the scores on section two are shown in Table 7. It is apparent from this comparison that there is little change between these two data sets.

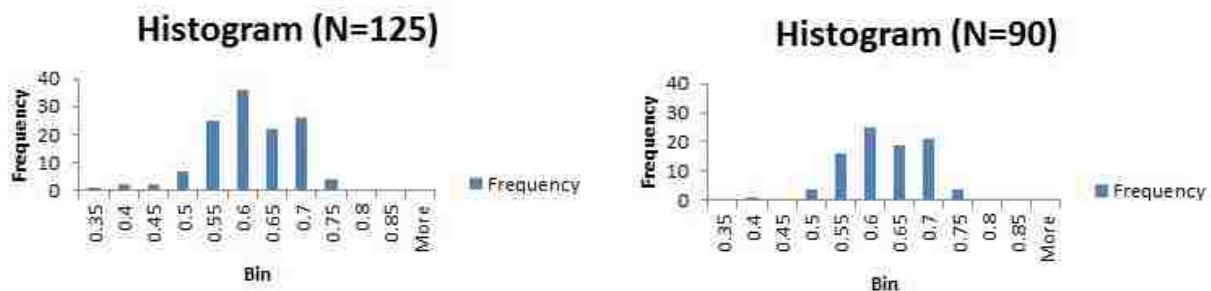
Table 7

*Comparison of Test 1 Measures of Central Tendency and Variability between 125 Respondents and 90 Respondents*

	N=125	N=90
Mean	0.59	0.60
Mode	0.63	0.63
Median	0.60	0.60
Standard Deviation	0.07	0.06
Range	31 to 74	40 to 74

Note. The 90 respondents shown in column two are included in the column one data set.

Histograms of these two data sets are shown in Figure 12. As can be seen, there is a similar pattern between these two distributions. The researcher used this comparison to make the



*Figure 12.* Comparison of section two (Avgerinou Instrument Test 1) survey scores between those who completed the full survey and those who only completed sections one and two. The 90 completers' scores are included in the 125 scores.

decision to include the data from the 125 respondents for individual test items.

### **Measures by Categories**

Avgerinou's VL Index is organized into three general categories: Visual Information, Intellectual Skill, and Cognitive Strategy. Each category has specific skills defined, and Avgerinou's Instrument was designed to measure these skills. Because the questions in the two parts of the instrument were coded, the researcher was able to put the scores for each of the questions into the appropriate subgroupings in order to describe each category in terms of how the respondents performed.

**Visual information.** As defined by Avgerinou (2001), this category includes three groupings of 1) knowledge of visual vocabulary (items 1a1-1a9), 2) knowledge of visual conventions (items 1b1-1b6), and 3) knowledge of the definitions of signs and symbols (items 1b7.a & 1b7.b). The skill set definitions declare that

[t]he subject should be able to *recognize* the main elements of visual vocabulary.... The subject should be able to *identify* the meaning of given signs and symbols....The subject should be able to *demonstrate* their knowledge of the meaning of a sign and a symbol through agreement with the given definitions. (p. 45)

The item numbers and means for this category are shown in Table 8. Each test item was worth 1 point total, with the exceptions of items 1b1, 1b4, 1b5, and 1b6. These were valued up to 2 points each, with some respondents earning full points and some earning 1 point or 0 points, depending upon level of response. Items 1a1 through 1a4 asked participants for their understanding of basic visual terms such as *point*, *line*, *shape*, and *form*. Items 1a5 through 1a9 asked participants to apply their understanding of particular graphic features and how those are denoted.

Table 8

*Visual Information Items and Corresponding Means*

<b>Item Number</b>	<b>Total Points</b>	<b>Respondents</b>	<b>Item Mean</b>
1a1	97	103	.9417
1a2	89	103	.8640
1a3	102	103	.9903
1a4	98	102	.9608
1a5	85	102	.8333
1a6	87	102	.8529
1a7	64	102	.6275
1a8	75	101	.7426
1a9	91	102	.8922
1b1	181/2 (2 pts poss.)	101	.8960
1b2	77	101	.7624
1b3	102	102	1.0000
1b4	172/2 (2 pts poss.)	102	.8431
1b5	177/2 (2 pts poss.)	102	.8676
1b6	120/2 (2 pts poss.)	102	.5882
1b7.a	97	102	.9510
1b7.b	96	101	.9505

Note. These data are derived from survey respondents for both Test 1 and Test 2 (N=125) even if they did not complete at least 50% of both tests.

Items 1b1 through 1b6 asked participants for their understanding of commonly accepted images and their meanings, while items 1b7.a and 1b7.b asked participants for their understanding of the terms *sign* and *symbol*. As can be observed in Table 8, only two items had a mean below the 70% mark. Taken as separate groupings, the measures of central tendency and variability for the groupings are presented in Table 9. It is obvious from these measures that the responses to this particular category of visual literacy are relatively consistent. The groupings with lower scores required a certain amount of participant interpretation which is likely a contributor to the variability in responses.

Table 9

*Visual Information Groupings with Measures of Central Tendency and Variability*

<b>Knowledge of Visual Vocabulary</b>		<b>Knowledge of Definition of Sign and Symbols</b>	
<i>Items 1a1-1a9</i>		<i>Items 1b7.a &amp; 1b7.b</i>	
Mean	0.86	Mean	0.95
Median	0.86	Median	0.95
Mode	N/A	Mode	N/A
Standard Deviation	0.11	Standard Deviation	0.000
Range	0.63 to 0.99	Range	0.95 to 0.95
<b>Knowledge of Visual Conventions</b>		<b>Visual Information</b>	
<i>Items 1b1-1b6</i>		<i>All Previous Items</i>	
Mean	0.83	Mean	0.86
Median	0.86	Median	0.87
Mode	N/A	Mode	N/A
Standard Deviation	0.14	Standard Deviation	0.12
Range	0.59 to 1.00	Range	0.59 to 1.00

This finding is intriguing, in particular, because there was not 100% agreement among the participants in the definitions of *point* or *line* which are visual concepts readily discussed in elementary math classes as well as art classes. (However, it must be noted that graduate level students may have brought in more advanced notions of point and line.)

**Intellectual skill.** This category is the most extensive of the three and includes groupings of 1) discriminations (items 2a1-2a9); 2) concrete concepts (items 2b1-2b13); 3) defined concepts (item 2c.1-2c.8); 4) rules (items 2d1-2d8); and 5) higher order rules (items 2e1-2e5). Each of these groupings has its own specific skill set as defined by Avgerinou (2001). The overall measures of central tendency and variability for this category are shown in Table 9.1.



Table 9.1

*Intellectual Skill Measures of Central Tendency and Variability*

<b>Intellectual Skills</b>	
<i>Items 2a1-2e5</i>	
Mean	0.70
Median	0.78
Mode	0.98
Standard Deviation	0.26
Range	0.03 to 0.97

As can be seen, there is quite a bit of variability overall in this category, but the mean/median show there is room for growth overall. Because of the complexity of this category, each of the groupings will be addressed in detail.

***Discriminations.*** The key skills listed under this grouping have to do with discriminating, recognizing, and grouping. Avgerinou (2001) describes the skills involved.

The subject should be able to *recognise* differences in shape between two-dimensional representations....The subject should be able to *recognise* differences in the size of given elements....The subject should be able to *recognise* differences in brightness in a series of projected colour slides....The subject should be able to *discriminate* between sources of light on the evidence of shadows' cast....The subject should be able to “*read*” and *discriminate* between still images of body language (cartoons)....The subject should be able to *group* objects commonly seen together; and to *name* the unifying concept behind each group....The subject should be able to *recognise* and *name* a picture of a common object taken from an unusual angle....The subject should be able to *recognise* and *name* the portrayal of movement in a still image....The subject should be able to *recognise* and *name* partially occluded objects of black and white still images. (pp. 46-47)

Table 10 shows the means for each item within this grouping. As in Table 8, each item was worth one point, except for item 2/a6 with a possibility of earning up to 4 points. The items that proved to be the most challenging to this group of participants involved identifying objects from either a partial view or with pieces missing.

Table 10

*Discriminations Items and Corresponding Means*

<b>Item Number</b>	<b>Total Points</b>	<b>Respondents</b>	<b>Item Mean</b>
2a1	84	102	.8235
2a2	88	101	.8713
2a4	93	102	.9118
2/a5.a	83	100	.8300
2/a5.b	65	96	.6771
2/a5.c	97	100	.9700
2/a5.d	82	99	.8283
2/a5.e	90	98	.9184
2/a6	301/4 (4 pts poss.)	97	.7758
2/a3	92	124	.7419
2/a7.1	106	122	.8689
2/a7.2	17	104	.1635
2/a8	108	125	.8640
2/a9.1	123	125	.9840
2/a9.2	51	125	.4080
2/a9.3	125	125	1.0000
2/a9.4	38	111	.3423
2/a9.5	118	124	.9516
2/a9.6	75	125	.6000
2/a9.7	3	96	.0313
2/a9.8	91	122	.7459
2/a9.9	112	123	.9106

Note. These data are derived from all survey respondents (N=125).

The overall measures of central tendency and variability for this grouping are shown in Table 11.

This set of items produced more variability than was seen in the Visual Information groupings.

It is possible that some of the difficulty encountered in these items involved the quality of the

images as displayed on each participant’s computer screen. Lower resolution screens could cause a decreased ability to accurately see what was presented in the survey, and some respondents did indicate having issues “seeing” a few of the images.

Table 11

*Discriminations Measures of Central Tendency and Variability*

<b>Discriminations</b>	
<i>Items 2a1-2a9</i>	
Mean	0.74
Median	0.83
Mode	N/A
Standard Deviation	0.27
Range	0.03 to 0.97

**Concrete concepts.** This grouping involves skills that are most typically required of students in either English or social studies classes. Avgerinou (2001) shares

[t]he subject should be able to *identify* instances of application of certain design principles; and to *evaluate* their effectiveness to convey meaning, by: 1) agreeing with given questions, 2) making suggestions as to which visual devices were employed in order to direct the viewer’s attention on a black & white magazine advertisement. (pp. 47-48)

For this grouping, Avgerinou used a common print advertisement and created a series of questions to probe for understanding. Table 12 reports the mean scores for each of the 13 questions posed for this advertisement. Upon first review, it is apparent that half of the scores

fall below 60%. Some of the lower scores came from items that asked the participants to evaluate visual composition and elements, while the highest scoring item asks a question regarding viewer perception. When calculating the measures of central tendency and variability (see Table 13) this observation is confirmed.

Table 12

*Concrete Concepts Items and Corresponding Means*

<b>Item Number</b>	<b>Total Points</b>	<b>Respondents</b>	<b>Item Mean</b>
2b1	84	97	.8660
2b2	54	97	.5567
2b3	48	96	.5000
2b4	75	96	.7813
2b5	39	94	.4149
2b6	46	96	.4792
2b7	50	91	.5495
2b8	43	90	.4778
2b9	67	90	.7444
2b.10	181/3 (3 pts poss.)	76	.7939
2b.11	86	94	.9149
2b12	55	93	.5914
2b13	66	94	.7021

Note. These data are derived from all survey respondents (N=125).

Table 13

*Concrete Concepts Measures of Central Tendency and Variability*

<b>Concrete Concepts</b>	
<i>Items 2b1-2b13</i>	
Mean	0.64
Median	0.59
Mode	N/A
Standard Deviation	0.16
Range	0.41 to 0.91

**Defined concepts.** This grouping applies the definitions of *sign* and *symbol* to given examples. “The subject should be able to *classify* examples of signs and symbols or both, by using given definitions” (Avgerinou, 2001, p. 48). Table 14 shows the means for this grouping by item number. It appears from the data that this is another grouping that proved to be more

Table 14

*Defined Concepts Items and Corresponding Means*

Item Number	Total Points	Respondents	Item Mean
2c.1	51	90	.5667
2c.2	12	89	.1348
2c.3	65	89	.7303
2c.4	76	90	.8444
2c.5	26	89	.2921
2c.6	48	89	.5393
2c.7	34	89	.3820
2c.8	63	89	.7079

Note. These data are derived from all survey respondents (N=125).

challenging. The measures of central tendency and variability shown in Table 15 confirm this observation. Again, there is a lot of variability as indicated by the range of scores. The image that caused the lowest score (13%) was the European monetary sign for *pound* (£).

Table 15

*Defined Concepts Measures of Central Tendency and Variability*

<b>Defined Concepts</b>	
<i>Items 2c.1-2c.8</i>	
Mean	0.52
Median	0.55
Mode	N/A
Standard Deviation	0.24
Range	0.13 to 0.84

**Rules.** This grouping required more interpretive skills than others. Avgerinou's (2001) descriptions are as follows:

The subject should be able to *mentally trace* constituting elements of an image and decide on their associations...The subject should be able to *demonstrate* understanding of the visual narrative conveyed by a black & white cartoon sequence, through describing it verbally (NB No verbal information would be provided by the cartoon sequence)...The subject should be able to *interpret* graphical representations of data as being correct or incorrect representations of the given information...The subject should be able to *identify* and *name* the unifying concept (activity) behind a sequence of colour slides arranged in chronological order and related by process (photographs)...The subject should be able to *identify* and *name* the unifying concept (activity) behind a sequence of colour slides arranged in an idealised order to represent elements of a process (photographs)...The subject should be able to *identify* and *name* the idea (feeling) that the following sequence of body language (one multiple image, colour slide) was arranged to communicate about a process (cartoon)...The subject should be able to *identify* and *name* the emotional reaction (feeling) that this black and white picture was meant to evoke in the viewer...The subject should be able to *identify* and *name* the predominant personal emotion conveyed by a sequence of body language colour slides (cartoon). (pp. 48-50)

Table 16 shows the item means for this grouping. Upon observation, it is clear that this is one of the higher scoring groupings. The items within this grouping typically displayed a sequence of

Images, and required the participant to interpret emotions through body language, or to interpret an activity; however, the lowest scoring item required participants to decide if the information described in a paragraph was truly represented by three different graphical representations (charts), which is a much more analytic skill. Table 17 shows the measures of central tendency and variability for this grouping.

Table 16

*Rules Items and Corresponding Means*

<b>Item Number</b>	<b>Total Points</b>	<b>Respondents</b>	<b>Item Mean</b>
2/d1.a	118	123	.9593
2/d1.b	110	123	.8943
2/d1.c	122	123	.9919
2/d1.d	120	123	.9756
2/d1.e	123	123	1.0000
2/d4	123	125	.9840
2/d5	67	125	.5360
2/d6	91	124	.7339
2/d7	115	125	.9200
2/d8	119	125	.9520
2d2	40	77	.5195
2d3.1	20	86	.2326
2d3.2	68	85	.8000
2d3.3	69	85	.8118

Note. These data are derived from all survey respondents (N=125).

Table 17

*Rules Measures of Central Tendency and Variability*

<b>Rules</b>	
<i>Items 2d1-2d8</i>	
Mean	0.81
Median	0.91
Mode	N/A
Standard Deviation	0.23
Range	0.23 to 1.00

This grouping shows a considerable disparity between mean and median, and shows a tendency towards the right of the mean rather than a typically “normal” distribution. This would seem to denote that the participants were able to “read” normal human activities, along with body language, with relative ease.

**Higher order rules.** This last grouping involves reasoning and reconstruction skills. Avgerinou (2001) describes these skills as follows:

The subject should be able to *predict* the end of a given, short visual narrative (cartoon)...The subject should be able to *imagine* and *verbally reconstruct* the opening frame of a given, short visual narrative (cartoon)...The subject should be able to *produce* a concrete-abstract continuum by means of the given visual symbols and their verbal equivalent...The subject should be able to *determine* the missing element on a particular surface of an object on the evidence of elements on other visible surfaces of the same object...The subject should be able to *imagine* and *re-construct* the meaning of the missing slides of a given, incomplete sequence (colour slides; cartoon) so as to remove any ambiguity in the understanding of the story. (pp. 50-51)

Again, this particular set of items proved to be more challenging. The items required the participants to supply missing information that would make the image/sequence complete.

Table 18 shows the item means for this grouping, while Table 19 shows the measures of central tendency and variability.

Table 18

*Higher Order Rules Items and Corresponding Means*

<b>Item Number</b>	<b>Total Points</b>	<b>Respondents</b>	<b>Item Mean</b>
2e1	47	80	.5875
2e2	51	85	.6000
2e3.1	58	62	.9355



2e3.2	28	61	.4590
2e3.3	31	61	.5082
2e3.4	37	60	.6167
2e3.5	42	61	.6885
2/e4.a	71	123	.5772
2/e4.b	64	122	.5246
2/e5.a	53	102	.5196
2/e5.b	6	100	.0600

Note. These data are derived from all survey respondents (N=125).

The item that scored the lowest was the second part of a two- part question based upon a cartoon graphic.

Table 19

*Higher Order Rules Measures of Central Tendency and Variability*

<b>Higher Order Rules</b>	
<i>Items 2e1-2e5</i>	
Mean	0.55
Median	0.58
Mode	N/A
Standard Deviation	0.21
Range	0.06 to 0.94

Participants were asked to determine what was taking place in two missing frames of a five frame cartoon sequence that contained only animal characters and no words. The missing frames were frames two and four, so there were images on either side to help the participant interpret what was happening. It is also worth noting that questions 2e3.1-2e3.5 had a much lower participation rate than other questions within this category. These questions required the participants to place visual images along a continuum of concrete to abstract. This is considered by the researcher to be one of the more difficult tasks to complete as there is likely little exposure to this concept outside of purposeful instruction.

**Cognitive strategy.** The final category of Avgerinou’s Index employs the skills of observation, concentration, and visualization/visual thinking. Originally, Avgerinou used two separate test items to score this category, but the second item was not possible to use in an online format as it required completion of a drawing and the ability to submit it. The description of skills for this category are as follows:

The subject should be able to mentally *remove*, one at a time, components of an image viewed from above...The subject should be able to *visualise* and *prepare* a rough design on how to perform a certain act, following given verbal instructions.

(p. 51)

The item included in this study required the participants to visualize the order in which they would remove a pile of overlapping sticks with a letter labeling each stick. After naming the sequence, the participants would then describe how they were able to accomplish the task. A point was awarded for the correct sequence along with the ability to describe a process (even if the process wasn’t well-articulated). Table 20 shows the means from these two test items. Again, this was an activity that the participants were able to complete with seeming ease.

Table 20

*Cognitive Strategy Items and Corresponding Means*

<b>Item Number</b>	<b>Total Points</b>	<b>Respondents</b>	<b>Item Mean</b>
3/a1.a	112	118	.9492
3/a1.b	113	115	.9826

Note. These data are derived from all survey respondents (N=125).

If the second activity requiring an actual drawing was completed, there would likely be more variability and likely some lower scores would have been collected.

### Correlations

The demographic data collected on the first part of the survey asked for location, age range, level of schooling, length of program, gender, endorsement level, endorsement area, past courses in K-12 related to visual literacy (i.e., art, photography, media), undergraduate courses related to visual literacy, program courses related to visual literacy, and current enrollment in courses on visual literacy. Table 21a shows the tabulated raw data from the demographic survey.

Table 21a

*Raw Data Table of Demographic Information for Correlates*

<b>Correlate</b>	<b>Number of Responses</b>	<b>Total Respondents</b>
Masters or Post Bacc	<b>48</b> Masters/ <b>42</b> Post Bacc	90
Gender	<b>58</b> Female/ <b>31</b> Male/ <b>1</b> Undisclosed	90
Age Range	<b>42</b> 18-25/ <b>27</b> 26-30/ <b>9</b> 31-38/ <b>4</b> 39-45/ <b>3</b> 46-50/ <b>3</b> over 50/ <b>2</b> undisclosed	90
Level of Endorsement (Main)	<b>44</b> Elementary/ <b>2</b> Middle/ <b>41</b> Secondary/ <b>3</b> undisclosed	90
VL Related Courses in K-12	<b>42</b> Regular Curr/ <b>2</b> Electives/ <b>2</b> Extra Curricular	46/90 took courses in K-12
VL Related Courses in Undergrad	<b>47</b>	47/90 took courses in undergrad
VL Courses currently	<b>14</b>	14/90 currently taking courses

From the final overall instrument scores (N=90), the researcher reviewed the results and looked to find any obvious correlations. From this perusal, it did not appear that there were any strong correlations; using Pearson  $r$  with a 95% confidence level, the  $r$  value of the correlates of most interest to the researcher were calculated. Table 21b shows the results of these correlation tests. It is obvious from this table that no strong correlations can be found. The researcher also

chose to calculate if there was a correlation between the scores of section two and section three (Test 1 and Test 2). The  $r$  value calculated from this correlation was 0.151. Again, this does not denote a strong correlation.

Table 21b

*Correlations by Total Test Scores*

Correlate Name from Demographic Survey	$r$ value; $p \leq 0.05$
Gender	-0.011
Age Range	0.028
Endorsement Level	-0.037
Courses Taken in K-12	0.025
Required Courses in Undergrad	0.145
Courses Currently Taking	0.056

Note.  $df=88$ ; critical  $r=0.214$

**Conclusion**

The low response rate to this survey is indicative of the present culture. Sheehan (2006) found that there was a trend for decreasing response rates and noted that there was a drop from a 46% average email response rate in 1995/6 to 31% in 1998/9 and another drop to 24% in 2000 (2006). Sheehan (2006) reported that “The correlation analysis revealed only one predictor variable that was significantly related to response rates: year ( $r=-.53$ ,  $p=.005$ ). The negative direction of this correlation suggests that response rates have indeed decreased since the inception of e-mail surveys” (p. 0). Sax, Gilmartin, and Bryant (2003) offer similar findings.

**Answering the research question.** How visually literate are graduate level pre-service teachers in engaging with still images? The results of the final scores as well as scores from smaller sections of the instrument reveal that there are areas of weakness in visual literacy ability of this sample of graduate level pre-service teachers. In particular, these weaknesses are in the

intellectual skills of concrete concepts (knowledge of design principles and their use/critical viewing), defined concepts (knowledge and understanding of the meaning of signs and symbols/critical viewing), and higher order rules (observation/visual reasoning/constructing and reconstructing meaning/verbo-visual association and reasoning/visualization/visual memory). According to Table 3 in chapter two, visual reasoning, constructing meaning, visual reconstruction, visualization, and critical viewing are all considered more important abilities within the overall VL Index. With this perspective, it is clear that the weaknesses shown in the results of this study are the abilities of most concern to overall visual literacy ability. These findings will be discussed further in the following chapter.

## CHAPTER FIVE

*The ability to read visual images is an essential skill even for those who can read and write well in the verbal language.... Visual literacy is a means to visual thinking, which is as much a processing of information as it is a knowledge of visual elements.*

*--Theoretical Foundations of Visual Learning*

*By John A. Hortin (1994, p. 17)*

The purpose of this descriptive study was to establish a baseline of understanding in addressing the question: How visually literate are graduate level pre-service teachers in engaging with still images? Through the implementation of Avgerinou's index and demographic information, this study was able to uncover areas of strength and weakness within the sample to gain a better understanding of the current state of VL in our nation's pre-service teachers. Although the sample size was small in comparison to the original participant pool, there is still much to be mined from the respondents in terms of VL ability, and where to go next in terms of further VL analysis and curriculum development. The results of this study help to further the work that Avgerinou began, and continued measurement with the use of Avgerinou's instrument will continue to strengthen the basis for showing a need for purposeful VL instruction.

### **Discussion**

The initial design for this study was determined to be descriptive in nature because there had been virtually no attempt made to establish a baseline understanding of how the nation is performing in the area of visual literacy. Much has been done to establish the theory base and in defining various aspects of the field as well as collecting attitudes regarding teaching visual literacy, but this study was most interested in a starting point from which to develop a better understanding of direction and purpose for the field of visual literacy as it applies to pedagogical

practice. It made the most sense to begin where pedagogy is taught: in pre-service graduate level teaching programs. In order to better understand the national perspective, the researcher chose to administer a survey that could be used to reach a national population with relative ease and low cost. As most graduate level students are familiar with online environments, the online survey format was the chosen means for distribution.

**Response rate.** It was decided that this method of collection had a high risk for non-response, and this proved to be true. The researcher designed the study with this in mind and sought the practice of others who had done this type of research to gain knowledge regarding the best methodology to implement; however, the time of year did not contribute to a successful collection, nor did the unanticipated IRB approval processes (required by some institutions) aid in getting a larger participation pool and return rate. Many individuals contacted were very willing to help with the distribution of the surveys, but some were reticent. This also had an effect on the final number of participants. It was also not anticipated that some of the programs had student enrollments over 100. The high numbers from some institutions (e.g., 554 from Institution 9) made it very challenging to come close to a 30% total response rate. The researcher decided that despite these shortcomings, the results would still be helpful in beginning a discussion and developing a course of action.

**The instrument.** Upon first examination, the researcher was concerned that portions of the instrument might prove to be too rudimentary for a graduate level test; however, after examining the results from this study, it is clear that the instrument was challenging in several areas. As with any stand-alone tests, this instrument only provides a snapshot of the VL abilities of the participants and is not meant to be comprehensive. It could be considered a “pre-test” of sorts and gives the researcher an indication that there is room for growth. Some key portions of

the instrument indicate more room for growth (namely intellectual skills of concrete concepts, defined concepts, and higher order rules), which is of crucial importance in the K-12 classroom.

**Visual information.** As shown in chapter four, the measures of central tendency for this category are as follows: Mean = 0.86, Median = 0.87, Mode = N/A. The measures of variance are as follows: Standard Deviation = 0.12, Range = 0.59 to 1.00. The test items in this category were focused on visual language (terms and definitions) as well as connecting meaning to various basic images (e.g., smiley face, heart, cross). It is likely that these skills are either intentionally taught in the art curriculum of many K-8 programs, are learned through math classes, or are learned through cultural and life experience. The higher overall scores indicate that there is some room for growth in this area, but that most participants were at least minimally proficient. The abilities within this category are considered to be the least important to the VL Index (See Table 3, chapter two).

**Intellectual skill.** As shown in chapter four, the measures of central tendency for this category are as follows: Mean = 0.70, Median = 0.78, Mode = 0.98. The measures of variance are as follows: Standard Deviation = 0.26, Range = 0.03 to 0.97. When compared to Visual Information, this category does show more room for growth. Many of the items within this category require higher order thinking skills such as application, interpretation, classification, evaluation, and prediction. Although it is common for teachers to require their students to use these skills, the curriculum is much more intentional using these skills in the modes of reading and writing traditional texts as opposed to reading and writing visuals. For example, asking students to evaluate a print ad (as in items 2b1-13) for its compositional aspects as well as its impact isn't an uncommon idea. In fact, this is one exercise commonly used in the study of persuasive writing and argumentation (Callaghan & Dobyngs, 2007; Faigley, George, Palchik &



Selfe, 2004; Lunsford, Ruszkiewicz & Walters, 2004). It can also be seen in the social studies classroom when studying propaganda movements of Nazism and the war of the Vietnam era through current Middle East conflicts. However; the participants in this study only scored a mean of 0.64, a median of 0.59, a standard deviation of 0.16 and a range of 0.41 to 0.91. If, indeed, the scores for this section are typical of students across the nation, it would make sense to teach the skills purposefully prior to expecting students to use them. These are the abilities of most consequence in the VL Index, and therefore, are the skills that should take priority in development. Further discussion of this issue is covered in the correlations section below.

***Cognitive strategy.*** This final category involves the mental skills of visualization and visual thinking. This was also the category from which the researcher had to omit one test item. The omitted item was structured as follows:

3a2) Prepare a rough design for a brochure about how to withdraw cash from a cash-point. Here are the verbal instructions to be visualized:

1. Insert your card into the card reader slot. Be sure that the magnetic stripe is facing up.
2. Enter your ID on the provided keypad.
3. Press the blue key for CASH WITHDRAWAL.
4. Press the green key to select the account from which you want to withdraw cash.
5. Use the keypad to enter the amount of cash you want to withdraw.
6. Remove your card, cash, and receipt

The key for this item required the participants to draw each of the above six items in some fashion on the given sheet of paper. One point would be awarded for each of the six items being represented in the drawing format.

It is obvious that this item would require more skills than other items, because the participant actually is required to “write” and design visually. The time involved to complete this item would also be much more than for other test items, as the participant would have to process the steps and determine how best to display them prior to drawing anything on the paper. This is a valuable item, but simply could not be formatted successfully for the online survey environment. The 96.6% mean scored for the other test item (3a1) is all that can be evaluated for this category; however, because of the complexity of item 3a2, it is likely that the overall score for this category would be negatively impacted if this omitted item (3a2) had been a part of the survey. This omitted item is crucial to explore because of the propensity of American citizens towards digital authorship through the use of the Internet. The concept of the rhetorical triangle can be of import here as the skill set required for authorship is directly related to that of the consumer. A clear understanding of authorial intent and rhetorical choices that can be employed when composing a visual requires the direct application of the analytic skills used by a viewer when interpreting an image text. In this case, the intent is to inform, therefore the creator of the image should choose to compose in a manner that allowed the viewer a clear understanding of a process.

***Overall scores.*** Although it is profitable to look at these categories separately, it must continue to be noted that these data were based upon the total of 125 participants as many participants answered random items throughout the survey. The overall scores for the survey were based not on this number but on N=90, or the total number of respondents who completed at least 50% each of sections two and three from the survey. The measures of central tendency for this group of participants are as follows: Mean = 0.66, Mode = 0.69, Median = 0.67. The

measures of variance are as follows: Standard Deviation = 0.07, Range = 0.38 to 0.80. These scores indicate ample room for growth for this sample.

**Correlations.** Perhaps the most surprising outcome to the researcher was the fact that there were no strong correlates for this study. It was anticipated that there would be a strong correlation between prior or current courses related to visual literacy and the final score, but this correlation did not surface. Nor was there a strong correlation for endorsement level which was also a bit surprising knowing that most elementary education students have to take art classes. These non-correlations do lend credence to Avgerinou's instrument design as it was targeted towards knowledge acquired through K-16 education as well as acquisition through life experiences; however, why is there no strong correlation between those who have taken art classes (even art classes required of elementary education programs) and their final score? One reason may be tied directly to the content of the art courses taken. Just because a course related to visual literacy (i.e., art, photography, media) is taken by a student, there is no guarantee that the focus of the course will lend to an understanding of VL. VL is strongly associated with interaction between viewer and image ("reading" and understanding). As discussed in chapter one, many art teachers do not feel comfortable with the idea of teaching literacy skills (nor are they necessarily trained to do so), while many English teachers trained in literacy do not feel comfortable with the realm of images (Robertson, 2007). Jeffers' survey of 121 U.S. and Canadian college professors teaching art methods courses provides a glimpse into what these types of courses may offer.

Survey respondents were provided with a list of 12 topics (presented in no particular order) and asked to check all topics around which their curricula were organized and to

star the primary topic....Several respondents specified "other" to mean discipline-based art education (DBAE). (1993, p. 236)

According to the results of the survey, studio activities and developmental stage theory along with pedagogical/educational issues topped the list as the central topics of content (See Table 22).

Table 22

*Relative Strength of Topics Which Apply to Elementary Art Methods Course*

Topic	Checked %	Starred %	Checked + Starred	Ratio
studio activities	65.8	23.3	89.1	3.82*
developmental stage theory	69.2	18.3	87.5	4.78*
critique or critical inquiry into students' or masters' work	70.8	10.0	80.8	8.08
art history knowledge	72.5	6.7	79.2	11.82
aesthetic or philosophical questions	74.2	4.2	78.4	18.67
pedagogical or educational issues	59.1	14.2	73.3	5.16*
multicultural approaches	63.3	4.2	67.5	16.07
safety tips and knowledge of hazardous materials	62.5	1.7	64.2	37.76
needs of special children	55.0	.8	55.8	69.75
cooperative learning approaches	52.5	.8	53.3	66.62
other	25.0	4.2	29.2	6.95
children's literature	21.7	2.5	24.2	9.68
computer technology	12.5	0.0	12.5	0.0

Note. Table is re-constructed from Jeffers, 1993, p. 236. \*Figures most closely approximating a 1-to-1 ratio between checked and checked-plus-starred topics, indicating topics of most strength.

The topic of critique/critical inquiry, although common to this type of course, is not given the most amount of time. This is likely due to the fact that in elementary programs, little time is devoted to critique. This may tie to the more traditional arts education approaches that have been a part of the 20<sup>th</sup> century educational system. Wilson (2003) explores this notion in an effort to map art education.

The diagram [displaying the four areas of focus of DBAE] represents how DBAE [Discipline-Based Art Education] complicated the content of art education. Nevertheless, for all its complexity, it fails to show much of what the contemporary field of art education might be about-and perhaps should be about. The diagram does not account for artworks which never find their way into galleries and museums—say, digital works on the internet. And the most obvious component missing from the DBAE conceptualization of art education is the vast realm of visual culture....There is an even larger question. Should the content of art education be expanded beyond the art world to encompass what is called visual culture?.... Today's art education, with its restricted and selective use of artifacts and practices, draws primarily from the art museum territory embraced by DBAE-and of course from the residue of folk handicrafts and the modernist-inspired elements and principles of design. (pp. 216-219)

Art methods courses do not seem to spend a gross amount of time developing critical interaction skills in pre-service teachers, and the other non-correlatives point to the fact that if arts courses in general do not address critique or critical interaction (visual rhetoric) as a primary focus, then whether or not a student takes these courses K-12 or in higher education is a moot point in terms of gaining the ability to critically engage with visual texts.

### **Implications**

It is clear that this sample demonstrates a need for VL ability in the most crucial areas of visual reasoning, constructing meaning, visual reconstruction, visualization, and critical viewing. If the results from this study are indicative of the level of VL ability in graduate level pre-service teachers across the nation, any expectation for those teachers to readily teach visual literacy skills to their students must be addressed through purposeful VL instruction. Equipping pre-

service teachers in visual literacy knowledge and skills would not only influence their curricular choices, but it would influence their pedagogy as well. As is seen in the test items in the Avgerinou instrument, these skills apply across curricular areas, so VL is not relegated to the language arts or fine arts classrooms. Every subject area has its own set of visual texts and must address those texts within discipline-specific philosophies and practices. Just as reading and writing traditional texts varies from discipline to discipline, so does reading and writing visual texts.

One concern regarding the implementation of VL in the K-12 system is the emphasis on the Common Core State Standards system and the testing requirements. It is too early to yet understand what may happen in the near future, but it is already being expressed that there will be a decrease in fictional texts with an increase in informational texts. The same holds true in writing becoming much more science and math based (technical writing) and less creative in nature. With this trend comes a demand for more skills in the area of data visualization and graphing. Examining the test items available from the Smarter Balanced Assessment, there is a clear use of visual items within both language arts and mathematics. In language arts, students are provided videos as well as charts and have to develop an oral argument towards a given prompt, while in mathematics, students are provided multiple graphic forms of charts and diagrams to aid in solving a practical problem. As was seen in items 2d3.1-2d3.3 under Intellectual Skill in chapter four, there is room for growth in this skill set. Intentionally teaching the graphics related to technical writing, which includes composition and layout, is no small undertaking. These visuals contain many elements and considerations that could certainly be covered across the curriculum, but teaching anything across the curriculum requires collaboration, which requires time.

Another concern is in the area of critical engagement within a consumer-driven marketplace. Kilbourne (2010) refers to the use of objectification in advertising, namely that of women and people of color, which leads to violence, and that this has become a “public health problem.” The history of American education points to the use of the classroom as a means to cure the ills of society (Brint, 1998; de Marrais & LeCompte, 1999; Schiro, 2008), and that practice continues to be true today. By educating students on how to be critical consumers of visual images within the context of advertising, a power shift from seller/advertising agent to consumer could be the result.

The increase in media arts as a focus in many secondary schools brings with it a reminder of the need to establish a basic set of skills within a still image context which can then be directly applied to a movement-laden context (Kress and van Leeuwen, 2006). However, although there is a direct relationship between the still and the moving image, movement adds even more complexity (Kress and van Leeuwen, 2006), and within the framework of media literacy, each form of media (journalism, advertising, film, television, dance, theatre, and digital) contains its own set of criteria. “For a person to be considered literate in the traditional sense, a certain amount of education is mandatory. In like fashion, media literacy requires an understanding of the sign and symbol systems of media” (Silverblatt, 2008, p. 9). Some of these signs and symbols are included in items 1b1-1b6 as well as items 2a5.a-e and 2c.1-8 (chapter four) many scores of which show substantial room for growth. Visual literacy has a direct impact on media literacy. For example, in still images, there is a single moment which incorporates the subject as well as the intent (goal) of that subject. The two are spatially connected as they are both included in the visual field.

In moving images the relation between Actors and Goals may be represented in a single shot, showing both Actor and Goal; or in two subsequent shots, the first showing the Actor, the second the Goal (or vice versa),...in one case they are spatially connected, shown together in the same shot; in the other they are *disconnected*, shown in separate shots. (Kress and van Leeuwen, 2006, p. 258)

As discussed earlier, the cubist movement in art includes the concept of motion through a still image, and a similar conceptualization is being applied through digital photography with the ability to compose multiple perspectives and/or locations within a single photo, such as the work by Swedish photographer Erik Johansson (See Figure 13). In this work, the basic compositional practices of photography are extended.



*Figure 13.* “Nightmare Perspective”—Johansson, 2010. (Retrieved from <http://erikjohanssonphoto.com/work/nightmare-perspective/>)



Finally, the number of art classes offered in the nation's public schools has declined over the years. According to a report by Rabkin and Hedberg (2011), the number of students who had visual arts courses by the time they were 18 declined from 36.1% in 1982 to 25.7% in 2008 (p. 44). The authors are also quick to point out that the offering of classes in visual arts does not guarantee any specific level of quality or depth. With these statistics comes the notion that visual literacy skills must be learned in curricular areas other than in visual arts classes. This means that all educators in K-12 need to have the ability to teach these skills to their students. If VL ability is not inherent in our pre-service teachers, then these abilities must be developed through intentional means in teacher preparatory programs.

### **Recommendations**

Even though the results of this study clearly indicate room for growth in VL understanding within the sample, because of the low response rate incurred (8%), the work here can only be viewed as a preliminary study. Future research could replicate this study and seek to overcome the low response rate. It is also recommended that the researcher explore the idea of offering the survey through multiple modalities (including live survey distribution) or to explore the possibility of using some type of digital drawing technology that could be linked to the current electronic survey in order to collect data on the test item that had to be omitted. It is further recommended that any renewed study be conducted throughout the academic year in order to provide a greater opportunity to secure IRB approvals through individual institutions.

The researcher will use this study as a basis to move forward in the training of pre-service teachers. Specific areas to explore will be in 1) visual rhetoric, 2) visual composition, 3) ethical authorship, 4) verbo-visual relationships, and 5) VL pedagogy. Ongoing research in these topics as well as continued skills assessment in visual literacy will be of primary focus.

Institutions that participated in this study are encouraged to review the results in order to make decisions regarding any actions they might take to increase the likelihood of their pre-service teachers becoming more visually literate prior to completion of their program. These actions might include 1) implementing one or more required courses in visual literacy, 2) requiring a stronger basis in visual literacy by requiring related courses that include not only basic visual language skills but critical engagement with visual analysis, 3) the inclusion of visual literacy components throughout discipline-specific coursework, or other choices appropriate to the needs/resources of the institution. They might also choose to continue exploring the visual abilities of their pre-service teachers through subsequent testing and analysis prior to making decisions regarding needed coursework/training. At the very least, it is recommended that these institutions introduce their students to the field of visual literacy and to the notion that this is an important 21<sup>st</sup> century literacy.

Participants in this study are recommended to pursue the concept of visual literacy as they enter the field of education. They are encouraged to explore how visuals play a role in their classroom and curricula, and how they might implement critical engagement with visuals in their pedagogy. Finally, it is recommended that they begin/continue to educate themselves in this literacy as a part of their continuing education and professional development. In particular, the focus of K-12 educators should be on the following: 1) Strengthen teaching in media and propaganda principles—this is modeled as early as grade 4 in a study by Rolling (2008) that involved political cartooning; 2) Directly teach students how to discriminate between sign/symbols and other compositional elements of visual rhetoric, particularly as they are used for commercial purposes; 3) Intentionally focus on visual abilities in logic and problem-solving as these skills will be directly addressed through Common Core assessments; 4) Directly teach

ethical authorship through the study of copyright law and fair use as well as rights and privacy as they relate to digital audio/video recording and photography; and 5) Focus on the verbo-visual relationship inherent in visual literacy as well as the implications for cross-curricular work in visual and verbal rhetorics.

Avgerinou's Instrument (2001) is an effective means by which to gain a baseline understanding of the visual literacy abilities of a group of participants. The three categories of skills determined to be necessary to be visually literate include higher order thinking skills which support the philosophy that engaging with visuals is not a simple task. As Rabkin and Hedberg (2011) observed,

[d]espite growing awareness among some educators and cognitive scientists that many of the fundamental processes of art-making are profoundly cognitive — reinforcing the building blocks of all thought — and despite the enormous discipline required to master arts skills and make high-quality art, the arts are often associated with play and luxury, not with the work ethic and discipline associated with school and academics. (p. 42)

With this in mind, the field of visual literacy, with members of the scientific, mathematics, psychological, educational, and artistic communities, is ready to become an integral part of the K-12 system if educators are willing to take on the challenge of developing their own visual literacy abilities and transmit those abilities to their students through solid pedagogical practices.

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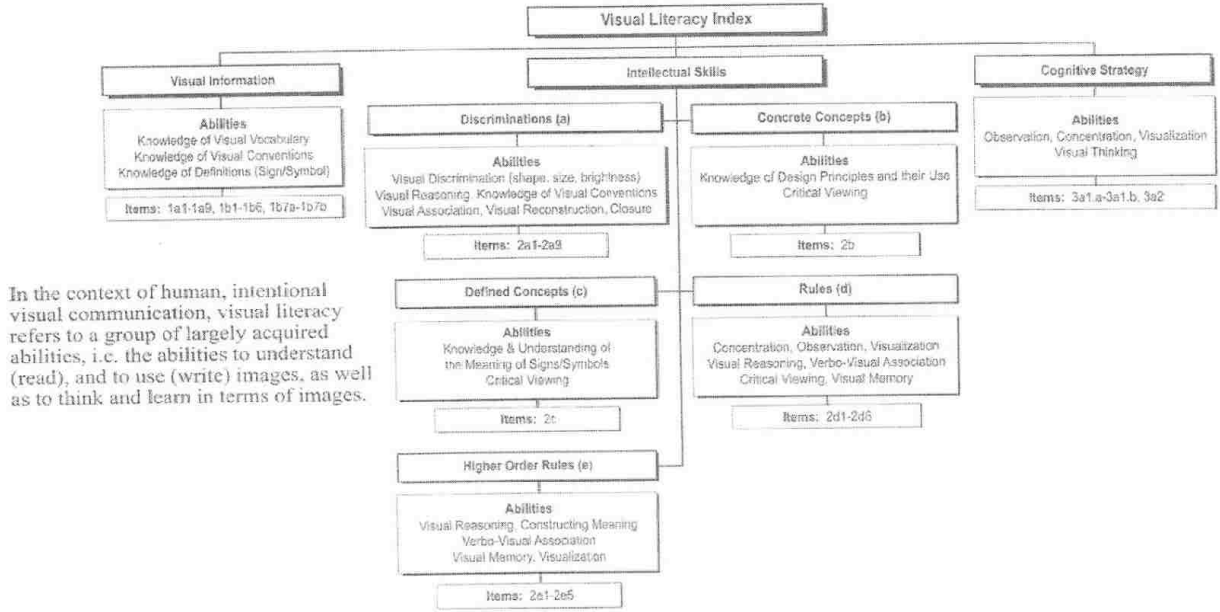


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## Appendix A

**Appendix 2: Operational Definition of Visual Literacy (VL Index Categories, Abilities, and Items)**



In the context of human, intentional visual communication, visual literacy refers to a group of largely acquired abilities, i.e. the abilities to understand (read), and to use (write) images, as well as to think and learn in terms of images.

(Avgerinou, 2007)

## Appendix B

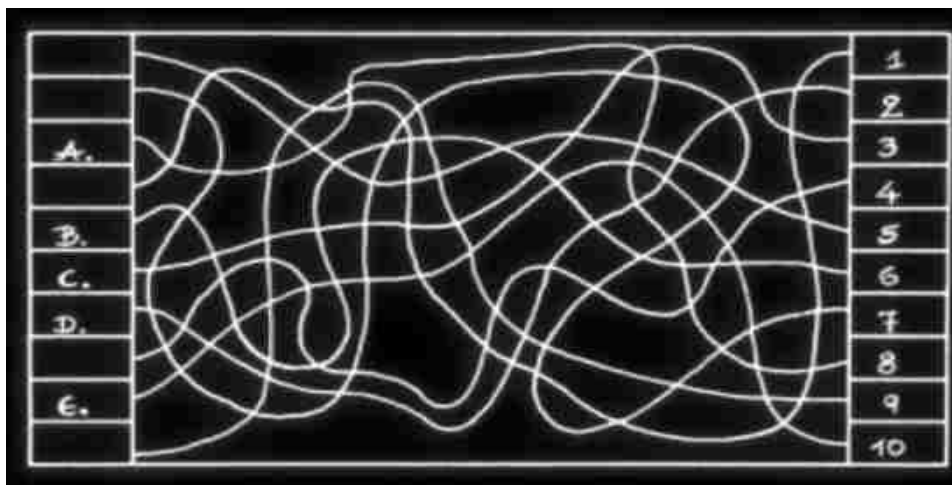
Below are some selected questions from Avgerinou's Instrument to show a variety of question types.

2) You will be presented with **two objects** that are shown from **an unusual angle**. Can you **identify** them?

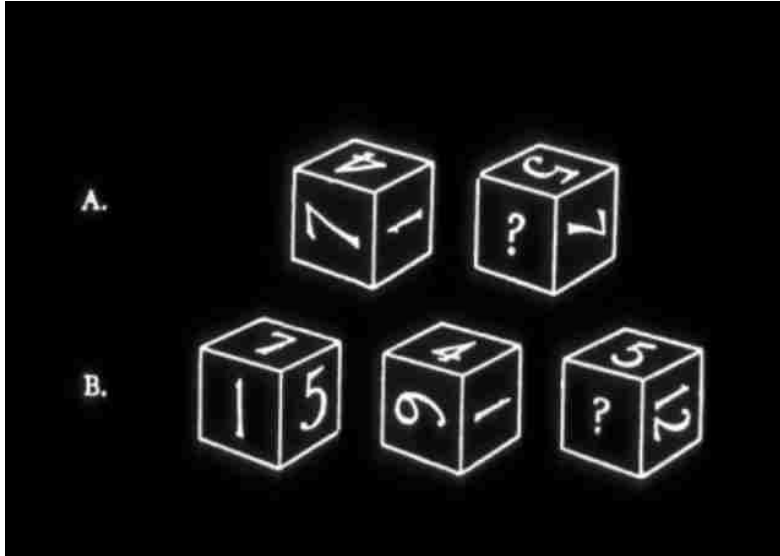


5) Look at the big box on the slide very carefully. **At the left-hand side** you can see a set of boxes which contain **letters**. A line begins at the side of each one of these boxes and ends at an empty box on the right. With your eyes only, you are to **follow the lines** from each letter to the correct number in the box **on the right**.

Remember, **the lines must be followed with your eyes**: do not follow with your finger or pencil.



11) You will be presented with **two, completely unrelated to each other sets of cubes** which have a **different number on each face**. In each problem the drawings represent views **of the same cube**. You are to determine **what number belongs** on the face of the cube marked with the question mark. If too little information is given for you to determine what number the question mark stands for, indicate it with a cross.



(1b7.a)

a **sign** can be defined as an indicator, a hint, a clue. It has a conventional meaning recognized within a particular community. *(Please check.)*

agree  disagree

(1b7.b)

a **symbol** can be defined as a sign that has other deeper meanings. *(Please check.)*

agree  disagree

## Appendix C



# Visual Literacy Index & Survey

## INFORMATION AND CONSENT

You are invited to participate in a research project about measuring the visual literacy ability of graduate level pre-service teachers in the United States. This online survey should take about 30-45 minutes to complete. Participation is voluntary, and responses will be kept anonymous to the degree permitted by the technology being used.

You have the option to not respond to any questions that you choose. Participation or nonparticipation will not impact your relationship with The University of Montana. Submission of the survey will be interpreted as your informed consent to participate and that you affirm that you are at least 18 years of age.

If you have any questions about the research, please contact the Principal Investigator, Teresa A. Farrell, M.Ed., Assistant Professor, College of Education, Eastern Oregon University, via email at [tfarrell@eou.edu](mailto:tfarrell@eou.edu) or the faculty advisor, Dr. Marian McKenna at [marian.mckenna@umontana.edu](mailto:marian.mckenna@umontana.edu) . If you have any questions regarding your rights as a research subject, contact the UM Institutional Review Board (IRB) at (406) 243-6672.

Please print or save a copy of this page for your records.

*\* I have read the above information and agree to participate in this research project.*

## DEMOGRAPHIC INFORMATION

- 1) At what college/university are you enrolled?
  
- 2) At what level are you enrolled?
  - a) Masters
  - b) Doctorate
  
- 3) Are you enrolled as a fulltime student?
  - a) Yes
  - b) No
  
- 4) Please mark your gender.
  - a) Female
  - b) Male
  
- 5) Please mark your age range.
  - a) 18-25
  - b) 26-30
  - c) 31-38
  - d) 39-45
  - e) 46-50
  - f) Over 50
  
- 6) Please mark the length of time required to complete your program (from the start with no interruptions).
  - a) 12-15 months
  - b) 16-24 months
  - c) 24-36 months
  - d) Over 36 months
  
- 7) Please mark the level your endorsement will be at. (Mark all that apply.)
  - a) Early Childhood
  - b) Elementary
  - c) Middle
  - d) Secondary
  
- 8) If secondary, please indicate your area(s) of study (e.g., English, Social Sciences, Science, Health/PE, etc.)

9) If you will be licensed to teach a special area (e.g., music, art, etc.) at the early childhood, elementary, or middle level, please indicate which area(s).

10) Did you take art/photography/media classes in your K-12 education? If yes, please indicate which area(s) and at which level(s). (If no, please move on to question 12.)

Art

- a) K-5/6
- b) 6/7-8
- c) 9-12

Photography

- a) K-5/6
- b) 6/7-8
- c) 9-12

Media

- a) K-5/6
- b) 6/7-8
- c) 9-12

11) If you answered yes to number 10, please select the best descriptor of these classes. (Check all that apply.)

K-5/6 classes were:

- a) part of the regular curriculum.
- b) electives.
- c) extracurricular.

6/7-8 classes were:

- a) part of the regular curriculum.
- b) electives.
- c) extracurricular.

9-12 classes were:

- a) part of the regular curriculum.
- b) electives.
- c) extracurricular.

12) Were you required to take any art/photography/media courses or visual literacy courses as a part of your undergraduate course work?

- a) Yes

b) No

13) If yes, how many courses?

- a) 1-2
- b) 3-4
- c) 5-6
- d) Over 6

14) As an undergraduate, did you take any art/photography/media courses or visual literacy courses as electives?

- a) Yes
- b) No

15) If yes, how many courses?

- a) 1-2
- b) 3-4
- c) 5-6
- d) Over 6

16) Are you currently taking any courses focusing on media/visual literacy?

- a) Yes
- b) No

## Appendix D

## Video Transcript for Initial Participant Emailing

Hello, my name is Teresa Farrell. I am an assistant professor of education at Eastern Oregon University, as well as a doctoral candidate at The University of Montana. Currently I am working on a study which is my dissertation with a focus on visual literacy. The purpose of this study is to gather data that will help me understand the level of visual literacy in pre-service teachers. From the total number of public colleges and universities currently offering teacher preparatory programs, your institution of higher learning has randomly been selected to participate in this study, and you, as an enrolled graduate student, are invited to participate.

Your participation means that you agree to complete an online survey. This survey contains both demographic information as well as a visual literacy test. The test itself includes images and symbols and asks for your understanding, interpretation, and application of basic visual literacy principles. The survey should take between 30 and 45 minutes. The results of the survey will be shared with your institution so that you can see how your participation has been valuable to this study.

The link to the survey will be sent to you within the week, and I encourage you to take the survey as soon as possible after receiving the link. Thank you in advance for participating in this study, and thank you for choosing a career that is one of the most rewarding available! Best wishes to you as you complete your studies and become a teacher.