WHITE PAPER

# Fostering Visual Literacy in the X-Box Generation

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The students of today's classrooms are bombarded with visual and graphical information: television, billboards, gaming systems, computer interfaces, cell phones, and IPods, for example, contain powerful images and symbols that require an entirely new technological vocabulary. Yet, mere exposure to images does not necessarily lead to understanding, and in fact, students often lack the sophisticated skills that permit them to move from "reflexive consumer" of images and graphics to "reflective interpreter." Today's educational environments incorporate graphical and pictorial interfaces and emerging technologies that require the student to not only interpret graphical symbols, but also use these symbols in a meaningful way. This proves a challenging feat, as our interpretation of images is, in part, culture-specific: the images we view interact with our culture, attitude and belief systems in such a way that our resulting perceptions are highly dependent upon culture and context. One of the challenges of our educational system is to enhance curriculum and help students not only understand how culture and social forces shape their interpretation of graphics and images, but also to use graphics and images for effective communication (Stokes, 2001). These dual abilities are collectively known as visual literacy.

## Visual Literacy Defined

Tradition defines literacy as the ability to read, write, and interpret text; however, current conceptualizations of literacy are considerably broader. As an illustration, consider the word text. Once considered mere print on a white page, text now often contains a constellation of images, automations, and sounds in what is referred to as hypertext (Bamford, 2001). With this expanded conceptualization of text comes the demand for a more encompassing definition for literacy. The seeds of visual literacy as a theoretical concept were planted in 1969 by John Debes, who described "vision-competencies," which enable a person to "discriminate and interpret the visible actions, objects, symbols, natural or man-made, that he encounters in his environment" (Debes, 1969, p. 27). More recent theorists provide varying definitions of visual literacy, each reflecting particular theoretical and practical orientations (Williams, 2001). In a very general sense, visual literacy is construed as the ability of students

to "use, interpret, analyze, and think critically about visual images and the significance of what they are seeing" (Bamford, 2001, p. 1). An operational definition of visual literacy is provided by Sosa (2009), who states:

… Visual literacy includes recognition of the importance of use of visuals, knowledge of principles of page and screen layout, use of color and font, appropriate line spacing, and selection of applicable images based on intended message and social context and the ability to implement that knowledge. (p. 56)

iSCIENCE Look for an example of Visual Literacy in Integrated iScience (Owl), Vol. 2, Chapter 15, Lesson 2, p. 548.

While formal definitions of visual literacy range from the general to the specific, there are general points of agreement among visual literacy (VL) theorists:

- A visual language exists
- Visual language parallels verbal language
- VL is a cognitive ability but also draws on the affective domain
- The VL skills have been specified as (a) to read/decode/interpret visual statements, and (b) to write/encode/create visual statements.
- Visual communication, visual thinking, and visual learning are inextricably linked to VL
- VL's main focus is intentional communication in an instructional context (Avgerinou, 2009 p. 29).

## Visual Literacy and Education

Students in today's classrooms are often called upon to interpret text that includes graphics, images, and sound, and traditional conceptualizations of "literacy" don't seem to fit the bill. The danger in neglecting these other dimensions of literacy by failing to incorporate them into instruction may in fact, hamper critical thinking skills. As Williams (2001) states, "… This runs counter to a pedagogy designed to teach critical thinking because it suggests to students that there is only one acceptable way of representing the world, when our goal as critical educators is to help students value the multiple forms of literacy and representation that constitute their lived experiences" (Williams, 2001, p. 26). The importance of incorporating visual literacy into curriculum is especially evident for subgroups of students, such as students with a learning disability or second language learners who may experience difficulty with traditional print media (Myatt, 2008). Further, use of animated and audio-graphics during instruction is linked to higher levels of motivation and attitude toward instruction (Sultan & Jones, 1995).

The importance of incorporating graphical elements and activities that foster visual literacy is reflected in the National *Council of Teachers of English* (NCTE)'s adoption of standards for promoting English literacy. These standards are presented in a document entitled the *National Standards for the English Language Arts*. One of the standards states:

*… Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment* (http://www.ncte.org/standards).

iSCIENCE The Interactive Whiteboard Activity in Integrated iScience (Owl), Vol. 1, Chapter 11 Teacher Edition, p. 372D, is a good example of the use of Visual Literacy in this program.

A perusal of the remaining standards reveals the inclusion of such terms as "visual language," "non-print" texts, and "graphics," thus highlighting the need for competency in this area.

## Reading Images

Visual literacy is regarded as a language, and as such, it contains linguistic components. Interpretation of visual elements is largely a function of syntax and semantics. *Syntax* is the form of an image or graphic, and contains elements of shape, design, and placement. *The National Council of Teachers of English (NCTE) Teaching Units – A Visual Literacy Unit for Students in Years 7 and 8*, provides detailed information about how we interpret the syntax of graphics and provides some guidelines for critiquing images:

1. **Objects**—Shapes and figures, some of which are associated with a feeling or emotion. Some objects are symbolic (e.g., a lion symbolizes bravery). Knowledge of artistic elements, such as foreground, mid-ground, and background, is helpful.

2. **Size**— Important objects are often larger and located in the foreground, whereas less important objects are smaller and located in the background.

3. **Setting**—The setting may have symbolic significance (e.g., a country scene may suggest tranquility).

4. **Color**—An object's color may carry symbolic overtones. Blue may suggest peacefulness and yellow may indicate happiness or joy. Symbolism associated with a particular color is culture-specific. For example, the color "red" in Western society is sometimes associated with aggression, whereas in Eastern culture it is associated with luck and prosperity.

5. **Position**—An object's position, whether in the center of the graphic or off to one side, may provide meaning.

6. **Direction**—Are the objects facing forward or to the side?

7. **Angle**—A high angle may symbolize dominance, while a low angle may symbolize submission.

8. **Light**—Underexposed lighting may suggest softness and an enclosed feeling, whereas overexposed lighting may indicate heat and openness.

9. **Body Language**—Facial expression, stance, posture, and gestures often suggest specific thoughts and emotions.

10. **Clothing**—Clothing often reflects culture, status, period, and personality.

iSCIENCE Look for Visual Literacy in Integrated iScience (Owl), Vol. 2, Chapter 21, Lesson 1, p. 767.

*Semantics* refers to meaning: that is, it reflects the way in which images impart meaning through frames. Generally, *frames of viewing* are the perceptual lenses through which we view graphics, and these lenses help define and shape our interpretation of visuals. Bamford (2001) describes six frames through which images are often perceived: (a) *personal*, or "gut reaction" to an image; (b) *historical reading* of the technical and cultural development of multi-media formats; (c) *technical*, a study of the complex grammatical system that governs the production of graphics; (d) *ethics*, a critical reflection of images that are created to persuade and influence; (e) *culture*, which goes beyond content and also includes style, attitudes, and word selection; and (f) *critical analysis* through the inferring of generalizations and the creation of judgments.

iSCIENCE This example of Visual Literacy requires students to create a visual to share data. See Integrated iScience (Owl), Vol. 1, Chapter 9, p. 325.

## Deep Viewing

To aid the interpretation of images and graphics, Pailliotet (1997) has proposed the *Deep Viewing* method, a "systematic process for analyzing, understanding, and interacting with visual information" (p. 35). This method is useful for analysis of all varieties of print media, from commercials to visuals presented in academic texts. The Deep Viewing method contains three levels: *literal observation*, *interpretation*, and *evaluation/application*. Each level incorporates the following graphical elements: sequence and structure; forms; language; proximity and spacing; culture and context; and effects. The first level, *literal observation*, entails gathering information for analysis. At this initial level, the student acts as mere observer and describes what is seen. Particular attention is focused on "what," "who," and "how": What is pictured? What type of language is used? How is space used? What symbols or languages are used? Is there more print or visual information? The second level,

*interpretation*, entails generating a range of understandings from the information that has been gathered. Pailliotet notes, "… participants now interpret the information they have gathered. They may summarize ideas, create hypothesis, connect information on the page with past and present experiences, identify and describe their strategies of analysis and express feelings and understandings of the text" (p. 36). Questions to assist with interpretation of images may include: What are the most important objects or people presented here? How do you know? What associations can you make? What messages are implicitly and explicitly conveyed? What meanings does the language impart? What meanings do the groupings of objects have?

The final level, *Evaluation and Application*, entails reaching a full understanding of the text and applying what was discovered to new situations. At this level the student must determine "relevance" or "assign importance" in order to place the image in memory recall, otherwise the image will be forgotten. Questions that might be addressed at this level include: Do the objects and people presented fit the textual message? Do these images convey purposes and ideas you feel are important? Is the language appropriate for the topic and audience? Why do you think the authors used this spacing? Who and what does this text include or exclude? Is it culturally biased? If so, how?

## Instructional Strategies

Seglem and Witte (2009) state, "…including visualization in the classroom cannot be a one-shot activity. Rather, it must be woven into the regular classroom curriculum" (p. 217). The incorporation of visual literacy activities in the school setting stems back as early at 1972, where the use of cameras was implemented in the primary grades. When children were encouraged to take pictures of things in their environment, researchers discovered that focusing on visuals not only fostered communication skills as children became more aware of their environment, but also lead to improved self esteem, and higher levels of academic motivation (Ross, 1972). More recently used in the classroom are visual strategies, designed to increase comprehension of written works or literary texts. Creating collages, paintings, and comic strips are methods by which students can demonstrate comprehension and link visuals with text. A novel and culturally relevant way to represent literary characters is through the creation of tattoos (Seglem and Witte, 2009). Other suggestions include creating commercials or advertisements representing historical figures or scientific products (Palilliotet, 2009). Technological tools, such as Adobe PhotoShop®, can aid in this regard. All of these strategies require the student to think beyond the written word and represent information in a non-linear way.

iSCIENCE Visual Summaries are illustrated in Integrated iScience (Owl), Vol. 2, Chapter 15, Lesson 2, p. 553.

When incorporating graphics into lessons, Stokes (2001) notes that effectiveness of visual design depends in part on students' prior knowledge of the material. Students with little prior knowledge of descriptive facts demonstrate better acquisition of material when lessons

include either still or animated graphics over a text-only presentation of material. For students with higher levels of prior knowledge of descriptive facts, animated graphics appear even more effective than still graphics. Other research findings reported by Stokes (2001) translate into suggested guidelines for incorporating graphics into instruction:

- Use color graphics as opposed to black and white graphics, particularly for concepts
- Use simpler visual representations, rather than complex
- Incorporate multimedia summaries of information rather than text-only summaries
- When assigning written compositions, encourage the use of graphics, images, words, and sounds
- Consider the students' level of prior knowledge and cognitive style when incorporating graphics into instruction

iSCIENCE See Visual Literacy in Integrated iScience (Owl), Vol. 2, Chapter 15, Lesson 1, p. 536 with color graphs or Chapter 15, Lesson 2, p. 548 with visual representations.

## Summary

Through their frequent interactions with technology, students of today are quite familiar with graphics and visuals. New and emerging technologies have led to new ways of presenting information, thus requiring a new vocabulary and method of interpretation. Visual literacy, the ability to read and interpret visual images, is quickly becoming a life skill that students need to master to navigate our technologically driven world.

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