

## Designing Materials for ESL Teaching: Visual Presentations

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*Summary: This article explores three areas of inquiry: Does visual perception supersede that of the other senses? How does vision occur? What are some theoretical bases and techniques for designing visual presentations that are congruent with the brain's process of seeing?*

*Keywords: materials design, techniques, vision, visual presentations, picture superiority effect*

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Medina's (2014) statement, "Vision trumps all the other senses," prompted my exploration of vision's preeminence in the realm of the perceptual faculties (p. 197). As a teacher, I wondered, "Considering that people are most influenced by what they see, how can teachers design materials that will make the content more accessible for ESL students?" Following a discussion of the visual sense in relation to the other senses, and a brief description of the seeing process, this article presents some theoretical background, and suggests techniques for designing materials for visual presentations.

### The Visual Sense and Visual Processing

Vision is wondrously complex. This section discusses the role of sight in relation to the other senses, and the process of visual perception.

#### Sight: The Preeminent Sense?

Does vision really supersede the other senses? Medina (2014) concludes that vision is a paramount influence in how one perceives the world, and it uses fifty percent of the brain's resources (2014, pp. 184, 197). Zadina (2014) seems to agree with Medina's conclusion in that she includes his quote about vision trumping the other senses in a discussion about the superiority of learning using visuals (p. 39).

Both Hutmacher (2019) and Majid et al. (2018) discuss the Aristotelian hierarchy of the senses, a view which has influenced Western thought into the present day. In this hierarchy, though Aristotle mentions that the haptic sense (touch) enables all of the other senses to function, which thus led some later thinkers to deduce that it was the supreme sense, he places vision in the dominant position (Hutmacher, 2019, pp. 7-8). However, among Western cultures, the hierarchy has not been consistent

throughout the centuries. Hutmacher shows that there has been a high degree of both individual and societal choice regarding the emphasis on sight (pp. 6, 8-9), and that as cultures have evolved to be more visually-based, so has that emphasis increased.

The English language comes the closest to championing vision, but in non-Western cultures, there is great variance of its position of importance (Majid et al., 2018, pp. 11370, 11372-11373). Majid et al. found that cultural factors or "ecological adaptation" influenced which sense(s) was (were) more relevant to a group of people (p. 11375). Additionally, there was not a uniform experience of the senses among the cultures of the languages tested, as evidenced by the linguistic expression displayed in each of the different cultures (2018, pp. 11371-11372, 11375). Further research will continue to reveal the unfolding relationship between the senses, both on societal and individual levels. Hutmacher (2019) proposes that researching how the senses interact would be more beneficial than attempting to differentiate between their functioning (p. 10). The findings could advance development of teaching methodology through informing the design of materials for visual presentations—materials designed for how the eyes see.

#### The Process of Visual Perception

The process of sight starts with the eyes and is completed in the visual cortex. As the brain processes what the eyes see, it first deconstructs, then reconstructs, the information. In other words, what is seen is the sum of what the brain has analyzed, based on the information that the eyes have perceived (Medina, 2014, pp. 184-187, 190, 197). From the initial moment of light entering the eye, the information it carries arrives in the visual cortex, where approximately 30 areas specializing in different aspects of sight (such as shape or places), are available

to examine, analyze, interpret, and identify each specific detail of the incoming data (Sherman, 2019, para. 11, 13). Simultaneously, queries are sent out to relevant parts of the brain—such as memory, emotion, and decision-making areas—to obtain input (2019, para. 14). Finally, as the information is received back and reassembled, the brain determines what is being seen: Perception occurs!

The brain references past images and experiences to detect, perceive, and understand current images. The process of visual perception is heavily influenced by what a person expects an object to be (*How Vision Works*, n.d., para. 11-12; Zadina, 2014, p. 38). The brain also may fill in a partial image or an unseen area with what it thinks should be there (Medina, 2014, pp. 187-188; Sherman, 2019, para. 15).

## Designing Materials for Visual Comprehension

Building on the background knowledge of their students, teachers of ESL can support their students' learning through materials designed to relate to their learners' differing cultural understandings of sight. Vision is often the strongest perceptual influence; it is advantageous to design materials that build on it. How can materials for visual presentations be designed to optimize learning? This section focuses on 1) theoretical principles for designing materials that complement the brain's visual process, and 2) general techniques for designing materials for visual presentations.

## Theoretical Background

Including images in materials is very helpful for ESL students (Zadina, 2014, p. 41). By capturing students' attention, pictures are more effective in conveying content than either written text or oral delivery (Medina, 2014, pp. 191, 195-197). The brain remembers an image more easily, and longer, than information obtained through either of the other two formats. The pictorial superiority effect refers to how people retain and remember more information when they learn it visually (Medina, 2014, pp. 191-192). Compared to presenting material only through text or only through oral delivery, using images relevant to a topic yields over six times the recall for students when combined with either modality (Zadina, 2014, p. 41). According to Mayer's (2019) Spatial Contiguity Principle, students learn better when related words and pictures are located near each other than when placed farther apart (see also Medina, 2014).

The graphemes of language are 'visuals in disguise'. The brain processes text like miniature images (Medina, 2014, p. 192). It meticulously examines every feature of each letter to determine what it is. Because of this, pre-literate ESL students might need additional support when learning to identify and pronounce English letters and words,

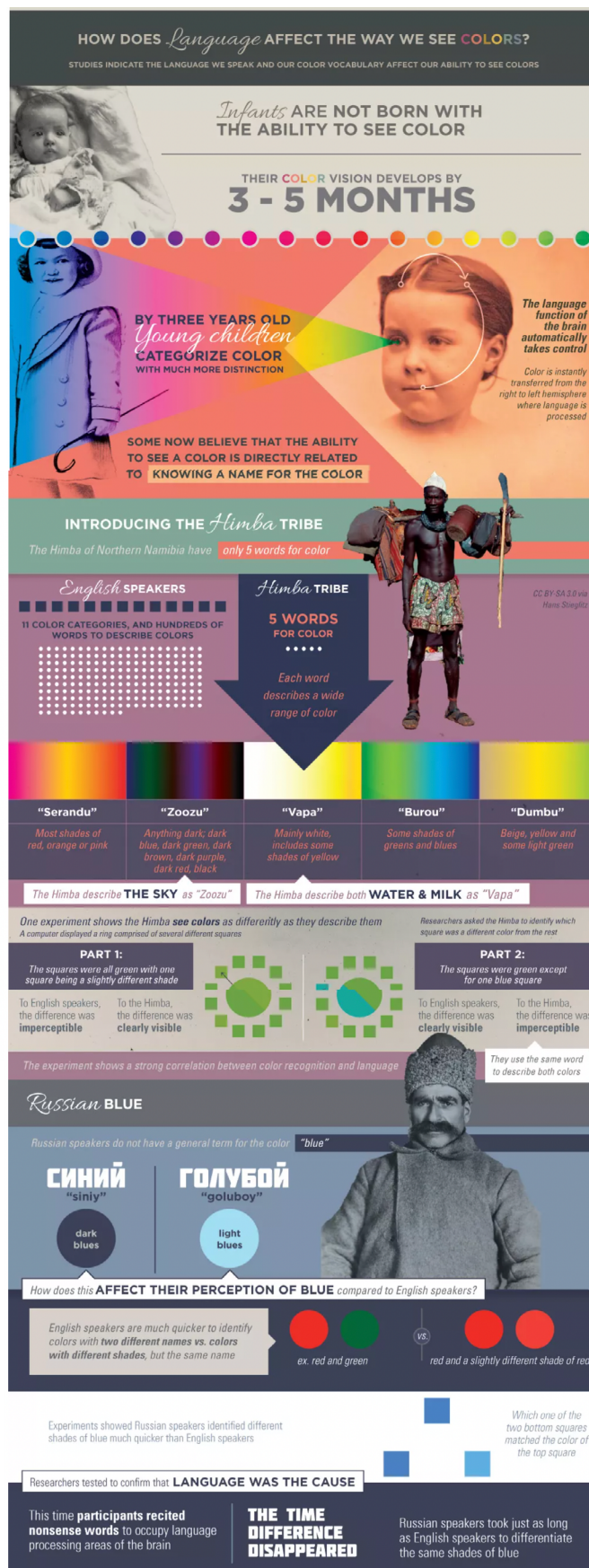


Image 1. Color Infographic. Used by permission. Courtesy of <https://newsourcing.com/project/how-language-affects-your-color-vision/>

especially if their primary language does not use Roman alphabet orthography (DeCapua et al., 2009, p. 21).

Experiences and cultures influence what students see

and perceive (Zadina, 2014, pp. 38-40). Kuwabara et al. (2020) state that the visual environment of a culture may influence the attention and perception of its members (pp. 1-2). For example, studies propose that East Asians demonstrate a more holistic approach, noticing the relationship between objects, while people with Western cultural backgrounds tend to notice individual objects more readily, having analytic attention. For example, Masuda and Nisbett (2001) conducted studies comparing Japanese and American students' processing of "complex visual displays" (p. 932) to determine which aspect they would remember more—individual objects, or an image as a whole (seeing objects within their overall context) (p. 924). Findings indicated that the Japanese students perceived objects within a surrounding background as a complete image (holistic view) while the American learners viewed objects as separate from any surrounding visual image (analytic view) (p. 932). Variation of noticing can also exist between individuals within the same culture (Zadina, 2014, p. 39).

When teaching, it is likely that some of the objects or concepts represented will be unknown or unfamiliar to some students. Using images helps to bridge the gap. For example, students from a rural culture might not know how to use an elevator. Showing images of elevators, and playing videos of people using them, are some of the ways to teach the concept.

### **Techniques: Visual Presentation Materials Design Guidelines**

When creating materials for students, some guidelines may assist in promoting effective learning through visually-based materials with presentation software programs (such as Microsoft PowerPoint and Google Slides), a document camera, or apps accessed via a smartphone. What are some ways to make the content accessible to learners? The following are some suggestions for creating effective visual presentations:

- Combine images with words for greater comprehension of material (Atkinson & Mayer, 2004).
- Use more pictures than text (Medina, 2014).
- Choose images that help students understand (Zadina, 2014).
- Narrate content (Atkinson & Mayer, 2004).
- Select a font that is easy to read.
- Ensure that the titles are a succinct summary of a slide's main idea (Atkinson & Mayer, 2004).
- Emphasize printed text through color, underlining, bold, italics, font size, font style, or repetition (Mayer, 2019), but avoid cluttering.

- List or position items in the body of a slide in the same order as listed in the title.
- Feature one main point per slide to promote focus (Atkinson & Mayer, 2004).
- Because our eyes are drawn to the largest item first, make the most important information the largest (Medina, 2014).
- Use color to spotlight information (Medina, 2014). However, don't rely on color alone to make a point (Usabilla, 2017).
- Choose colors and color combinations that are accessible for color blind individuals (Usabilla, 2017). The most common colors to differentiate are any with red and green hues, followed by blue and yellow. See [How to Design for Color Blindness](#) for more information.
- Learn [the significance of the colors](#) of your students' cultures.
- Eliminate any irrelevant or unneeded material (Atkinson & Mayer, 2004). This aids students in processing and understanding content more quickly, and reduces cognitive load.
- Movement conveys information more memorably and engages students, so play videos and use animation (Medina, 2014).
- Consider aspects of [Universal Design for Learning \(UDL\)](#) when creating visual presentations.

As always, teachers should use their judgment in designing materials for visual presentations that are supportive of, and applicable to, their students' learning.

### **Conclusion**

Vision is a fundamental aspect of human existence, and visual presentation materials designed with consideration of the visual process, and students' cultures, lead to more effective learning and greater retention of material. Instructors who are aware of their ESL students' differing cultural values regarding the senses are better positioned to design relevant and accessible materials that engage their learners.

*Note: Some ESL students are visually impaired or blind. Though beyond the scope of this article, there are many techniques available for teaching them. One online resource that provides information on this subject is [Paths to Literacy](#).*

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