

MARY MULLEADY

What's the Story?

Teaching Color to Primary Students

If students are excited about learning, learning will occur and, hopefully, a love of learning will be created and nurtured. If teachers are excited about the subject matter being investigated and teach that matter in a wonder-filled format, the learning environment is more likely to become one of enthusiasm and wonder for everyone involved. The problem in this entire “getting everyone excited” equation is how to go about creating and maintaining an enthusiasm for learning. This is where Cognitive Tools of Imaginative Education have a role to play. Cognitive tools are used as a means of developing a meaningful engagement between the student and the subject matter being taught.

The teacher of early primary students may develop a unit/lesson plan within the Mythic Framework, a template for employing the cognitive tools students in the primary years typically have at their disposal. Cognitive tools are employed throughout the Framework to provide engagement for the learner (and the educator too): Story, metaphor, binary opposites, rhyme, rhythm and pattern, mental imagery, gossip, play, mystery and embryonic tools of literacy. Cognitive Tools at the mythic level embody a simple logic about how learners learn; a story format is engaging and commonly understood. So for the primary age group, the Mythic Framework frames content in the form of a story. For the purposes of this paper, the Mythic Framework used is similar to the ones created at www.iERG.net. The Framework consists of: Locating Meaning; Developing the Story; Creating Images to Convey the Story; Using the Story Format to Teach the Subject; Concluding the Story; and Evaluation.

LOCATE MEANING

An effective imaginative teacher expresses authentic enthusiasm and excitement for the subject matter being explored. Both enthusiasm and indifference is contagious. Picking up on queues from the teacher, students will often be excited, bored or uninterested about learning. It is imperative, therefore, that the signals being sent from teacher to student are ones that impart a ‘love of learning’, no matter what is being discussed or considered. It is absolutely critical that the teacher locate meaning for her/himself first and then for the learners. The imaginative teacher begins the planning process by locating meaning, by identifying what ignites her own passion for the topic. She asks herself, ‘what is it about the topic of investigation that matters; what is engaging about the topic?’

Meaning within Color

In many ways, modern society often takes the importance of color for granted; yet color directs our lives in so many ways. We are bombarded with color, affecting our emotions, moods, and preferences for this or that. The natural world, of which humans are a part of, relies on color for survival. The brightly colored flower attracts the honey bee, the intricately colored markings on the wings of a butterfly wards off birds, the brilliant camouflage used by the chameleon helps to ensure its survival. As we busily rush throughout our daily lives, performing tasks and making choices to ensure our survival, we sometimes neglect and undervalue the importance of color. Take for instance the essential work done by pollinators and the importance of color to the pollination process. Eighty percent of the food plant species worldwide depend on pollination by animals, almost all of which are insects. Many pollinators depend upon color for plant selection. When searching for the perfect flower, honeybees, our most valued pollinator, employ a color preference for flowers that are blue, purple, or yellow. For human beings color affects our moods and our preferences. Color is a language with an important message to relay.

The language of color sends out signals. In an attempt to create a calming atmosphere, some correctional institutions paint their walls pink. Consider the color combination of traffic lights – red, green

and yellow; green, a calming color, means *go*; red, an alarming color means *stop* and yellow enhances concentration and gives the brain a *warning signal*. Even advertisers rely upon color branding to distinguish their products. Why is it that a company selects a particular color or colors for their brand over another? Because color matters!

The exploration of color is a fascinating area of study for learners of all ages. The study of color is a scientific, artistic and psychological endeavor. The *scientific consideration of color* is a springboard to many curriculum-integrated-type investigative explorations: How the brain works, how the eye works, theories of color, physics of light, the chemistry of color; the mystery of how light appears to be white and, yet, when that light bends, a rainbow of colors magically appears. The *artistic study of color* is a great springboard to a better understanding and appreciation of the beauty and impact of color: profiling various artists, understanding and appreciating the choice of color, appreciating color as a design tool. Although closely linked to the artistic exploration of color, *the psychological study of color* is a great springboard into the workings of the human mind. How does color affect our mood and daily lives? What does color symbolize? How does color help us to understand and interpret our world? What exactly is color? Why and how are things colored, or *are they*? Do objects, in fact, really have color?

WHAT'S THE STORY?

The challenge for the teacher is to figure out how to engage the learner in the subject matter being explored. Understanding and appreciating the appeal of 'the story' format to children (of all ages), the imaginative teacher works toward framing the subject matter into a story form. Being aware that a story (and one more engaging for children) is often based upon opposing forces, and that children are fascinated with and understand those opposing forces (good/bad fairy godmother, ugly/beautiful duckling), the imaginative teacher searches for opposing forces (binary opposites) within the subject matter.

The Story

An intriguing and mysterious story about color involves its *color/colorless* aspects (binary opposites). The world we see is full of colors. It is quite shocking, then, to discover that there really is *no color*; a startling revelation, considering the importance of color in our daily lives. How can there possibly be *no color*? Unless we are colorblind or blind, when we see, we see color and therefore color must exist. We see the blue sky, the green grass, a red apple. Because so much of our daily choices are based upon color it is almost unimaginable that there could be a world without color.

So, then, how can there possibly be no color? The idea that 'there is no color' creates a real sense of mystery and intrigue. After all, isn't 'seeing believing'? Do we really only see in black, white and gray? Consider the fact that until the moment a ray (or rays) of light hits an object, that object has no color! Does this explain why objects at night are mostly (but not exclusively) black, white and gray? In fact, color is all perception. The brain perceives colors after receiving information from the eyes.

Consider the sun – the source of most natural light on Earth - a humungous burning ball of gas. Rays of sunlight hurtle through space at a speed of 186,000 miles a second. Simply place yourself in a dark room and use a flashlight to simulate the sun to illustrate that there is no color until rays of light bounce off of an object. When rays of light bounce off objects, as seen by the eye, a message is sent to the brain and the brain then perceives color. The brain's interpretation of color - faster and more efficiently than any computer – is a marvel. Even though we "see" color in our brain or it is there where the perception of color occurs, it is the receptors in the eye that send signals to the brain which then interprets the color of an object.

Let's imagine, for a moment, the world as black, white and gray only – okay, that's how it really is but let's imagine that our ability to perceive color was magically removed one day. How would you feel? Would you be able to describe something, without a color reference? How would you make sense of the world around you? How would the animal and insect world react? Would a lack of color, the absence of that essential, communal, non-verbal form of communication, divide us even further?

CREATING IMAGES

So far, the educator is discovering that which is exciting and wondrous about the subject matter. Next, that excitement and sense of wonder about the subject matter is framed within the format of a story, based upon opposing forces. Now the task is to convey the subject matter to the learners, keeping in mind the opposing forces (binary opposites) discovered in the story format, through images and drama.

Images of Color

Imagine the sun, 93,000,000 miles from earth, shining upon the Earth. It takes about 8 minutes for the light from the sun to reach Earth. Imagine a ray of light from the sun to be a magic wand. As the light from this magic wand touches a colorless object, presto, that object magically has dazzling color. The magic of what appears to be white light actually creates color; magically there exists, within each ray of white light (boring), a rainbow of colors (exciting). Not only does this magic ray of light wand create color in objects, it also magically creates the color of us. We are a part of the beauty and magic of color. As an experiment, try to paint a classmate's skin color. A discovery is soon made that there really is no black or white skin – trying to re-create skin color demonstrates that many of the same colors are needed to make various shades of skin – again, creating a common understanding about color (of us).

The imaginative teacher might expand upon this image as follows: You are a marvelous creation. You are smarter than the smartest computer. Your brain, your body's central computer system, performs more complex functions and a multiplicity of simultaneous tasks faster than any computer ever created. Your five senses of sight, hearing, touch, taste and smell work in conjunction with the brain (your onboard computer system) to interpret and understand the world around us. No matter who you are or where you are from, the human brain functions in the same way. Although the meaning attached to color may vary from culture to culture, the brain's perception of that color is the same (harmony). It is the sense of sight that allows you to see the world around you:

Color vision begins with a light source. When light hits an object, wavelengths are reflected or absorbed. This is what gives the object color. If all wavelengths of light are reflected, the object looks white. When all wavelengths are absorbed, the objects look black. An object looks a certain color because it reflects certain colors and absorbs them. The grasshopper appears green because it absorbs blue and red light and reflects green.

www.uark.edu/depts/prntrsv/Color_seminar_final.pdf

USING THE STORY FORM TO TEACH THE SUBJECT

So far, the imaginative teacher has located meaning within the subject matter being taught. Next, her sense of excitement or whatever sparks her emotional commitment to the topic is conveyed to the learner in the format of a story (using binary opposites, images and drama). Now the imaginative teacher refers back to the binary opposites that initially provided meaning and engagement for your subject matter. She mediates those binary opposites to enhance the meaning of the subject matter for her students.

Life With/Without Color

In order to enhance meaning and to engage the learner, investigations and discussions of color are founded upon the aspects of color/colorless. So, what would life be like without color? A colorless world: Other than observing signs of blood, how would medical situations quickly be evaluated? Without color queues, how would we know if a plant or snake is poisonous? Would it be more difficult to discriminate between foods that look similar – such as varieties of lettuce or similarly shaped fruit? Without color, even a bowl of spaghetti and a bowl of worms might look similar. Living without color, although not impossible, presents its difficulties, hazards and embarrassing situations. Students are invited to observe and discuss how a lack of color would affect their daily lives.

On the other hand, living with color adds meaning and pleasure to life. Think of the incredible breathtaking pleasure derived from the colors of a sunset and the magnificence of a colorful flower garden. After a long winter, the colors of spring are rejuvenating and inspiring. Consider the beauty of paintings and the joy they provide. Students may be invited to discuss and observe the importance and relevance of color in their daily lives. How does the presence of color keep us safe?

The story might revolve around the journey from the sun of a group of light waves. It might describe their impact on the planet earth. There could be a situation in which the light waves become blocked – they cannot reach earth and, as a result, all havoc emerges. Perhaps there has been a massive volcanic eruption and the entire earth has been enveloped in a thick, impenetrable layer of cloud, dust and smoke. As a result of this explosion, bees cannot find the flowers they need to pollinate. Crops are failing. People are going hungry. The earth has become a drab, boring, colorless place. Perhaps, after much struggle a wind blows through and clears the air, allowing the light waves to hit the earth. Color appears. Life returns to normal on Earth but people are not the same. They remember what the world without color

was like. The imaginative teacher would expand upon this kind of story so that students could mediate the binary oppositions of color/no color around which the story is based. What would happen if, for a while, the sun's rays were blocked? How might human beings react?

Through various hands-on color experiments involving the color wheel, mixing and creating colors and playing with color, an appreciation of color is emphasized. At a general discovery centre, the teacher might place prisms, flashlights, color paddles, colored cellophane and various colored finger paint for unstructured play opportunities. Through various art lessons, the study of artistic works of arts and the fascinating lives of artists may be explored. Through discussions about the general feelings evoked by various colors, students explore the importance, meaning and an appreciation of color and color selection. Color has a story to tell; a message to relay.

ALL GOOD STORIES MUST END (OR DO THEY?)

Students might conduct mini-research projects investigating exactly how color helps us. A project might be something like creating a co-operative mural of a neighborhood in which different colors are used to create a shared meaning. Certain colors are used to make markings on the road while other colors used for certain road signs. There are yellow school buses, flowering gardens buzzing with bees (attracted, of course, to the particular colors of certain flowers), a rainbow of skies (a crimson sunset sky, stunning blue sky or a stormy, dark sky). The mural may heighten the students' awareness of their subconscious reliance upon color, as a tool to understand their environment. At the higher end of the primary group, research might involve an investigation of color blindness and its impact on everyday lives or the uses/meaning of color in the natural world. Maybe students could bring in a collection of empty food containers and compare and contrast the colors used by advertisers to catch the attention of the buying public. Students might also simply observe colors (individually or in small groupings) and record their reactions to particular colors. This reaction/non-reaction might also be further explored in terms of their investigations of the colors advertisers use to sell their products.

EVALUATION

Students need to be assessed on their understandings of color. Ideally, the criteria for assessing student learning should be collaboratively determined by both the teacher and students. Students may then be invited to take ownership of their projects by sharing their investigations with another class and discussing/explaining how color impacts their lives.

FINAL COMMENTS

Teaching about color through the Mythic Framework allows students' imaginative engagement to come to the fore in the classroom. The Mythic Framework's bedrock, the universal and timeless appeal of the story, grounds content in a manner that engages the learner. Students develop emotional connections with the subject matter. The Mythic Framework, constructed on the idea that every bit of human knowledge is fascinating and wonder-filled, can make learning and teaching a colorful experience.

Mary Mulleady
Simon Fraser University