

Creative Application: The Use of Visual Imagery in Assessment

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Abstract

Visual imagery, while maintaining a presence within the visual arts methodologies, has struggled to find its resting place among the world of today's assessment-driven processes. However, in this paper, the author seeks to establish the effectiveness of visual imagery – specifically the use of photographs – during the assessment phase of the learning experience as students are challenged to connect content through creative application. The current views of testing, especially in the design of exams, are challenged while the very act of creativity is elevated to its rightful place within the school day.

Keywords: visual imagery, assessment, creativity

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What is Visual Imagery?

*Seeing freed from the constraints of sight.
Or perhaps, sight rediscovered through
an act of insight. ~Burnett, 2004, p. 10*

The single structure of a scarred,
wooden pylon with loosely-wrapped wire
defiantly emerges from a watery
landscape and draws me in, capturing my
attention. I quickly grab my camera and
begin taking random shots. Images are
captured with each clicking sound, and I

sense that somewhere among the photos will be a perfect analogy waiting to be exposed.

Wire string...solid, yet scarred wooden pylon...rusty nails...a fishing lure left behind by a
passing angler...reminiscent of a missed opportunity. Yes, for me, the composite image was
definitely worthy of further exploration.

*Visual images, like all representations, are never innocent or neutral reflections of reality...they
represent for us: that is, they offer not a mirror of the world but an interpretation of it. ~Midalia,*

1999, p. 131

Visual imagery has found its niche within the world of educational research, particularly in the visual arts methodologies. “In photo-educational research the images are the most important and decisive element of the investigation. They define the problem, describe the context, provide and interpret the data, argue a case for the findings and reveal conclusions” (Marin & Roldan, 2010, p. 9). However, photographs, when situated in the world of assessment with the specific purpose of stimulating reflective thought while connecting content to creative application has proven a bit challenging for those aligning with more traditional testing approaches. This composition shares one person’s attempt at challenging current views of testing, specifically in the design of exams and the accurate accounting of content information internalized by each student.

Is It Possible for Creativity to Exist in Today’s Data-Driven World?

Casually glancing back at the first image, one assumes the wire to be a single strand. However, as one becomes more intimate with the photograph, the truth emerges: the wire is actually multiple threads intertwined and wrapped tightly together. In a similar fashion, the emerging educator sees assessment as a means to an end: the entire year is spent preparing each child for a high-stakes exam (e.g., end-of-course exam, benchmark exam, standardized exam). As the educator spends time getting to know the curriculum and to experience with her students the nuances found in the ebb-and-flow of learning, the high-stakes exam suddenly unravels. Less-traditional approaches to assessment actually reveal valuable components that, when woven together, tell a much better story of the students’ desired advancement in the learning process.

Sadly to admit, we [educators] live and breathe in a No-Child-Left-Behind, Race-to-the-Top system of high-stakes accountability where quantifiable data are obtained and detailed analyses

occur. Yet, occasionally and surely by mistake, a window is left open. Silently and somewhat irreverently, a breeze enters the stale room... a fresh breeze whispering the truth: education – yes, even testing – when perceived in clarity must stimulate creativity and incite vigorous curiosity (Tamdogon, 2006). Kline (2002) tells the story in a slightly different way: “The current crisis in education can’t be solved by tightening the screws on schools to enforce ‘excellence’ as manifested by scores on standardized tests” (p. 350). Instead educators must “trade accountability for curiosity, standardization for creativity, and bubble sheets for collaboration” (Sheridan-Rabideau, 2010, p. 54).

There is a natural link between vision and light. It is not an accident that the ‘enlightenment’ was about learning and discovery, about new ways of bringing truth, discourse, science and religion into more productive relationships with each other. Light, in the fifteenth and sixteenth centuries, was as mysterious as the eyes themselves, the manifestation of a physical effect without simple causality. ~Park, 1997, p. 237

Broudy (1987) does well in capturing the sterile environment of today’s quantifiable learning process:

Common to all skill learning is practice on a set of typical situations with (1) a set of rules for identifying the task, (2) selection of the proper rule to be applied, and (3) repetition of these procedures to a high level of dependable performance... For the most part, skills are taught through [the]... tutelage of a master of the craft. The outcome is ‘knowing how,’ plus familiarity with the appropriate ‘knowing that.’ The test for the mastery of [the] learning is the ability to perform on demand pretty much what has been practiced during the learning (p. 9).

However, initial learning experiences often connect text (i.e., vocabulary words) with imagery. For example, a second grade teacher assists her students in their understanding of the word 'occupy'. As the scene unfolds, the teacher leads the discussion with examples of imagery related to 'occupy': a bird occupies the nest, a worm occupies an apple, and a person occupies a house. She then encourages each child to draw her/his own image of what the term brings to mind. Each drawing is shared and the class now has a richer understanding of the word 'occupy'. In a high school science class, the teacher provides each student a graphic organizer to capture personal meanings of the unit's vocabulary words. Embedded in the graphic organizer is a space for an image, once again to encourage the learner to connect the visual with the text. As the learner continues to advance in her ability to master the concepts, perceptible examples become more and more important in the cognitive process. In fact, the more abstract the information is, the more visual imagery is required in the production of insight (Broudy, 1987).

Because of the personal recognition of the linkage between visual representations and meaning making in the professor's own learning, she determined there must be others who relate to this connection. But first, there must be an understanding of exactly what is involved in the process of knowledge crystallization.

Our visual representation of the world is much more impoverished than we would assume. People can be looking at something without being aware of it. Perception doesn't just involve looking at an object but attending to it. ~ Kuhn



Visual representations –

“visual meaning-making devices and symbols” (Bustle, 2004, p. 416) – continue to be used extensively in textbooks and ancillary materials in an effort to cover a wide range of subjects and grades, even amid the high-stakes testing market. Typically these diagrams are embedded within text to appeal to its audience and provide important and unique information sometimes absent in the text. Fictional literature uses visual representations, more so in the early stages of reading and less as the reader matures. More often than not, visual images are utilized within the sciences, mathematics, and social studies to elicit a better understanding of the written word.

While there are numerous accounts of the reliance on visual imagery within the creative process, especially in the sciences, I have included three such examples. During Einstein's progress towards discovering the concept of special relativity, documentation conveys his mental imagining – visual imagery capturing possible consequences of one's traveling at the speed of light. A second example conveys Kekule's discovery in organic chemistry after remembering a dream in which a “snake was coiled in such a way as to represent the molecular structure of benzene” (Finke, Ward, & Smith, 1996, p. 45). A final example shares Faraday's claim to having

seen in his mind “lines of force that emanated from electric and magnetic sources, resulting in the modern conception of electromagnetic fields” (Finke, Ward, & Smith, 1996, p. 45).

A common strategy used by many expert problem solvers relies on the use of visual imagery. Larkin and Simon (1987) conclude that skilled individuals construct mental visualizations when presented with word problems, facilitating the search for “relevant information in the problem, recognizing important patterns and relations, and handling complexity” (Finke, Ward, & Smith, 1996, p. 175). Visual representations of a problem often allow for a solution to emerge; however, individual problem solvers must engage with the visualization, must seek to interpret and analyze it, and in so doing, create a unique and personal mental image largely based on one’s cultural perspective. Nevertheless, the teacher feels compelled to step into this stream of learning and impart some wisdom to her students. In this instance, while the intention may be pure, the meaning is forever altered. Instead of witnessing a momentary “attending to” of the student to the image, the solution – if you will – has been tainted with the teacher’s own biases.

Where Do Today’s Students Stand on Creativity?

Real creativity comes from finding your medium, from being in your element. When people find their medium, they discover their real creative strengths and come into their own. Genuine creativity is not only a matter of letting go but of holding on. ~Robinson, 2001, p. 10.

According to Kyung Hee Kim (2010), a creativity researcher at the College of William and Mary, “creativity has decreased among American children in recent years. Since 1990, children have become less able to produce unique and unusual ideas. They are less humorous, less imaginative, and less able to elaborate on ideas” (as cited in Rettner, 2011).

Creativity in education begins with a personal curiosity and grows as knowledge is acquired and produced. Furthermore, “creativity is possessed by everyone, creative talent shows up in different fields in different people, and levels of innate creative talent vary. A person may be extremely creative or possess tremendous creative potential, but unless this creativity is manifested in a particular visible or audible way, it will go unrecognized” (Hope, 2010, p. 41). Unless we, as educators, provide students with opportunities to divulge this creativeness, then it will remain silent. One area that largely goes unnoticed, in terms of creativity, is the assessment phase of learning. However, when visual imagery is purposefully placed in content exams, opportunities abound for the learner to connect the cognitive with the affective. Sheridan-Rabideau (2010) asserts, “For assessment to be meaningful, it must measure something beyond aptitude alone. It must take into consideration the qualities of curiosity, creativity, and collaboration that are so essential in the making of meaning... Meaningful assessment is messier than our current models measure” (p. 55).

The question arises as beauty from ashes: If the teacher purposefully selects and embeds visual imagery into the text – specifically in the assessment phase of learning – and guides her students toward the experience, how much greater can the information provided by each student enlighten the teacher’s understanding of gained content knowledge? In other words, does the strategic use of visual imagery in the assessment phase (1) sufficiently prompt participants’ response to engage on a higher level of Bloom’s Taxonomy while also (2) connect what is known with what is felt, combining “sight and insight” (Schuller, 2004, p. 84).

Formulation of the Research Study and Its Results

For several semesters, the professor – being a visual learner herself – found the traditional styles of questioning (i.e., true/false, multiple choice, short answer, and essay) to be rather boring to grade. She also imagined for many of her students the test may be rather boring to take. Therefore, Dr. Alvarez determined to spice up the cumulative assessment by inserting an image and a poem in the final portion. She then suggested each student connect the image and poem with the content in an effort to authentically assess knowledge gained. On a number of occasions, the students would include comments at the conclusion of the test such as, “I really enjoyed answering this question,” or “I’ve never had an opportunity to consider the material through a photograph and a poem. I like it!”

Within the final exam of a graduate early childhood strategies course were one image and one



poem of which each student was instructed to clearly and concisely connect what was learned with what was seen and read. The image shown was what the students had to work with. The following excerpt from one student’s exam captures knowledge gained on differentiated instruction within an early childhood classroom setting:

If six children are given cameras and asked to take pictures of the same tree, it is very unlikely that any two pictures will be exactly alike. Some students will likely focus on the whole tree, while others might find

close-ups of the leaves or bark more interesting. There may be some students who frame their shots well and others who constantly let their thumbs slip over the lens. Just as

children's abilities and interests affect the photographs they take, so too will they affect their work in the classroom. Recognizing children's differences in ability and interest helps teachers plan more effective instruction and assessment. Knowing at what level students can perform helps the teacher set reasonable goals for each student and recognize progress as a measure of success. Noting different interests also helps teachers engage students in learning. No two children see the world the same way and no two children should be viewed in the same way.

It was during one of these moments as Dr. Alvarez read and reflected upon the depth at which answers were provided that she felt compelled to do something with this information. After much consideration and conversation with colleagues, the professor established a two-prong research question: Does the strategic use of visual imagery and poetics in the assessment phase of graduate classes (1) sufficiently prompt students to respond on a higher level of Bloom's Taxonomy while also (2) connect what is known with what is felt, combining "sight and insight" (Schuller, 2004, p. 84). Once the question was identified, Dr. Alvarez began the task of completing all paperwork associated with official IRB status. It wasn't long before notification of acceptance was received.

During this process, three colleagues representing two areas known for its high-quality research learned of the focus on assessment and became quite interested in pursuing a collaborate effort. Subsequent meetings occurred and during the last official meeting prior to developing the survey instrument, resources – time, equipment, and money – were mentioned. The professor/researcher walked away feeling very good, sensing this style of testing may actually be worthy of consideration. With their blessing and encouragement, the project was off to a blazing start.

Subsequent meetings were scaled back to include the professor who excels in survey and questionnaire development and Dr. Alvarez. Suggestions were provided by the expert and she listened intently, trying to follow the direction in which they were headed. Identification of classes was discussed in which a potential pool of candidates – expanding the total number from 30 to 145 – might be found. She was sincerely grateful for the insight provided into the development of an instrument by which valuable data may be acquired; however, something had changed with the overall project. It seemingly had taken a sharp turn towards quantifiable data and had somehow left behind the very thing the project was to embrace – creativity. Nevertheless, the tests were made ready and in accordance with the professor's suggestions. Specific courses were identified, instructors were provided an overview of the research project, test instructions were given, and test dates were established.

As the completed tests were returned, Dr. Alvarez immediately began scanning them for usable data. Participating students finished the survey questions; yet, the question portion of the document was sparsely filled. Answers were somewhat vague, clearly demonstrating the students simply did not understand this variance of a test. Many indicated their preference to standardized test formats, rather than having to think creatively or “outside of the box.” The professor contemplated the disastrous results and considered dropping the entire project. She gathered from the lack of attentiveness by those that initially were willing to help that they, too, had either lost interest or sensed this was the moment to step away from the study.

Nevertheless, Dr. Alvarez refused to abandon what she had so clearly witnessed in her students: there is a place for creativity in the application phase of learning. Earlier comments by those engaging in such exams proved this. The personal choice was made to pull back on the numbers of responders and concentrate once again on the qualitative approach to gathering data.

It was then that the professor/researcher understood a simple fact occurring on many campuses: quantifiable means by which data are collected cannot be assumed as effective approaches in all aspects of research. There are moments when the best, the most valuable method is qualitative in nature. The majority of the returned exams were worthless with regards to quantifiable data.

What Impact Does Creative Application Have among Today's Students?

In analyzing the early results of the seemingly failed survey questionnaire, the professor did notice of those completed a strong resistance towards creativity within the assessment phase of learning. The majority indicated their desire to remain with true/false, multiple choice options of testing responses. This puzzled the Dr. Alvarez simply because when provided an opportunity to test in a manner that opened the door to personal reflection and input, she believed the students would without hesitation opt for the creative approach.

It was during this reflective phase of the work that a chance encounter with a freshman student occurred, shedding light on the rationale as to why so many answered as they did. Dr. Alvarez was chatting with the freshman student prior to a scheduled meeting. The conversation turned to creative application and its opportunity for individualization within a testing environment. With no hesitance, the freshman responded, "I don't understand why you would put something like a picture or a poem in the test, and then expect me to relate the item to the content when it would be much easier on everyone to simply use either a true/false or multiple choice format. Besides, that is how we have been tested all of our lives. Why change the format now? We are comfortable with it just like it is." And there it was...the reason why the freshmen classes did not respond enthusiastically on the research-designed exams. They simply saw no

need for it. They preferred the traditional method of assessment precipitated by years and years of standardized testing.

Yet, according to a recent IBM poll of 1,500 CEOs, creativity was identified as the No. 1 “leadership competency of the future” (Bronson & Merryman, 2010). Global crises continue to cry out for creative solutions: fires, floods, water shortages, earthquakes, health care. If we are to survive and thrive into the next centuries, then society must have individuals trained to think uniquely, creatively. In these situations, standardized thinking will not sustain our world.

As educators, we must insert moments within each course to allow for a return of creativity. Problem-based learning is one way by which we can benefit from this form of thinking, inviting the students into a world filled with active engagement and personal motivation. One individual asks his students to “think of all the things that could interfere with graduating from college” (Bronson & Merryman, 2010), and then the professor instructs the students to select one of those *things* and create solutions for that problem. According to Bronson & Merryman (2010), “this is a classic divergent-convergent creativity challenge”. Other instances of creative thinking can be found in icebreaker activities, analogies, and even through technology applications.

However it arrives, this focus on creativity within the learning environment must return. Today’s students must see the need for such a skill and be trained to utilize uniqueness in problem solving and collaboration. The American ingenuity has been one of creative innovation; therefore, let us, as educators, seek to reignite a new generation of individuals – instead of standardized minds. And as for Dr. Alvarez, she will continue to insert random pictures and poems into the tests in hopes of sparking one moment of creativity within her learners.

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