

# The Effect of Information Technology on Visual Art Perception

## Introduction

Visual perception is a very complicated process. It is based on our experience with the surrounding world. Our brain is used to construct the visual stimuli we see into something we are able to understand. Much of the stimuli that goes into our retinas is imperfect which causes our brains to be flooded with many different shapes and images. The brain thus has to order and interpret these images into something that makes sense to us. Learning how to see is a spontaneous process which begins the first day of our lives so it is hard to measure. We can, however, see the beginnings of this process in people who were blind from birth and then had their eyesight restored. At first initial glance, they do not recognize things, especially in two-dimensional pictures, because their eyes and brains had not learned how to see them.

If you look at this Wolverine/Batman picture below, you immediately create an idea and a meaning for and about it — and that is basically the essence of visual art. Although, we can never see both variants at the same moment, because our brain can only interpret this picture in a certain way at a certain moment. This idea is as old as the human race and has helped us to survive as a species up to the present day.

## What do we actually see?



## Visual Perception

Nerve endings at the back of the retina carry visual signal information into the Thalamus. Visual signals then continue through two types of cells in the parvo-cellular and magno-cellular pathways. The parvo-cellular system contains small cells and is mostly responsible for seeing color hues and contrasts and the magno-cellular system includes large cells and detects motions. With these systems, our brain recognizes a particular objects image and sends another signal back to our eyes. Our eyes are then directed to another movement and/or image. This process repeats constantly and continually.

Visual processing in our brain reinterprets the

imperfect image received from the retina. Through this process, our brain gives us an understanding about a particular object's image spatial relations and forms, and its directions of movement. In the perception of art, we prefer images that are previously familiar to us or images that we have a background on. In other words, we are predisposed to understand what we have already been exposed to or have some knowledge about.



Not everyone sees the world in the same way and it is not only because of our visual apparatus, but also because of eye impairments such as visual processing disorders. For people with normal, healthy eyesight, it is normal to see strange images in normal everyday objects in the surrounding world- for example, if one sees a face with eyes and mouth in a wall plug. Some people with visual processing disorders would not recognize this face in a wall plug and in extreme cases they are not even able to recognize a human face with missing parts (e. g. a nose) in a photo.

## Negative Effects of Technology

Many studies have confirmed that information technology effects our brains. By information technology, I am referring to: watching television, using the Internet, and playing video-games on TV, computers, smart phones etc. The biggest effect has been seen in groups of children below the age of two. Children under twenty-four months of age who watch TV have delayed language development, weaker reading skills, and problems with short-term memory. Negative effects on sleep and the ability to pay attention has also been noted in these children. **How can children who have grown up on constantly changing and shifting images on a screen which has resulted in attention problems have the ability to perceive a (static) art object properly?**

## Positive Effects of Technology

Dyslexia is most likely a dysfunction of the magno-cellular system and playing video games can help boost this system by improving attention span as well as reading abilities. Since video

games can make dyslexic children better readers, I am going to find out if there is any connection between playing video games and visual art observing. This would mean I would be able to help dyslexic children to see and appreciate art better.

## Eye Tracking in Art

This technique is mostly used in the advertising industry and can also be used for research in the field of art. It has been discovered that people with backgrounds in art, have different eye-tracking maps. Someone who is educated in art views art pieces in a different manner than one who is not educated in this field. When people in the art field solve a problem in a picture (e. g. looking for an exact object), their eyes move in a different way as well.

I am going to use an eye tracker machine for my research about the effect of information technology on visual art perception.

## Research

Experimental group: 20 children from 5 to 8 years old (10 healthy children, 10 children with dyslexia, ADD or ADHD).

Goals:

- To confirm or disprove the effect of video game playing on art perception: Can we compare reading skills with art perception? Can playing video games help children with dyslexia? Can video games help children without dyslexia in the perception and enjoyment of art as well? (According to the study of S. Franceschini, S. Gori Milena Ruffino, S. Viola et al.: Action Video Games Make Dyslexic Children Read Better)
- To examine if information technology can indeed assist children in the perception and appreciation of art. If the answer is yes, then which exact type of technology should be used and how should it be used. If the answer is no, then why?

**It takes 24 months for a children's brain to understand that 2D pictures on a TV screen have equivalents in real life.**

Source of the picture: Olly Moss, [www.moss.fm](http://www.moss.fm)

**Mgr. Irena Točíková**

Department of Art Education  
Faculty of Education  
Masaryk University  
Brno  
Czech Republic