

Susan Daniels, Ph.D.

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CONTENT LINK



VISUAL

Learning AND Teaching



An Essential
Guide for
Educators K–8

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Foreword by Richard M. Cash, Ed.D., author of *Advancing Differentiation*

PRAISE FOR
VISUAL
Learning AND Teaching

“I’ve been awaiting a visual thinking book for educators with the breadth and depth of this one. Dr. Daniels’s work made me want to read cover to cover and start again at the beginning. I’m confident *Visual Learning and Teaching* will be a resource for teachers for a very long time.”

—Sunni Brown, chief human potentialist and best-selling author of *Gamestorming* and *The Doodle Revolution*

“I was pleased to see Susan Daniels’s *Visual Learning and Teaching*. Gradually we are all enlightened to the power of visual thinking. The best minds have used it to make discoveries in science, engineering, medicine, and technology and to design some of our most powerful tools. Now these ways of understanding are available to us all. In the past our schools have relied mainly on the ‘thin pipe’ to the brain of words and numbers. Now the newest visualization technologies provide us with a ‘fat pipe’ to the brain. I am enormously grateful to Dr. Daniels for providing a comprehensive and practical step-by-step pathway for teachers to help prepare students well for new worlds of work and understanding.”

—Thomas G. West, author of *In the Mind’s Eye*, *Thinking Like Einstein*, and *Seeing What Others Cannot See*

“Today’s teachers need easily accessible resources at their fingertips to serve the wide range of students in their classrooms. Susan Daniels meets this challenge by deftly weaving practical, visual strategies with a deep understanding of why these visual approaches are effective for all learners. I predict that this guidebook, which is filled to the brim with creative visual communication lessons, will be a compelling addition to the shelves of contemporary educators looking to strengthen their repertoire of skills.”

—Michele Kane, Ed.D., professor of special education at Northeastern Illinois University, Chicago

VISUAL Learning AND Teaching

**An Essential Guide
for Educators K–8**

Susan Daniels, Ph.D.



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To April Morris for believing in me and the work of this book one
mind map and doodle at a time and every step of the way.
To Devin McGhee who has been a constant
source of insight and inspiration.

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FOREWORD by Richard M. Cash, Ed.D.

When I was a student in the 1960s and 1970s, film strips and movies on a reel-to-reel projector were all the rage in schools. In the 1980s, overhead projectors and videotapes became the visuals that enhanced teacher voices. The 1990s saw an explosion of technologies (computers and interactive whiteboards, for starters), which challenged teachers to keep pace. Now, in the 2000s, visually enhanced technologies overwhelm our daily lives. As a result, many of today's students have known nothing other than a highly visual world.



For thousands of years, we have depended on using visual elements to communicate. Today, we use visuals more than ever. From social media to outdoor advertising, from tech screens to interactive media, our students are bombarded with visuals intended to engage, encourage, and inspire. Teaching students how to use visual language to record ideas, refine thinking, and transmit ideas is an essential tool for success in this multi-lingual world.

Susan Daniels understands this. One of my first encounters with Dr. Daniels was at an educational conference. We were discussing new ways to engage students in learning. We both drew pictures of our ideas on napkins, placemats, and any surface that would allow for our graphics. As we did, we realized we were expressing ourselves beyond the spoken word. I knew at that moment she was the right person to write a book on developing visual learning and teaching.

So many of our students who struggle with the written word are more at ease sharing their ideas in graphic ways. In this book, Susan encourages educators to delve into visual language and communication: that which isn't spoken or written. She expertly outlines the visual triad model (VTM)—“seeing, imagining, and depicting”—as a way for students to express what they understand. Best of all, her techniques can benefit students accustomed to traditional teaching methods and students for whom visuals are the preferred way of demonstrating proficiencies.

I remember one of my teachers scolding me for doodling during class. She said I was daydreaming and not paying attention. In this book, Susan reassures us that doodling is, in fact, a mentally stimulating process through which more divergent thoughts and ideas are shaped. Allowing our students to let their pencils and minds wander can help them craft better solutions for this highly complex world.

Immerse yourself in the world of visual teaching and learning. Doodle your ideas as you read. Document your thinking visually as you progress through this text. Discover new ways to awaken your inner creative thinker and deepen your understanding of diverse ways to communicate and learn. Let yourself go as you enjoy this highly valuable text.

Richard M. Cash, Ed.D.
Educator, author, and consultant

INTRODUCTION

Why Visual Teaching and Learning? Why Now?

People have innate tendencies to express themselves visually, and visuals play a big part in how we process information. From prehistoric images to the printing press, humans have sought to communicate. Primitive cave drawings show a primal desire to use pictures in an effort to convey thought, feeling, and meaning. Even today, most toddlers seek to make meaningful marks, drawing rudimentary pictures to show what's going on inside their heads.

Despite this early inclination to express ourselves visually, our classrooms often default to verbally dominated instruction. For centuries, many educators have relied on lecturing, storytelling, and the written word to convey information. Standardized tests, in written form, emphasize verbal learning. But in a world filled with laptops, smartphones, tablets, and virtual reality machines—all tools with graphic-centric interfaces—it becomes paramount to proactively teach students how to “read” and create visual texts and to embrace this instinct more fully or risk falling behind. As such, many teachers find themselves without the resources needed to give 21st-century students the skills they'll need to thrive in an increasingly visual world.

The Benefits of Visual Teaching and Learning

Introducing a consistent visual component to the curriculum can:

- help students better engage with materials
- develop higher-order thinking skills
- hone fundamental abilities that enable students to see and conceptualize visuals clearly
- enhance tactile hand-eye-mind connections that improve the ability to recall facts and retain learning
- serve the unique needs of learners who process information primarily through visuals, as well as increase learning for all students
- provide new opportunities to some students with learning differences and challenge students who are gifted or twice exceptional
- be an integral part of best-practice intervention methods with individuals on the autism spectrum

This book, *Visual Learning and Teaching: An Essential Guide for Educators K–8*, seeks to give educators exactly what they need to fill this void. Visual learning and teaching are exciting and creative ways to meaningfully engage students in visual literacy, visual language, and visual communication. By introducing meaningful visual elements to the curriculum, educators can help students more completely engage with the multitude of visual messages they receive daily. And becoming fluent in visual communication can help students build the skills necessary to succeed in almost all areas of their lives. The teachers I have worked with, who use visual note-taking with their students, consistently report better student scores on quizzes and tests as well as stronger essays, projects, and papers.

Defining Visual Terms

To fully understand visual learning and teaching, we need to discuss visual literacy, visual language, and visual communication.

Visual literacy has been defined many ways. As applied to classroom learning, this book defines visual literacy as the ability to do three things:

- Decode—to understand and translate communications made with visual imagery
- Imagine—to create, interpret, and manipulate mental models of visual imagery
- Encode—to express thoughts and ideas using visual imagery

I will use the visual triad model, introduced in chapter 1, and its three components: (1) see, (2) imagine, and (3) depict.

In addition, visual literacy includes the ability to be an informed critic of visual information and to ethically judge accuracy, validity, and worth. For example, when visually literate students encounter graphs and charts in their texts, they often have the ability to read and analyze the visual and verbal messages, comprehend their meanings, question irrelevant or misleading data, and create a visual or verbal response to it.

As you proceed through this book, you will come across additional visual terms that are synonymous with *mark-making*, such as: depict, doodle, draw, sketch, and illustrate. These terms, in many instances, can be used interchangeably. The definition of *depict* is “to show or represent by doodling, drawing, illustrating, or other visual means (collage, photographs, and so forth).” A *doodle* is thought of as a more basic image, and a *sketch* or an *illustration* is something more realistically rendered. *Infodoodling* is a form of doodling used to convey information. What’s important to remember is that none of these words imply “artistic ability” when used in the context of visual learning and teaching. Mark-making is a tool for learners of all skill levels. (This will be discussed at length later in the book.)

Visual language is a form of communication that isn’t aural, written, or gestural. By excluding the spoken word and signed words, visual language relies on marks, forms, design, color, and shapes to convey messages. Pictograms, hieroglyphs, and ideograms are simple forms of visual language. Signs and symbols for trains, planes, buses, restrooms, restaurants, and others are readily understood visual communications that don’t rely on language to comprehend. This book will address both depicting and doodling as simple forms of visual language and then extend into other graphic forms, including mind maps, one pagers, presentations, picture books, and more.

Doodling is an important part of visual learning and teaching. Once thought to mean simply dallying, doing nothing, or scribbling absentmindedly, doodling has more recently been defined by Sunni Brown, author of *The Doodle Revolution*, as making marks to help yourself think. This definition, and Brown’s work on doodling and graphic facilitation, form part of the foundation of this book. And infodoodling integrates words and images that are designed to record and communicate concepts and processes.¹ Depicting refers to a broader range of ways to show or to illustrate that includes detailed sketches, illustrations, designs, diagrams, photography, digital content, videos, and more. Doodling and depicting will take center stage throughout this book as important tools on the path to visual literacy.

Visual communication is something we take part in every day, both actively and inactively. We actively rely on visual communication to perform day-to-day tasks (for example, following directions on road signs). But sometimes, we are unaware of the visual conversation because it's happening constantly: images in advertising, photos in magazines, icons within emails, colors in the background of product packaging, and so on. This book will introduce skills to help you and your students become active visual communicators.

The Path to Visual Learning

Simply put, visual learning is associating information with reading, analyzing, interpreting, and creating images, symbols, icons, and other forms of visual input. It's sometimes referred to as spatial learning, or visual-spatial learning when applied to three-dimensional objects and space. On their own, verbal instructions on the whiteboard are not an example of visual language or communication. Visual learning begins when simple yet meaningful doodles or depictions are added alongside the verbal instructions. It continues when text and visual elements appear together in the form of a graph, a diagram or an illustrated text, such as a picture book or graphic novel.

It's important to note that visual literacy is not new. As infants, we take in a tremendous amount of information visually and quickly begin learning through the visual mode. For young children, visuals are an important part of how they interact with the rest of the world. Invite a child to share—"Please tell me about your picture"—and a whole story will unfold. In fact, until we become proficient at written and spoken language, most of us rely on depictions to communicate our ideas and wants.

Over time, however, our visual skills—observing, looking closely, analyzing images, imagining, doodling, and otherwise depicting—can sometimes diminish as our focus turns to other forms of communication (verbal and written). But, as previously noted, the demands of the new century and the advancements of technology suggest we need to integrate opportunities to learn, teach, and interact visually within education contexts. This book will help educators reenergize and build upon these innate abilities in both themselves and their students.

A Note on Visual Learning and Technology

Graphic interfaces and iconography dominate today's students like never before. They live in a digital world as much as an analog one, and a large part of navigating the digital world is learning how to read and interpret visual imagery. However, while the formats and mediums may be novel, the skills needed to understand and create visual information are not new. While using the latest app, game, software, or device, users still need to see and conceptualize visuals clearly and make their own meaningful visual marks. The tools in this book aid these fundamental abilities, online or off, even though the tools may not reference specific technologies, which are ever-changing and shifting. Furthermore, the importance of the tactile hand-eye-mind connection when writing or drawing the old-fashioned way is difficult to overestimate when it comes to engagement with and retention of learning.

Why Visual Learning and Teaching?

When educators introduce a new teaching and learning technique, the goal is to help students better understand the material in an assigned curriculum. Visual teaching and learning methods can simultaneously address the needs of underserved learners (those who excel at processing information visually) and potentially increase learning for all students. Let’s look first at how visual techniques can help students whose learning style is more visual-centric.

In her book *Upside-Down Brilliance: The Visual-Spatial Learner*, Linda Silverman identifies two types of learners—auditory-sequential learners and visual-spatial learners—and discusses the different learning preferences and characteristics of each. Silverman states that auditory-sequential learners work well with words, linear organization, and order. Visual-spatial learners work well with images, big-picture thinking, and possibilities. Most students work with both modalities but have strength in or a preference for one or the other. **Figure 1** shows a comparison of auditory-sequential and visual-spatial strengths.

FIG. 1 DIFFERENCES BETWEEN LEARNERS WITH AUDITORY-SEQUENTIAL STRENGTHS OR VISUAL-SPATIAL STRENGTHS*

Learners with Auditory-Sequential Strengths	Learners with Visual-Spatial Strengths
<ul style="list-style-type: none"> • Think mostly in words • Have auditory strengths • Are step-by-step learners • Attend well to details • Follow oral directions well • Do well at arithmetic • Learn phonics easily • Can sound out spelling words • Learn well from instructions • Are comfortable with one right answer • Tend to be academically oriented • Can memorize math facts quickly • Have good short-term auditory memory • Are well organized 	<ul style="list-style-type: none"> • Think mostly in pictures • Have visual strengths • Are whole-part learners • See the big picture • Decode visual depictions well • Prefer geometry • Learn whole words easily • Can spell well by visualizing • Arrive at correct solutions intuitively • Like problems with many possible answers • Often, are creatively, technologically, or mechanically talented • Can tackle higher-level math successfully often before mastering basic facts • Have good long-term visual memory • Create unique methods of organization, need to “see” materials

*Adapted from Silverman, L. K. (2002) *Upside-Down Brilliance: The Visual-Spatial Learner*. Used with permission.

Because many modern classrooms rely on lecture, reading, and writing to impart information, they are set up to convey information in a manner that best suits learners with an auditory-sequential preference. But from 1999 to 2001, researchers conducted a study of 750 students in two schools and found that 33 percent of the students were strongly visual-spatial and another 30 percent were moderately visual-spatial. The results clearly showed that the majority of students have a visual-spatial learning preference. And the research suggests that many of our students with this preference are going

undetected and undernourished.² In adopting a visual learning and teaching approach, educators can better meet the needs of these students.

Visual Learning and Students with Special Needs: Some Examples

Visual-spatial strengths and related learning needs have been found in greater incidence in some students with learning differences. Visual-spatial abilities have been identified as strengths in students who are gifted. Students with dyslexia have been found to perceive three-dimensional visual presentations with great acuity, but they often struggle with visual material presented in two dimensions and in sequence. And visual support strategies are being used extensively with individuals on the autism spectrum and are considered to be an integral part of best-practice intervention methods. Further, some students who are known as twice exceptional—particularly those who are gifted and who also have dyslexia—have been found to be creative visual thinkers.

Sources and Recommended Resources:

The Dyslexic Advantage: Unlocking the Hidden Potential of the Dyslexic Brain by Brock Eide and Fernette Eide, 2011, Plume.

Literacy for Visual Learners: Teaching Children with Learning Differences to Read, Write, Communicate, and Create by Adele Devine, 2016, Jessica Kingsley Publishers.

Twice Exceptional: Supporting and Educating Bright and Creative Students with Learning Difficulties by Scott Barry Kaufman, 2018, Oxford University Press.

Visual Support for Children with Autism Spectrum Disorders: Materials for Visual Learners by Vera Bernard-Opitz and Anne Häußler, 2011, AAPC Publishing.

But what about learners with an auditory-sequential preference? These students also can benefit from adding visual elements to the curriculum. Research by educational psychologist Richard Mayer found that using images to convey information improves a person's ability to recall facts or key steps by an average of 23 percent. When text and graphics are combined, retention increases to 42 percent.³ So, whether students prefer auditory-sequential or visual-spatial learning, they can still benefit in terms of recall when visual elements are incorporated.

This is not to say that traditional teaching methods rooted in lecture and reading should be jettisoned wholly. Even though visual communication is becoming increasingly important, verbal and written communication are still ubiquitous and essential. Employer surveys frequently cite verbal communication skills as some of the most highly sought-after skills in potential employees. So, it's important to learn visual skills but not at the expense of other skills. This can be accomplished by introducing visual elements in tandem with existing techniques. The lessons in chapters 10 and 11 demonstrate how to do this.

About This Book

Over the years, my work in visual learning and teaching has been inspired by a number of groundbreaking pioneers whose research and ideas formed the bedrock of what is collectively understood today about how humans process information visually. The lessons learned from their work and the work of other researchers have guided many of the ideas and classroom materials I present in this book.

Dr. Jerre Levy, a neuroscientist from the University of Chicago, researched the specialized functions of each hemisphere of the brain, leading to a stronger understanding of

how the two hemispheres collaborate to process visual stimuli. Her work moved us past the old concept of right-brained and left-brained learners. The traditional and dichotomous view of right-brained and left-brained learners is false. We are whole-brained learners with hemispheres and regions of the brain that both specialize and work simultaneously and synergistically depending on the task and the strengths and learning preferences of the learner.⁴ Dr. Howard Gardner, of Harvard University, researched and developed the theory of multiple intelligences and showed how visual-spatial intelligence is naturally advanced in some children and adults. But—barring physical or cognitive impairment—everyone can develop the abilities associated with each intelligence to at least a proficient level.⁵

Professor of psychology Allan Paivio’s dual-coding theory of cognition and literacy development is of special importance. Paivio asserts that we perceive, discriminate, analyze, synthesize, interpret, anticipate, comprehend, compose, imagine, remember, and express ourselves without text as well as with text. Further, dual-coding theory suggests that the integration of visual and verbal modes of expression in a learning context increases engagement, understanding, and retention.⁶

Finally, Robert McKim’s pioneering work on visual thinking described three kinds of visual imagery: images that we see, imagine, and draw. His work closely informed my own model of visual learning, the visual triad model (VTM), which is discussed in greater detail in chapter 1.

My goal is to synthesize the knowledge of these leaders with my own thoughts and present practical, easy-to-use strategies that will help educators become more comfortable with their own visual abilities and introduce these techniques to students.

Visual Learning and Teaching is meant to be an interactive guide. As you flip through the pages and immerse yourself in the chapters, you’ll find recommended activities to exercise your visual literacy skills on the spot. You will want to keep a blank notebook or journal and your favorite writing utensil handy (or a tablet or smartphone with a stylus). This will be your visual learning notebook. In it, you can make marks, doodle, sketch, and illustrate to practice your own visual skills and more closely connect with the material throughout. When you are ready to introduce these skills to your students, you can revisit the same exercises. Each student will need a notebook as well.

Most importantly, this is a resource for you to:

- acquire visual tools to fill students’ visual toolboxes
- integrate visual language and visual literacy across the curriculum
- meet the needs of visual learners
- provide visual learning opportunities for all students across all grade levels and content areas

Using This Book

To help students learn visually, we need to teach visually. Many teachers express anxiety about visual teaching, believing that they aren’t “artistic” enough. The truth is you do not need to be artistic, or even a visual-spatial learner yourself, to learn the skills and strategies of visual teaching.

This book will share proven strategies for building on to your innate visual capacities to enhance your instruction. You'll explore, practice, and implement these strategies throughout each chapter.

To help teachers gain confidence and to further clarify what visual literacy is all about, I've divided the book into three parts to take readers from understanding the foundations of visual literacy, to using visual teaching and learning tools with students, to incorporating visual tools and texts into different areas of the curriculum.

Depending on your comfort level and teaching goals, you might start with a careful read of part one or, alternatively, focus more on the tools and strategies in part two or the curricular applications in part three.

Part One: The Visual Teacher focuses on educators. The goal is to help teachers of all skill levels feel more comfortable with doodling and sketching, core components of visual teaching and learning.

Chapter 1 explains what it means to be a visual teacher and introduces a team of educators who adopted visual teaching techniques into their classrooms. Throughout the book, these educators will talk about their own journeys to becoming visual teachers, share their classroom experiences using visual teaching, and offer insights into how they feel their students have changed in a visual learning environment.

Chapter 2 explains the basic tools required to create meaningful marks—such as the visual alphabet and six essential design elements—and uses key strategies to connect doodling and learning in a memorable way.

Part Two: Visual Tools in the Classroom is filled with tools you can use day to day in your visual classroom. There are explicit instructional strategies with visual and verbal examples that introduce these gateway tools to students.

Chapter 3 offers insight into working with visually adept students and reluctant doodlers. This chapter includes several activities to introduce students to visual tools. The chapter also explores visual note-taking, visual vocabulary flashcards, and graphic organizers that help students put these tools to use.

Chapter 4 covers visual texts including two of the most important texts for classroom use: mind maps and one pagers. Mind maps and one pagers are both single-page formats that use visual and verbal content and are designed to represent knowledge of and information about a central concept or idea.

Chapter 5 contains a primer on informational graphics—such as icons, diagrams, and timelines. They provide readers with a visual explanation without relying on verbal decoding. Infographic posters are discussed as assignments that can be used across the curriculum. These graphics provide building blocks that allow students to communicate visually in a manner that's easy to understand and comprehensive.

Chapter 6 looks at journals and how they can become visually rich tools that can expand learning. Two types of journals are highlighted: life notebooks that document day-to-day activities and prompt personal reflection and learning, and nature journals that aid in enhancing scientific curiosity and study.

Chapter 7 delves into the world of picture books—for many students, picture books are the first visual texts they encounter—and how they can be used to convey more complex and detailed information. There is also a discussion of how comics and graphic novels have become commonplace in classrooms and how these visually rich texts can be interpreted. Resources for incorporating comics and graphic novels into the curriculum are provided.

Chapter 8 discusses the benefits of keeping visual learning portfolios of student work for assessment and reflective purposes. This chapter includes information on how to create assessment rubrics and be selective in which material to include in the portfolio. It also talks about how a well-maintained portfolio can be passed along to future teachers and provide a quick overview of student progress and abilities.

Part Three: Incorporating Visual Tools and Texts into Subject Area Lesson Plans and Curriculum includes content-based chapters that provide instructional strategies, activities, and models for integrating visual teaching and learning within K–8 curriculum across subject areas and grade levels.

Chapter 9 looks at how visual learning and teaching fits into Common Core State Standards and how to design effective, visually rich curriculum.

Chapter 10 provides sample units that integrate visual lessons into the curriculum for grades K–3 focusing on science (botany) and social studies.

Chapter 11 includes sample units that integrate visual lessons into the curriculum for grades 4–8 focusing on math and design, English language arts, and earth science.

All these lessons include the necessary tools to integrate the visual processes and products alongside their verbal counterparts. Each curriculum unit also provides assessments for visual products. Part three wraps up with a glimpse into the future of visual learning and teaching.

Supplemental materials and all the book's reproducible handouts are available in the book's digital content. See page 258 for instructions on how to download.

I hope you find the ideas and strategies within this book valuable and fun as you build your own visual thinking abilities. Further, I hope the visual content in the book inspires you to tap into and build on the visual skills of your students to help increase their retention, motivation, and engagement.

I'm eager to hear about your experiences as you implement visual teaching and learning in your classroom. Feel free to contact me in care of:

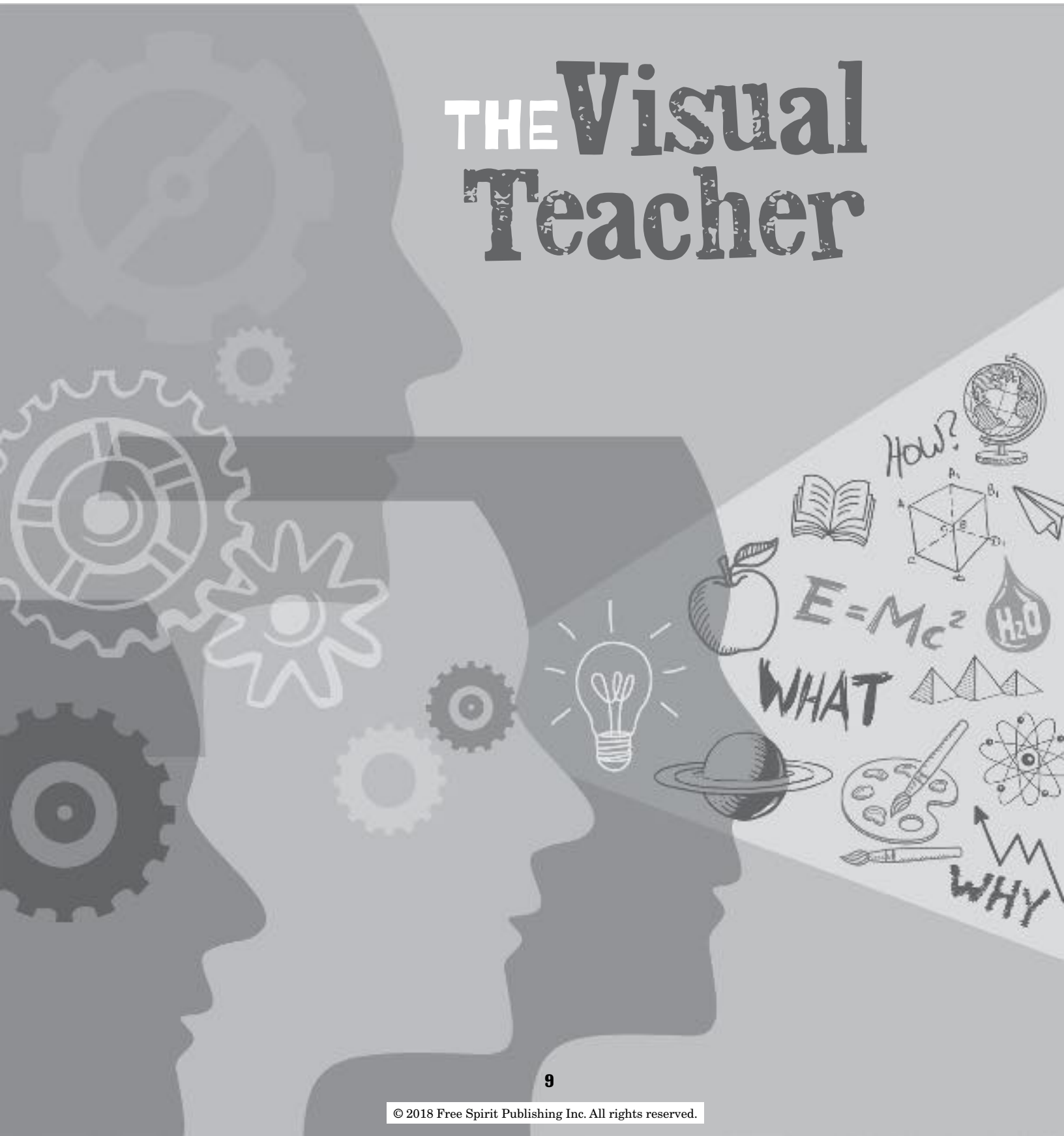
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Let's get ready to explore visual learning and teaching!

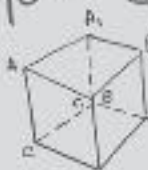
Susan Daniels

PART ONE

THE Visual Teacher



How?



$$E=Mc^2$$



WHAT



WHY



1

CHAPTER

Being a Visual Teacher

All educators have the potential to be visual teachers. For many of us, this means remembering or relearning some of our earlier visual thinking abilities. Looking closely, observing, analyzing images, imagining, and doodling are abilities we typically developed as very young children. Some of these skills dwindle as we progress through school. My passion is to help teachers connect (or, in many cases, reconnect) with their ability to express themselves both visually and verbally and gain comfort and confidence in helping their students engage with their visual abilities.

My goal is to show how you may already be a visual teacher and how you can improve on these skills. This book will share proven strategies for building your innate visual capacities and enhancing your instruction with the children you teach. We'll explore, practice, and implement these strategies throughout each chapter, and I'll share insights from teachers I've been working with over the past few years.

Setting the Scene: Meet the Visual Teachers



You may have doubts about your ability to become a visual teacher. You might say, “But I don’t draw” or have a dozen other reasons to feel skeptical. Don’t quit before we’ve even begun! Let me introduce you to a team of educators who went from novices to seasoned visual teachers. All they needed was a little determination and faith.

I have been collaborating with a team of K–8 teachers to develop visually enriched and integrated curriculum ever since I provided professional development to the entire staff of a K–8 school on differentiated instruction and creativity that included an introduction to visual learning and teaching. A group of teachers expressed interest in learning more about visual instruction. They varied in their teaching experience and their background with using visuals in the classroom. What they shared was curiosity and a desire to expand their visual teaching and learning skills to better meet the needs of their students.

After the principal approved it, we made plans to meet for extended professional development to be held over one week during the summer. The first two days were a workshop during which I provided and modeled instructional strategies for visual learning and teaching. The teachers had time to practice these new strategies and discuss applications for their classrooms. The next three days were spent redesigning

existing curriculum units to integrate both visual and verbal learning.

These newly developed curriculum units were implemented during the next school year. While piloting their curricula for the first time, teachers kept detailed notes of what worked and what they would do differently. We continued to meet for one afternoon on a monthly basis. The teachers piloted their resources and curricula, and we worked on revising the units throughout the year. Let me introduce the team:

Kipp is a young, talented, and tech-savvy kindergarten teacher. He uses his interactive whiteboard with ease, and his students are comfortable expressing themselves in images and words. Kipp was eager to better understand the developmental needs of young children, how to incorporate more explicitly visual instruction in reading and math lessons, and how to structure his classroom as an atelier, or learning studio, for early childhood.

Carol has been teaching kindergarten and first grade for many years. Her classroom has a number of activity stations where children may go to work and create on their own. Carol is very comfortable with hands-on activities and various forms of visual expression. The curriculum that Carol has built over the years is largely project-based with small-group instruction. Her classroom provides a rich selection of materials—markers, pencils, crayons, various papers—that students may use while developing their designs and class projects. Carol came to the professional development with a lot of experience and a great deal of openness to new experiences and strategies.

Jenna is a creative and curious primary grade teacher. She has taught a second-and-third-grade combination class for several years. While she doesn't consider herself an artist, she has always been a strong visual thinker. She supports her students' learning with multiple forms of literacy in the classroom, including numerous visual activities. When first presented with the concept of visual teaching, Jenna said, "But I can't draw." Jenna was self-critical about her abilities to draw until she participated in our summer professional development on visual learning and teaching. Now, Jenna keeps a daily visual journal, and she models that "everyone can doodle" by illustrating her whiteboard work with simple doodles and diagrams.

Martin is a fourth-grade teacher who walks the walk. He is both a talented teacher and a talented artist. In his spare time, Martin sings and acts in operettas. He also designs curriculum with a strong visual emphasis. Though he is not a trained visual artist, Martin expresses himself beautifully through doodling, sketching, and drawing. These are all wonderful qualities for a visual teacher to have. Yet, Martin's talents can be intimidating to students and colleagues. Martin has addressed this by adapting his own visual illustrations in the classroom and by simplifying the methods he uses, while simultaneously scaffolding his students' abilities to express themselves visually.

Toni and Jennie are on the same sixth-and-seventh-grade team. Each teaches students in their looped and self-contained classrooms. Toni and Jennie are experienced, energetic, and passionate teachers. They regularly revise and update their curricula, and more often than not, they collaborate to do so. Toni has had the good fortune to have a classroom parent with visual design experience who has brought many ideas for potential projects, especially related to literature and social studies. Meanwhile, Jennie has been dedicated to differentiating instruction to build on students' strengths. Jennie has had particular interest in the value of illustrated science notebooks and students' life notebooks. (See page 114 for more on life notebooks.) Because they teach adolescents,

These curriculum units are featured in chapters 10 and 11 to use as models or to build upon for your own use.



Kipp



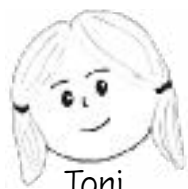
Carol



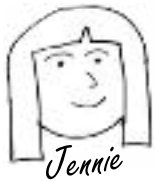
Jenna



Martin



Toni



both teachers recognize that many students work best when they have a personal connection to their learning, engage in self-reflection, and can vividly see their role in the classroom and the larger community.

Becoming a Stronger Visual Teacher

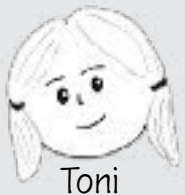
I've been working for over twenty years to help teachers understand the value of visual learning and become stronger teachers. I am heartened and fueled by the feedback I get from teachers all over the country who have embraced their visual learning and teaching methods. Some of the most compelling and telling responses I've received reflect significant transformation by teachers.

For example, Jenna's first response—"I can't draw"—became:



"Thinking about visual teaching and learning has helped me see my own practice in a new way. I am a very verbal person, and words are my comfort zone. By practicing drawing and doodling, I have become more confident in expressing knowledge in a more visual way. But, more importantly, I have been able to incorporate visual learning into my classroom in ways that I wasn't before. The simple question, 'How could you doodle that?' has opened up a world of possibilities for me and my students."

And when I asked Toni about her experience:



"When I first started working with visual literacy, I shared with my class the very basics of doodling as learning. Some very simple ideas and concepts were all it took to change how my students expressed themselves. Gone were text heavy posters that simply regurgitated information. In their place were rich documents that expressed deeper understandings with color, pictures, and recomposed text that clearly had meaning for the student creators."

I have the good fortune of designing and leading professional development workshops that include rich visual resources, are highly interactive, and provide numerous opportunities for teachers to experience visual learning and teaching in a hands-on way. Part of this process involves helping teachers remember how doodling, drawing, and diagramming were natural instincts in early childhood. In early childhood and the primary grades, most of us enjoyed hands-on and eyes-on practices that incorporated strong visual components. As we grew older, into middle school and beyond, these practices were replaced with verbally loaded textbooks, classroom talks and lectures, and verbally dominated assessment practices. How sad that we lose the inclination and the confidence to pick up a pen or pencil—or tablet or smartphone with a stylus—for illustration. And how unfortunate especially when we live in a visually prolific culture.

Fortunately, many teachers recognize (or are rethinking) the value of visual teaching and learning. Some of you may have found visual modes of expression through hobbies, crafts, or the publication of books designed for business that extol the virtues of doodling. Or perhaps you have discovered online teaching tools like TeacherTube, Moodle, Edmodo, and the like. Some of you may still feel disconnected and, like the teacher at the beginning of the chapter, are stuck on "But, I can't draw." Well, this book has emerged

from years of working with teachers just like you, from every grade and subject area across the country. So, let's shift our focus from the classroom to you—the classroom teacher, the classroom designer, and the curator of visual learning experiences.

The Five Ws

How do we identify a visual teacher? How do we know a visual teacher when we see one? Let's look at the basic five Ws: Who? What? When? Where? Why?

Who Is the Visual Teacher?

Teachers who are striving to increase their understandings of and apply instructional strategies that increase students' visual literacy—their capacity for decoding, imagining, and encoding visual images—are visual teachers. The teachers you have already been introduced to—Kipp, Carol, Jenna, Martin, Toni, and Jennie—did not come to visual teaching and learning with specific skill sets or prior training. What they had in common was a recognition of the value of visual teaching and learning along with a desire to learn more and reach their students. As stated at the top of this chapter, there is a visual teacher in each of us.

What Does a Visual Teacher Do?

Visual teachers optimize learning for all students by integrating visual teaching and learning across the curriculum. They understand that visual teaching and learning activates students' brains more fully than when verbal modes are used alone. They provide opportunities—work stations, visual note-taking, mind maps, one pagers—to decode, imagine, and encode visual images in all subject areas. They observe the progress that students make in visually representing their learning. They model visual learning and teaching by sharing and using their own visual representations. They doodle in front of the class. In short, they actively encourage students to combine images and text to share ideas more expressively.

When and Where Does a Visual Teacher Use the Skills of Visual Literacy?

When we become more aware of visual teaching and learning, we begin to see opportunities for incorporating visual strategies into our classrooms and curricula.

- Visual learning and teaching helps students access and share prior knowledge, develop vocabulary, learn new concepts, brainstorm ideas, and build higher-order thinking.
- Visual thinking helps students see connections, patterns, and relationships, and also helps the development and communication of ideas.

Spelling, vocabulary, language arts, math, science, technology, and social studies all lend themselves to instruction with both visual and verbal content. Once we become more aware of and deliberate in the use of visual thinking approaches, it is something we take with us everywhere. As Jenna points out on the next page, visual thinking is not reserved for the classroom alone.



“Not only am I incorporating visual teaching and learning within my classroom, I am becoming more aware of my visual surroundings: Noticing street signs and their icons, looking more closely at the visual images in magazines/TV/mail/books. Daily doodles are now a part of my life. The grocery list is an explosion of icons, and while planning for teaching, I illustrate with simple doodles too. I am becoming more confident in my own visual skills, and although it does take some extra time, I feel it is well worth it for motivating and engaging the learners in my classroom.”

Why Is It Important to Be a Visual Teacher?

Visual communication is too important in the 21st century to leave its learning to chance. Unfortunately, teachers receive very little, if any, explicit instruction in how to teach with visual language and texts. To learn useful strategies for explicit visual learning and teaching, we need to fully understand visual literacy.

Teachers change and shape lives. Strong teachers seek out resources and strategies to support all learners. Visually aware teachers strive to incorporate visual thinking. Children learn in different ways, and all of our students are processing more and more information and input from visual sources each and every day. We need to bring this into our classrooms by integrating both visual and verbal literacy throughout the school day. Most of our instruction is already verbally based, so now it is up to us to meaningfully integrate visual learning. We do this by embracing visual literacy and engaging in explicit visual instruction.

Visual Literacy

Timothy Gangwer, a teacher and an author who specializes in visual teaching and learning, defines visual literacy as the ability to understand nonlinguistic communication made with visual imagery and the ability to use visual imagery to communicate. In his book *Visual Impact, Visual Teaching*, Gangwer states that individuals become visually literate by means of visual encoding—expressing thoughts and ideas in visual form—and visual decoding—translating the content and meaning of visual imagery.⁷

My own definition of visual literacy includes interpretation and imagination, nestled between decoding and encoding. So, from my perspective, visual literacy is:

- Decoding: the ability to understand and translate communications made with visual imagery
- Imagining: the ability to create, interpret, and manipulate mental models of visual imagery
- Encoding: the ability to express thoughts and ideas by using visual images to communicate

When teachers embrace visual literacy, classroom instruction is shaped by—and students are actively engaged in—the processes of decoding, imagining, and encoding visual texts.

Visual Thinking, Teaching, and Learning

When I first came to the study of visual thinking and creativity over twenty years ago, I was immediately drawn to the work of Robert McKim. McKim, a professor and designer, wrote an early strategy manual for thinking visually titled *Thinking Visually* (Yes, really!) in which he outlined three kinds of visual imagery that are essential to visual thinking.

1. Images that we see.
2. Images that we imagine.
3. Images that we draw.

Now, this may not seem revolutionary, but in 1973 and 1990, the years of the first and second versions of his book, little had been written about visual thinking. McKim's work first defined and described the processes of visual thinking and then provided activities for practice.⁸

I've built on his work and developed what I call a visual triad model (VTM) of visual thinking, teaching, and learning. My VTM is a combination of my own definition of visual literacy and the writings of McKim.

1. Images that we see. (Decode)
2. Images that we imagine. (Imagine)
3. Images that we depict. (Encode)

In my model, I changed the last word from *draw* to *depict*. It may seem like a small change, but this is an important distinction when taking into account how many people immediately believe visual thinking requires the ability to draw. There are so many other ways to visually represent our thoughts, ideas, and feelings. I felt this idea was best captured by *depict*. I encourage doodling as the most generally accessible means to depict ideas. But, we could also make collages, take photos, create digital images, and more. My experience has been that the majority of students enjoy working with simple depictions or doodles. Yet, when learners try different forms of visual expression, they benefit by having opportunities to work in the mode they are most comfortable with, or perhaps, the mode they most enjoy.

Visual Triad Model (VTM)

The VTM provides a visual schematic for how the processes of seeing, imagining, and depicting interact to support the visual decoding, imagination, and encoding of our students. In **figure 1.1**, the actions listed under see, imagine, and depict describe visually based learning and teaching strategies as applied in the classroom. These lists are an excellent resource for developing visually based learning objectives. The questions that follow provide jumping off points for discussion with students about their visual experiences and their visual products.

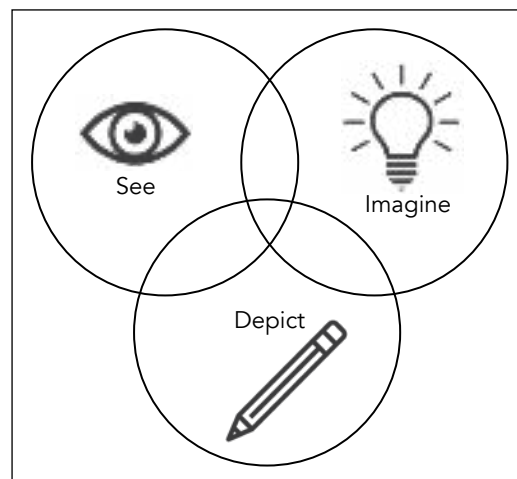


FIG. 1.1 VISUAL TRIAD MODEL BREAKDOWN

	See	Imagine	Depict
Actions	<p><i>Decode</i></p> <p>Look View Perceive Observe Inspect Examine Identify Analyze Contemplate Investigate Evaluate</p>	<p><i>Manipulate mental models</i></p> <p>Picture Visualize View in mind's eye Envision Conceptualize Interpret Design Foresee Inspire Invent Dream</p>	<p><i>Encode</i></p> <p>Doodle/draw/diagram Represent Reproduce Chronicle Communicate Illustrate Display Model/map Compose/recompose Express Create</p>
Questions	<p>What did you see?</p> <p>What is there, and what isn't there?</p> <p>How are you able to think about parts and wholes about what you see?</p> <p>What insights have you had about your observations?</p> <p>What did you discover in your observation?</p>	<p>How have you used mental images in your thinking?</p> <p>What did you discover?</p> <p>How have you manipulated your mental images to develop a new idea?</p> <p>What thoughts have you used to express what you have imagined?</p>	<p>How have you depicted an idea, a concept, or a feeling visually?</p> <p>How are you able to use simple methods of depiction—especially doodling—to depict your thoughts and convey meaning?</p> <p>How can you elaborate on your depictions to convey a more detailed meaning?</p> <p>What can you do to help a viewer understand your intended meaning?</p>

Before we go into exactly how you can use these lists to write visual learning objectives, let's think about this model for a moment, with a few examples from an educator's perspective.

1. What is significant about the images students see?

In our visual world, we are inundated by images—those we choose to see as well as those thrust in our field of vision (advertisements, pop-ups, billboard signs, commercials, and so on). Given the amount of visual information we take in on a daily—not to mention hourly—basis, we would overload if we didn't find a way to distinguish useful images from tertiary images.

Learning to identify and decode visual communications takes practice. The more practice students have with "seeing" images, the more they will start trusting their ability to see with a purpose and make viewing a more intentional act—something they actively do and not something they don't have control over.

2. What is significant about the images students imagine?

Imagination is a birthright of being human. We can conceive of possibilities not yet realized and manipulate them internally. This is an extraordinary capacity and one that is evident even in very young children. Toddlers play with pots, pans, bowls, and dishes as drums, hats, and building supplies. Socks become puppets with their own possibilities, and if you observe preschool play, you will hear “Okay, you’re the mommy, and I’m the baby, and this teddy bear is really our pet dog.” Imagination is important at all ages as students write original short stories, design projects in social studies, and find problems to solve in environmental science. The ability to imagine and interpret thoughts, ideas, concepts, scenes, stories, and more enables learning and undergirds all forms of creativity.

3. What is significant about the images students depict?

The images we depict allow us the satisfaction of seeing the contents of our thoughts and imaginations and the ability to share these inner experiences with others through visual communication. Again, this is fundamental to learning and creativity. Various forms of depiction or picture writing—integrating images and text (more on that later)—allow students to show what they know in varied ways with numerous forms of media. Presentations in college, career, and civic life require visual representation of ideas, designs, and data analysis. Creating and displaying knowledge, information, and findings of research are also necessary for preparing students for future career paths.

Practical Applications of the Visual Triad Model (VTM)

So, how does the VTM help us write visual learning objectives? Let’s consider an example. At different times, we emphasize a variety of mental processes based on our objectives. For example, in the primary grades, picture books are often part of the English language arts curriculum. As we read through the text, we might ask students to view the pictures while they listen. Our objectives might be that:

- Students **view** illustrations in picture books while being read to.
- Students describe what they **see**, including characters, setting, and action.
- Students **analyze** illustrations in picture books and predict what might come next.

After which we might have students use their imaginations to create their own visual representations. These objectives might include:

- Students will **imagine** themselves as a character in the story.
- Students will **draw** a picture placing themselves in the setting.

You’ll see the VTM in application as you study the activities and lessons throughout this book.

“Teaching the very young child can be challenging as most have not mastered basic literacy and mathematical skills. Using visual strategies—having students observe their visual world, chronicle their findings, and express their interpretation through words and images—allows students another avenue in which to express themselves. Incorporating visual strategies allows me the chance to provide appropriate learning tasks that challenge students at their level.”

