



**Welcome!** This document will provide you with information on the twelve modules developed through this National Science Foundation (NSF) project. Each module includes a wealth of supporting instructional materials. If you are interested in incorporating some or all of the DVL modules into your classes, we welcome you to do so. In order to download the modules and associated Instructor Guides, you will first need to request a user name and password from the DVL Team at [dvl@domail.maricopa.edu](mailto:dvl@domail.maricopa.edu). After receiving your user name and password, you can follow the download instructions found at: <http://dvl.mc.maricopa.edu/>

## DVL Overview

A modern, literate person is one who is not only able to read and write but is educated in all the basic means necessary to thrive in a digital, networked world.

An important aspect of this general literacy is a *digital visual literacy*, the ability to critically analyze visual materials, create effective visual communications, and make judgments and decisions using visual representations of thoughts and ideas.

Digital visual literacy is a set of skills that enable students to function in an increasingly digital and visual workplace. These skills are based on concepts from a range of established disciplines but are not simply a collection of modules from courses in, say, computer science and graphic design; they build on basic concepts in such disciplines but are modified with awareness of related skills in other disciplines. The basic DVL skills are informed by original sources in single disciplines and interdisciplinary projects. Ideally, students should learn DVL skills in authentic contexts, such as learning how to make a business presentation, rather than study them solely in the abstract.

One of the challenges of defining a field of DVL and describing its contents is that research on the visual has been carried on in many fields, but without, until recently, much cross-disciplinary influence. Imagine, if you would, that mathematics was taught and conceptualized very differently in different fields: “Engineering math” might have different notations, axioms, methods of proving things and goals than “aesthetic math” and both might seem foreign to, say, a group of number theorists. The groups wouldn’t be able to leverage each others’ knowledge because it would be so hard to translate between them. A student seeking to be mathematically literate would have to undertake studies in several academic departments to get any sense of a larger mathematical picture. There wouldn’t be any “basic math” to teach in an introductory course because the “basics” would be different depending on the field the student was going into.

The field of DVL is like this today. Although one needs access to concepts that originate in several different fields, there are few resources for non-experts that relate a field’s concepts to DVL. Terminology in media theory and the computer science of computer graphics, for example, fall into two circles that scarcely overlap at

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all. In addition to terms incomprehensible to one group or the other, often the same words mean different things in different fields. The key phrase “computer graphics,” for instance, means something quite different to a computer scientist than to a graphic designer.

Art and design, and often visual literacy courses, tend toward a studio-based approach that includes drawing and compositional skills and an extensive vocabulary to describe images (line, form, color, etc.). Media and culture theory tend toward highly politicized views of image meaning and purpose and often draw on ideas in philosophy, economics, and linguistics. Vision science, an increasingly vital part of the “brain sciences,” has progressed dramatically in the past 50 years, in part through trying to teach computers to “see.” This research is directly applicable to creating and interpreting images, especially those made on the computer, but, once again, the underlying concepts and terminology are completely different from the fields mentioned before. A novice cannot casually read a research paper in vision science.

### **IL1 - Introduction to Digital Visual Literacy**

This module asks "what is DVL?" It motivates the topic by exploring the profound impact of computer imagery in our lives and the resulting need for Digital Visual Literacy skills. Students will also learn how DVL integrates knowledge from many different fields and how it is different from other literacies (such as IT literacy). Finally, the module introduces DVL categories and the modules funded by the National Science Foundation grant.

### **IL2 - Practical Visual Copyright Skills**

When students enter the IT workplace, they routinely need to incorporate images into presentations, web sites, and other documents. Images are easy to find on the Web and from other sources, but cannot be used indiscriminately. Just as students must learn to research and reference textual sources, they must also properly source, reference, and, if necessary, license images that they plan to use in documents to be distributed via print or online. In addition, students may well be creating their own original digital visual materials and need to understand how their work is protected from misuse by others.

In this module, students learn a number of practical skills for resolving common workplace challenges involving visual copyright issues. In doing so, students explore how copyright law strives to balance the monetary value of visual materials with the need to share and communicate ideas visually. The initial presentation covers issues such as determining fair use, how to license images, and finding and assessing the copyright status of images created by others. A website is also available, with further practice activities, for building these skills.

### **IL3 - Visual Rhetoric for Blogs**

The persuasive essay is a fundamental part of textual literacy. Today’s “essays” must often include visual elements that generally originate from digital environments but may include scanned non-digital materials. This module addresses the need to be as persuasive with digital images as with text and to use the two together to maximize the power of one’s argument. The focus is on persuasive “writing” in a digital, networked, temporarily responsive (if not actually real-time) context by creating Blogs on issues of personal interest. Additional “real-time” aspects include using cell phone cameras to upload images and comment on events as they occur.

This module supports the DVL areas of Communications and Cultural Context. Students learn how to create a Blog and use digital images to communicate effectively. The Blogging context of this module introduces concepts in social computing, including social protocols of public and private visual communication.

**IL4 - Visual Dialog in ECommerce (Office 2003)**

Web-based e-commerce depends in many ways on visual computing. Obviously, images of products are essential for customer decision-making. The professionalism of images in e-commerce sites varies, but most large corporations employ art directors, photographer, and graphic designers to create and populate their web sites. Product images have gone from small pictures replicating (although in much lower resolution) catalog images to zoom-able and often multi-view images. (And many web sites (including Amazon.com) lost money for years before building up critical mass of users and refining transaction processes.)

The role of visual computing in attracting customers has recently reached a new level with the ability to have a visual dialog with customers by allowing customer image upload. Amazon.com has been pioneering this new feature. Innovative uses of textual dialog (such as professional and user reviews of products and services, product suggestions, wish lists, recommendation lists, etc.) have helped to define online marketplaces. We believe that visual dialog will have similar profound impact on how we shop and interact online.

This module supports the Commerce area of DVL by introducing students to the concept of an “image economy” and exploring the value of images in terms of the students’ desire to purchase a product based on site- and customer-supplied visuals.

**IL5 – Graphics Literacy using MS-Paint**

The computer has revolutionized the manner in which graphic art is created. It has vastly changed the manner in which art-copy is produced for the advertising and publishing industries. A wealth of information today is received in a digital, visual format. Much of what is learned is simply *absorbed* by looking at graphic images.

This module is designed to promote student awareness as to the technology and talent involved in creating computer graphics. A further intent is to demonstrate that graphics are easily obtainable and that persons other than the original creators may modify them. This of course, might raise issues of copyright infringement.

**IL6 - 3D Graphics using the Graphics Teaching Tool**

This module introduces some basic technical concepts in 3D graphics using the Graphics Teaching Tool (GTT). Basic terms and 3D processes are introduced and then applied using the GTT. Students will also explore Web sites in which 3D graphics are used in the business world to show products and processes.

**IL7 - Visual Display of Information using Word (Office 2003)**

A Word document is not just about the content of the text: it includes that way text looks (which helps to convey the content) and the use of images to enhance the communication.

In this module students gain awareness of the role of design and imagery and learn that it is important to consider even in Word processing software. They then learn to choose effective visuals to complement their text and to identify and apply basic design and type guidelines.

**IL8 - Visual Display of Information using PowerPoint (Office 2003)**

Presentation software is ubiquitous in today’s IT/knowledge workplaces, from corporations to the health and legal industries and beyond. Unfortunately, many presentations are not nearly as effective as they could be, in part because their creators do not fully appreciate the visual aspects of the medium. In this module students are shown the vital role of design in creating an effective PowerPoint presentation. They learn how to use PowerPoint’s graphics tools to create effective visual communication.

This module supports the Communications area of DVL. Students learn basic design and typographic guidelines

and how to apply them a typical presentation program. These introductory-level skills are essential in virtually any IT/knowledge-work field.

#### **IL9 - Influencing Decisions with Charts** (Office 2003)

It is especially important for students who plan to enter the business world to recognize the need to run “what if” scenarios with charts and graphs and to present important business information in visual formats so that decision makers are able to get the “big picture” quickly, with a minimum expenditure of time and effort.

This module helps students learn how to analyze and interpret numeric data using charts and how to select the appropriate type of chart in a standard spreadsheet program, MS Excel. Students also learn how to identify misleading uses of charts.

This module supports the Communications, Commerce, and Cultural Context areas of DVL. It’s chief focus is optimal numerical information visualization. The module also explores cultural and commerce issues in its discussions of how charts can inform many types of decisions for better or worse.

#### **IL10 - Visual Display of Information using Word** (Office 2007)

A Word document is not just about the content of the text: it includes that way text looks (which helps to convey the content) and the use of images to enhance the communication.

In this module students gain awareness of the role of design and imagery and learn that it is important to consider even in Word processing software.

Students will learn to identify and apply basic design and type guidelines to documents created using Word 2007. They learn to use Word 2007 features including paragraph styles and document themes. They learn to use professional typographical features in Word 2007 and to avoid features which result in unprofessional visual results. They learn to choose effective visuals to complement their text while observing copyright law.

#### **IL11 - Visual Display of Information using PowerPoint** (Office 2007)

Presentation software is ubiquitous in today’s IT/knowledge workplaces, from corporations to the health and legal industries and beyond. Unfortunately, many presentations are not nearly as effective as they could be, in part because their creators do not fully appreciate the visual aspects of the medium. In this module students are shown the vital role of design in creating an effective presentation using PowerPoint 2007. They learn principles of visual design and how to use tools and features in PowerPoint 2007 to create effective visual communication.

This module supports the Communications area of DVL. Students learn basic design and typographic guidelines and how to apply them in a typical presentation program. These introductory-level skills are essential in virtually any IT/knowledge-work field.

#### **IL12 - Influencing Decisions with Charts** (Office 2007)

It is especially important for students who plan to enter the business world to recognize the need to run “what if” scenarios with charts and graphs and to present important business information in visual formats so that decision makers are able to get the “big picture” quickly, with a minimum expenditure of time and effort.

This module helps students learn how to analyze and interpret numeric data using charts and how to select the appropriate type of chart in a standard spreadsheet program, MS Excel 2007. Students also learn how to identify misleading uses of charts. This module supports the Communications, Commerce, and Cultural Context areas of DVL. Its chief focus is optimal numerical information visualization. The module also explores cultural and commerce issues in its discussions of how charts can inform many types of decisions for better or worse.