# Using Digital Photography to Promote Learning

W eb-based education pioneer Tom March says that in an age of instant media gratification, learning experiences must be "real, rich, and relevant."[1] Yet many of today's classrooms do not function much differently than those a hundred years ago. Education has been primarily text-based for the past several centuries, but the world is changing from text-based to image-based.

Teachers complain about unmotivated, unengaged students; but Marc Prensky insists that students "*do* know what engagement is: Outside school, they are fully engaged by their 21st century digital lives."[2] Students love being immersed in a sea of images and information. Eric Jensen notes that "the brain can register more than 36,000 images per hour . . . [and the] eyes can absorb thirty million bits of information per second."[3]

### Instructional Strategies

It's a big challenge to meet students' changing needs by incorporating technology into the curriculum in meaningful ways; but the good news is there are many exciting ways to do it. However, all technology projects need to be built on a solid pedagogical foundation.

### Bloom's Taxonomy

Bloom's Cognitive Taxonomy[4] is a familiar construct to help teachers develop a bal-

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ance of *lower-order* and *higher-order thinking skills*. While both categories are needed, the lower-order skills are often emphasized to the neglect of higher-order skills. A recent revision of Bloom's Taxonomy lists lower-order thinking skills as remembering, understanding, and applying.[5] Activities that strengthen these skills lay a foundation for the higher-order thinking skills of analyzing, evaluating, and creating.

Teachers and students can use digital photography in a wide variety of ways. To enhance students' lower-order thinking skills, teachers can use projects such as vocabulary flash cards, a photo calendar for service-learning activities, or posters and greeting cards. Although these activities are important, educational technology activities too often stay at this level, leaving powerful learning techniques untapped.

Teachers can design digital photography projects that engage students in unique ways and develop higher-order thinking skills. In these projects, students work through a framework to acquire photos for their projects, analyze them, create new products, and communicate or share what they have made and learned with others. As teachers connect real-life projects with the curriculum, students will be motivated to learn.

**BY MARILYN EGGERS**

## Visual Literacy

Many researchers including Stokes agree that visual literacy is a critical skill for today's students.[6] The North Central Regional Educational Laboratory[7] defines visual literacy as "the ability to interpret, use, appreciate, and create images and video using both conventional and 21st century media in ways that advance thinking, decision making, communication, and learning."[8] It has always been a challenge for teachers to develop visual literacy; however, now with the American public education system more and more focused on high-stakes testing, the use of modern tools and skills to promote critical thinking and visual literacy is becoming more important than ever. The pressure teachers feel to prepare their students for these tests may cause them to neglect visual literacy in their classrooms without realizing they can do both.

## Cross-Disciplinary Framework for Digital Photography

Digital cameras now outsell film cameras in the United States and are becoming a "ubiquitous technology throughout society."[9] Students have video iPods, cell phones with cameras, and digital cameras. With so much equipment available, educators can creatively use these technologies to promote learning in the classroom. The International Society for Technology in Education (ISTE)[10] encourages educators to employ a four-step, cross-disciplinary framework:[11]

*Teachers can design digital photography projects that engage students in unique ways and develop higher-order thinking skills.*

• *Acquire* images;

• *Analyze* images;

• *Create* instructional activities and products with images;

• *Communicate and disseminate* products and outcomes.

This framework can be used at any grade level and in any subject. The four steps do not necessarily need to be done in order; once students get to the last step of Communication, they may need to go back to the Acquire or Analyze steps in order to complete the Communication process.

**Acquire**

Acquiring images includes having students taking their own photographs. They can take photos to document class-



Students can use digital cameras to illustrate projects that will be included in their portfolios.

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## Sidebar 1: **How to Develop a Project**∗

**Step 1: Create Foundations** – Make sure students have a good foundation of knowledge about the topic before they begin. Discuss resources and copyright issues.

**Step 2: Set Expectations** – Develop goals, types of products to create, a list of technology tools, checklists, and rubrics to help students understand what is expected for the project.

**Step 3: Form Teams** – Create heterogeneous groups, and develop clear roles to foster positive interdependence among team members.†

**Step 4: Brainstorm Ideas** – Have students brainstorm ideas that address essential questions in one way or another.

**Step 5: Develop the Vision** – Have students create a project vision that includes goals and how they will develop the project for their target audience.

**Step 6: Create a Storyboard** – Have students develop a storyboard or "roadmap" describing how they will develop each part of the project; it should be approved before implementation.

**Step 7: Build the Project** – Have students work independently to build their project following their storyboard roadmap.

**Step 8: Present the Project** – Have students present their project and ask the audience for feedback.

**Step 9: Assess the Project and Process** – Do both formative assessment throughout the project and summative assessment at the end. Require students to do a self-assessment using the project rubric.

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∗ Find full descriptions for each step at Tech4Learning: http://www.myt4l.com/index.php?v=pl&page_ac=view&type=learning&catid=53.

† For more help on working with cooperative groups, see Cooperative Learning: http://college.hmco.com/education/pbl/tc/coop.html and http://www.netc.org/focus/strategies/coop.php.

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## Sidebar 2: **Digital Photography Resource Website**

Technology changes rapidly, as new project and lesson ideas are posted on the Web every day; therefore, a supporting Website for this article, "Digital Photography in the K-12 Classroom," has been provided to give busy educators updated resources on ways to use digital photography to promote learning. It includes all of the resources mentioned in this article plus others on how to develop digital photography technical skills, instructional strategies, and curriculum projects.

**Digital Photography in the K-12 Classroom**

http://www.avln.org/digphoto

room learning experiences such as experiments and outcomes, collections they have made (including leaves and flowers), tell a story, and so on. This step may also include students' finding photos from many rich Web collections with royalty-free photos that can be used in student projects and research. One example is the Library of Congress American Memory site,[12] which has a vast collection of primary

*Projects with digital images can communicate far beyond the classroom.*

Digital cameras allow students to make "virtual collections" of butterflies, birds, flowers, or leaves for study and analysis.

Students can take photographs to document the outcomes of science experiments.

# Sidebar 3: **Digital Photography Activities and Projects**

| Activity | Discipline(s) | Grades | Description |
|---|---|---|---|
| **Collections** | | | |
| Specimen Collections | Biology, Science | All | Students make digital photo specimen collections (flowers, leaves, rocks, butterflies, etc.) in the field for further study and analysis in the classroom. Photo collections can be shared out of class. Digital photography is an ecologically friendly way for students to develop collections. |
| Visual Databases | All | All | Students create visual databases using their photo collections. The teacher should create fields that fit the topic of the collection so students can search for specific photos or groups of photos that meet search criteria. |
| Photo Books | All | All | Photo collections can be published in books with commentary or used to illustrate books that explain and teach in any subject area. |
| Posters | All | All | Students can use photos and type to develop posters. Large posters can be printed at Kinko's or other copy companies or by online photo services.[13] |
| Photo Websites | All | 7-12 | Older students can create Websites that share what they have learned, including all or part of their photo collections. |
| Documentary-Style Movies | | | Students can create documentary-style movies with their photo collections and voice overlays. Movies can be shared on CDs or DVDs or posted on the Web. |
| **Digital Storytelling** | | | |
| Visual Read-Alouds[14] | All | All | Using images, students show what a literary passage means to them while reading the passage in a voice overlay. This activity can strengthen reading skills for all students but especially for those who are not yet able to visualize what they read. |
| Visual Literacy Narratives[15] | All | All | Similar to Read-Alouds, Visual Literacy Narratives focus on an individual's story. They can, however, be adapted to interpret and present other concepts such as photosynthesis, the effects of acid rain, the problem of homelessness, and other processes or issues. |
| Photo Books | All | All | Students illustrate their writing with photos. Students can create sequencing books,[16] storybooks, counting books, historical narratives, etc. Every field trip is a photo opportunity. Extend the experience by having the students create a class photo book, including their written memories or analytical comments. |
| Spiritual Symbols | Bible/Religion | All | Students take pictures that represent some aspect of the spiritual life. They can explain each photo with overlay voiceovers and music in a slide show or publish in a photo book with written narrative. |
| Modern Parables | Bible/Religion | All | Students develop a modern version of a parable, Bible story, or concept in photos. These could be photo books with narratives or presentations with voice overlays. |
| Music Videos | All | | Students develop their own music videos using still and/or video images that match the music they have written. This is a good way to develop musical intelligence.[17] |
| Story Posters | All | All | Students develop collage posters that tell a story or select a single photo that converys an idea in a powerful way. Poster titles and/or captions can help viewers to make learning connections to the content and message. |

document photographs on a variety of topics such as historical photos of presidents, cities, technology, wars, culture, and much more.

### Analyze

Analysis is a crucial part of critical thinking. During this step, students examine photos or groups of photos to learn something that may not be obvious to the casual observer. This analysis should combine the context of the curriculum content and the students' knowledge base. Students can develop classification systems for photo collections or use existing tools to analyze historical photos, such as those that are available at the Library of Congress American Memory Learning Page.[18] These collections offer tips on how to use the materials to promote learning. In addition, photos of buildings and bridges can be analyzed mathematically with tools such as Geometer's Sketchpad. Older students can identify and measure angles and arches; while younger students can identify basic shapes.

### Create

Traditionally, classroom assignments have involved the production of written documents, but now, visual projects can be included as well. Students can create digital stories or photo essays using a variety of computer programs. Using free or affordable software, they can develop sophisticated documentaries that combine professional visual effects with recorded narrative voiceovers. Even young students

can develop meaningful slideshows using age-appropriate software.

## Communicate and Disseminate

Projects with digital images can communicate far beyond the classroom. They can be shared face to face with other classrooms, schools, and community organizations; or be posted on the Web either to a select group in a secure area or open to the world. Students can share what they have learned in electronic portfolios filled not only with traditional text documents, but also with photos of 3-D projects, physical skills or events, and digital photo projects. The use of electronic collaboration tools and e-mail can encourage collaboration among students and teachers.

## Activities and Projects

Developing technology-integrated projects is an important part of a 21st-century curriculum. But teachers often feel baffled about how to begin. Tech4Learning recom-

mends a nine-step process that covers the essential elements for success (see Sidebar 1). When students learn the project steps, they will know what to expect. This encourages self-directed learning and develops life skills.

## Project Design and Assessment

When developing technology-integrated curriculum projects, teachers should plan the *end* before the *beginning* and *middle*. First, they should decide what their students will do to demonstrate what they have learned. Using the Backward Design[19] process helps ensure that, from its inception, the project focuses on stated learning goals. Starting at the end means developing the assessment first.

It can be challenging to decide whether to assess the content of the project or the technical aspects, or both. Balance can be achieved by developing a project rubric, which allows teachers to focus both on key curriculum objectives and required technical features. This also helps ensure that the projects are assessed objectively and fairly. Without

rubrics, it is possible to be dazzled by technological features of projects that do not fulfill content requirements. Rubistar[20] is a free online tool that busy educators can use to develop meaningful rubrics. This powerful Web tool includes rubric examples for technology-enhanced projects that teachers can modify for their own use.

In addition, rubrics offer guidance to students throughout a project by making it clear how they will be assessed at the end. This knowledge makes them feel more confident that they can complete a project successfully.

### Activities and Projects Examples

Students feel comfortable in a visual world, so they find it both natural and exciting to use digital images in their school work. A brief sample of suggested activities is included in Sidebar 3, but the supporting Website for this article (see Sidebar 2) has many more activity and project descriptions and lesson plans.

*Collections.* Students enjoy collecting things, so assembling meaningful digital images can be the beginning of many valuable activities and projects. Most digital image

*When developing technology-integrated curriculum projects, teachers should plan the end before the beginning and middle.*

collections can be used for study and analysis and later published to audiences such as other classes, community groups, or churches.

*Digital Storytelling.* A powerful way to use digital images is for storytelling, where students share stories containing digital images and their own narrative voiceovers. Ohler encourages teachers to tie digital storytelling projects to the curriculum and to use them "to strengthen students' critical thinking, report writing, and media literacy skills. In creating and presenting digital stories. . .educators [should] think in terms of a continuum anchored by 'story' on one end and 'analytical report' on the other, and to aim for the middle."[21]

This balanced approach will keep teachers from being dazzled by special effects that lack solid content.

Teachers should encourage students to make a difference in the world around them with their projects. It is easy for students to entertain and "wow" people with their technical expertise, but teachers need to challenge them to pick project topics that enable them to use their knowledge and expertise to make the world a better place. They might select a community or environmental issue or other meaningful

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project to research and share. Or they could work with the local church to develop a series of thoughtful visual presentations for the worship service. The possibilities of linking learning to the students' worlds are endless.

### Conclusion

As we learn more about how 21st-century students learn, educators must modify their instructional strategies to better meet pupils' learning needs. Visual literacy is one of the needs that digital photography can help to address. Further, designing curriculum projects that expand beyond the

classroom to the school, home, church, community, and world is an effective way for teachers to make education "real, rich, and relevant."[22] Promoting a sense of mission and service through curriculum projects will help students to reach beyond themselves to use their growing knowledge and developing technical skills to be a blessing to others.

Challenge: What will you do with digital photography to promote learning, service, and mission in your classroom? ✎

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NOTES AND REFERENCES

1. Tom March, "The New WWW: Whatever, Whenever, Wherever," *Educational Leadership* 63:4 (December 2005/January 2006), p. 14.

2. Marc Prensky, "Listen to the Natives," *Educational Leadership* 63:4 (December 2005/January 2006), p. 11.

3. Eric P. Jensen, *Brain Compatible Strategies: Hundreds of Easy-to-Use, Brain-Compatible Activities That Boost Attention, Motivation, Learning, and Achievement* (San Diego, Calif.: The Brain Store, 2004), p. 18.

4. See http://www.learningandteaching.info/learning/bloomtax.htm.

5. See http://www.apa.org/ed/new_blooms.html and http://coe.sdsu.edu/eet/Articles/bloomrev/index.htm.

6. Suzanne Stokes, "Visual Literacy in Teaching and Learning: A Literature Perspective," *Electronic Journal for the Integration of Technology in Education* 1:1 (2002), pp. 10-19. Retrieved on June 1, 2007, at http://ejite.isu.edu/Volume1No1/pdfs/stokes.pdf .

7. See http://www.ncrel.org/.

8. See http://www.ncrel.org/engauge/skills/vislit.htm.

9. Glen Bull and Ann Thompson, "Establishing a Framework for Digital Images in the School Curriculum," *Learning & Leading With Technology* 31:8 (May 2004), p. 14.

10. See http://www.iste.org/.

11. Bull and Thompson, "Establishing a Framework for Digital Images in the School Curriculum," op cit., p. 15.

12. See http://memory.loc.gov/ammem/index.html.

13. Shutterfly.com, Kodak EasyShare Gallery, PhotoWorks, Costco, and Wal-Mart are just a few of the possibilities. See article Website for more options: http://www.avln.org/digphoto.

14. Sara B. Kajder, "Digital Images in the Language Arts Classroom," In *Teaching With Digital Images*, Glen L. Bull and Lynn Bell, eds. (Eugene, Ore.: International Society for Technology in Education, 2005), pp. 105-110.

15. Ibid., pp. 116-124.

16. See http://coekate.murraystate.edu/camera/ideas.htm.

17. See http://www.thirteen.org/edonline/concept2class/mi/index.html.

18. See http://memory.loc.gov/ammem/ndlpedu/index.html.

19. See http://www.greece.k12.ny.us/instruction/ela/6-12/BackwardDesign/Overview.htm.

20. See http://rubistar.4teachers.org/index.php.

21. Jason Ohler, "The World of Digital Storytelling: Through Creating Electronic Personal Narratives, Students Become Active Creators, Rather Than Passive Consumers, of Media," *Educational Leadership* 63:4 (December 2005/January 2006), p. 46.

22. March, "The New WWW: Whatever, Whenever, Wherever," *Educational Leadership*, op cit.