


Digital Cameras: Activities, Assessment, and Administration

Wondering how to extend a field trip?

... how to enrich student portfolios?

... how to streamline administrative record-keeping? 

Consider using a digital camera. Many things you can do with a digital camera will enhance your students' educational experiences and make life easier for you as a teacher or administrator. These applications fall generally into curriculum planning, student assessment, and administrative management.

The Technology: How It Works

The digital camera is a relatively new form of photograph technology that uses no film but instead stores images in a digital format. Digital images are most often stored in the camera's internal or flash memory, functioning like a small hard disk drive, where images can be saved or deleted. Most cameras are equipped with removable flash card memory, allowing full cards to be removed and replaced, like miniature floppy disks. In most cases, images must be downloaded or transferred to a computer running imaging software bundled with the camera. Then the images are created or can be converted to convenient file formats such as jpeg for use in myriad applications. A camera from Sony completely eliminates the download and convert steps by using actual 3.5 inch floppy disks to store its jpeg images.



*Compact Flash
Memory Card*

Digital cameras can do just about anything that film cameras can do, often doing them better. Basically, the operation of a digital camera is no different from any other still camera: aim, and click the shutter to capture the image. To take advantage of the full capabilities of the digital camera, it should be used with a computer and the software and cables usually bundled with the camera. Cameras sporting PCMCIA-type memory cards allow the removable cards to be inserted directly into the computer's card slot. Most cameras communicate with desktop or laptop computers via USB, serial, parallel, or dedicated cables. The photo software is used for jobs ranging from viewing the images stored in the camera to retouching images or creating zany morphs. Typical imaging software will perform cropping, color changes, resizing, contrast adjustments, sharpness

* Catherine Cavanaugh Ph.D.
Florida Center for Instructional Technology
Tampa, FL
cavanaugh@tempest.coedu.usf.edu

Terence Cavanaugh Ph.D.
Instructional Technology, University of South Florida
Tampa, FL
cavanaugh@tempest.coedu.usf.edu

Digital Cameras for Education web site:
<http://typhoon.coedu.usf.edu/~tcavanau/camera/index.htm>

Digital Cameras: Activities, Assessment, and Administration

enhancement, and adding text to photos. Using the camera as a computer peripheral is a new approach to photography, but one that is easy for both teachers and students to learn.

Flexibility, control over the photos, and instant use of pictures are examples of the advantages of digital photography. In addition, once the initial investment is made in the camera hardware, there are no processing costs for pictures. The only ongoing expenses are for batteries, disks to store images for long periods, and media for printing images. Digital photographs have infinite uses in digital form, and may be printed in any number on glossy paper, transparencies, iron-on transfer, Post-it notes, labels, envelopes, certificates, posters, banners, and many others.



KidBoard's JamC@m

The quality of the printed product depends on the quality of the paper, printer, copier, and of course, the resolution of the camera. Digital cameras can be placed in the hands of students for under \$100 with low-resolution images and basic features. Adding higher resolution, flash, zoom, and video output will boost the price to \$200-800. Professional quality digital photography costs over \$1000 per camera. Each camera offers its own suite of features, accessories, and capabilities, outlined in the accompanying chart. For the latest information in the dynamic field of digital photography, search the web and then contact the manufacturers via their web sites.

When choosing a camera, carefully consider what its uses will be. To print photos, put the money into high resolution megapixel images. For digital applications, look for cameras with large memory, flash, zoom, and attachable lenses. Cameras with built-in viewing panels like small television monitors are easiest to use because they will not need to be connected to a computer to work with images. The view screen will let you know immediately whether you got a good picture, and let you select images to delete when the camera memory gets full. An important bonus with a number of cameras is the ability to connect directly to a television or videocassette recorder for viewing and recording images on video. Most cameras are compatible with both PC and Mac computers.

Will a digital camera be worth the cost in your classroom?

Read on to find out just a few of the possible educational uses for digital photography.

LEARNING ACTIVITIES

As a curriculum tool, digital cameras add a multimedia dimension to learning. Placing a digital camera in the hands of a K-12 student or teacher unleashes creativity and opens up new possibilities for all areas of the education spectrum. Beyond simply recording events, digital images transform documents, presentations, and communications into personalized, custom productions. Using software such as PowerPoint or HyperStudio, projects come alive with digital photos that showcase school activities. Students quickly master the art of shooting photos and recording them on a

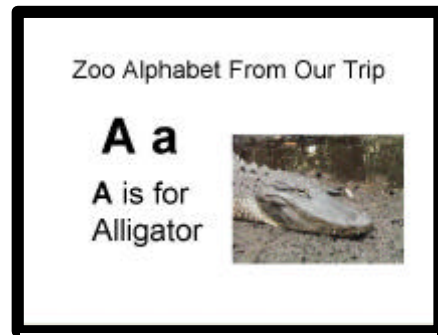
Digital Cameras: Activities, Assessment, and Administration

video cassette recorder to share their learning in class, at home, or far beyond through network technologies.

Documents created on a computer can include digital photos for making activity sheets illustrating maps or science equipment, posters of sports positions or choreography, iron-on transfers of national flags, creative crests with faces, and photos of community events. Students can write stories accompanied by photos they shoot. Video productions incorporating digital images directly from the camera can be produced instantly and dubbed with a student speech or music track from the school band. These products can be shared in class or with broader audiences via e-mail or the Web. Presentations can be used at the annual "Open House" to show parents what their children are learning at school.

Sample Applications:

During a class field trip to the zoo, elementary school students can take turns photographing animals with the digital camera. Back in the classroom, the images from the digital camera can be imported into something like HyperStudio. The students can then create a booklet in the form of an animal alphabet. In this activity, students might illustrate each letter of the alphabet with a different animal and description. Poster-size pages from the animal alphabet could be hung in the room, and a copy of the booklet might be sent to the zoo with the thank you letter from the class.



Create Display Signs

During the study of geometry, middle school students photograph objects in nature illustrating geometric shapes and properties. They build PowerPoint or HyperStudio presentations of their interpretations of the objects, and share their findings with the class. Next, they crop portions of their photos to create a tessellation or a three-dimensional animation of a shape. Such sophisticated manipulations are possible for students who have access to software like Adobe Photo Shop.



PowerPoint Virtual Fieldtrip

A high school Earth Science class in the mid-west can take an electronic field trip to the beach or the mountains by accessing the Intranet or Internet web site created with images taken by a class keypal. The photographs e-mailed from the remote site can be instantly added to an HTML document that describes the sights, links to a glossary of scientific terms, and asks follow-up questions about the geologic features seen in the pictures. Each student can choose an image and use a program like Photo Shop to produce a 360 degree panorama of an area.

Digital Cameras: Activities, Assessment, and Administration

ASSESSMENT

A digital student portfolio is a powerful and authentic means of ongoing assessment. The portfolio collects samples of the student's best work as a testament to his or her abilities and growth, providing a more complete picture of progress than a test score. In a digital portfolio, the student's writing, presentations, audio clips, and other computer accomplishments are stored with images of three-dimensional work.

Assess student learning by evaluating the products they create with the help of digital photography. If students learn by doing and by teaching others, they will certainly learn by producing reports, presentations, videotapes, and World Wide Web pages with their photographs. Student portfolios become richer with the addition of images of student work and performances.

Traditional test instruments are improved with the realism of digital photos. Actual classroom or lab images offer a more authentic method of measuring knowledge. For example, a laboratory exam with photos of the lab equipment used by students more accurately tests their memory of the processes they learned.

Sample Applications:

The elementary social studies students use their digital camera while studying local history. To show their understanding of the past of their area, the students take pictures of local historical sites, important people in the community, and portrayals of past events. The photos are assembled into a large mural for display in the school and local community site such as public library, city hall or post office. The mural could even become the featured illustration for a local publication, publicity campaign, or banner.



Community Resources



Document Student's Work

At the completion of food and nutrition unit, the Health/Consumer Sciences class in the middle school uses digital images to demonstrate knowledge of food groups and a healthy diet. Students photograph a variety of foods and packages to make a game in which the object is to arrange the food pictures into healthy meals. The class uses the game to teach the neighborhood preschool children about proper eating habits. The unit culminates with a health party where the older student prepare snacks for the younger children, and take pictures of them eating healthy food.

Over the course of the marking period, as each art project is completed, high school students use a digital camera to photograph their work. As the grading period

Digital Cameras: Activities, Assessment, and Administration

draws to a close, each student evaluates the pieces he or she has created and assembles the best into an individual electronic portfolio or gallery for assessment. The teacher or the class might select images of outstanding class projects to be viewed as a digital art gallery on the school's Intranet.

ADMINISTRATIVE SUPPORT

Digital photography streamlines many of the management tasks in a school. The jobs of handling equipment and keeping records of students and staff are done efficiently, and quickly updated with digital images. Inventories and identification pictures kept on the school network make the data more accessible and take less space than paper files.

Photo ID cards, certificates, awards, and signs with the visual impact of photos of recognized faces are all quickly created with the help of the digital camera. School publications can incorporate photos in less time and at no cost when the photos are digital. Newsletters, brochures, and a digital yearbook that include digital photos require a shorter production time because the photos are processed on the school site. Teacher tasks are supported by digital photography. Our attendance rolls and seating charts are much more useful when they include student photos.

Sample Applications:

Every year at award time, elementary schools give awards of appreciation to students, parents, partners in education, and other who provide assistance to the school. The awards can be personalized with pictures of the school or the recipient for a more meaningful momento.



Display Student Efforts

As each middle school student walks to the stage to receive her science fair award, a picture of her with her project can be projected on a screen for the audience to see. The student's award certificate might also include a photo of her school and her project.



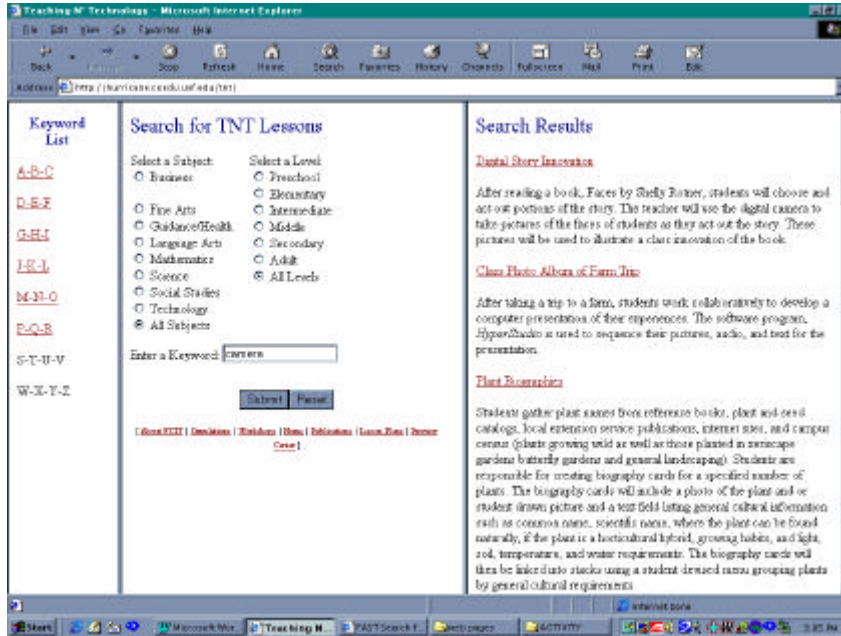
Record Plays and Events for Portfolios

High schools can produce their own electronic yearbooks for disk, CD-ROM, or the Internet with photos of students, staff, teams, and important events of the year. Thumbnail images of plays, athletic matches, and academic competitions can be added to the school's web site for ongoing communication to the community, as well as a lasting record for students.

Digital Cameras: Activities, Assessment, and Administration

LEARNING MORE

Like most applications, once you begin to use a digital camera, you'll learn more about them and begin to develop your own educational applications. Some ideas are provided by camera manufacturers through help lines and World Wide Web sites. Other good sources for camera applications are educational databases. Many of the web sites include lesson plans, ideas, and updates. Teachers can contribute classroom-tested activities to the web databases, which are then available to other teachers.



FCIT's Lesson Plan Database: <http://fcit.coedu.usf.edu/tnt>