FEATURE

DIGITAL MEDIA *(INCLUDING VIDEO!)* RESOURCES FOR THE STEM CLASSROOM AND COLLECTION

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As educators, we know that students learn better and faster when they are actively engaged in their learning. Digital media can be a great vehicle for student engagement with classroom technology in the science, technology, engineering, or math (STEM) classroom.

Why use media to teach STEM? Although media cannot replace hands-on learning, it can strengthen learning in any STEM classroom. Media can illustrate scientific concepts, showcase the design process, introduce robotics, model three-dimensional geometric figures, and connect students to real-life STEM careers. Media can be a powerful tool that sparks curiosity, promotes scientific inquiry and critical thinking, and helps students make connections between their experiences and the content to be learned. Overall, media can help reinforce critical 21st-century skills. As the ambassadors to the schools' learning resources and technology, school librarians are essential participants in media-rich learning.

Getting Started with Digital Media

Here are some tips for using digital media, like videos or interactives, in the classroom:

Preview the media to check the content, audio levels, and window size. If you are using a video from the Web, download it, if possible, to avoid Internet

DOMAIN

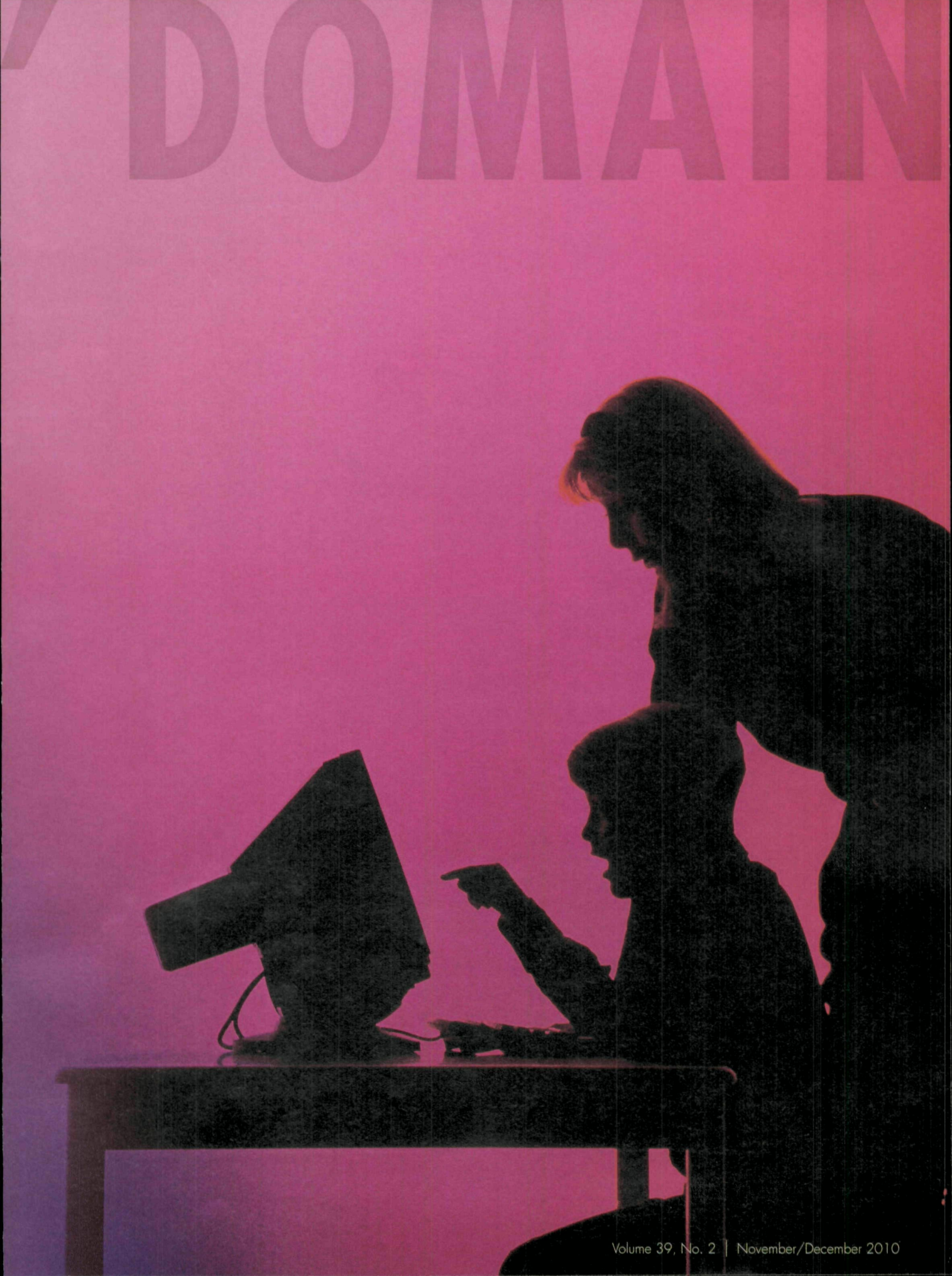

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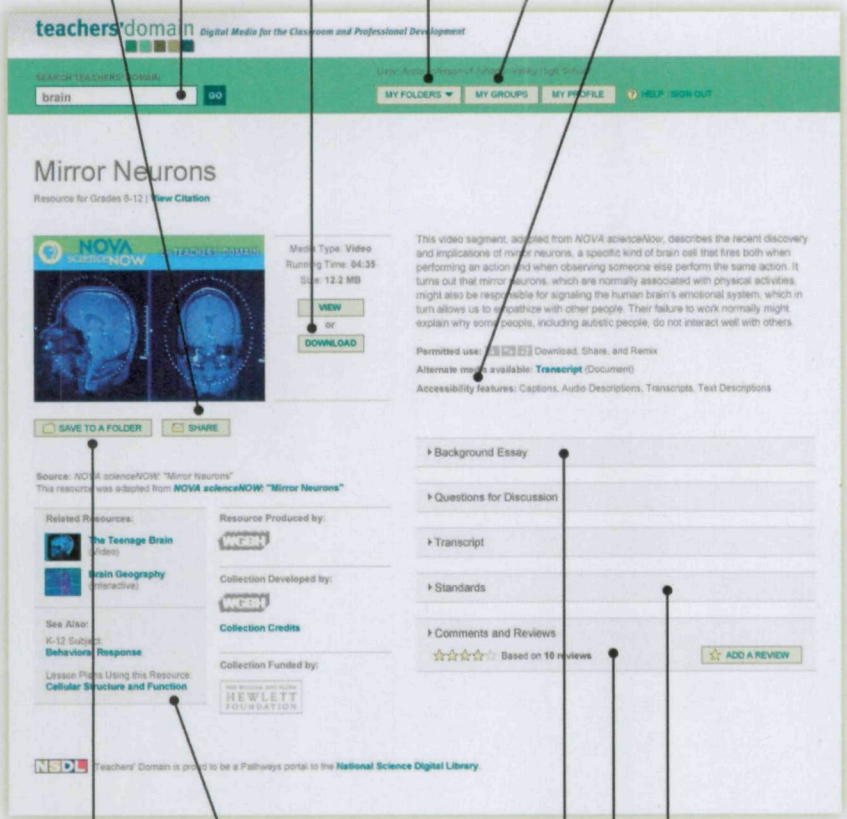
Figure 1. Teacher's Domain resource page.



connectivity problems, and remember to select "full-screen" mode whenever available.

Make ample use of the *pause* button. You can pause for discussion, to ask for predictions, to define a word, to make connections to students' own experiences, or to highlight a point made in the video.

Replay the video. Students may not take in all the information in one viewing, so replay the video as needed. You can have students view the segment multiple times, asking them to focus on a different element each time.

Consider turning the *volume off* and allowing students to observe and comment on the images or predict the content of the narration.

School librarians can work with teachers to facilitate *small group discussions* and brainstorm extension activities.

Teachers' Domain Exemplary Digital Media Resources

Teachers' Domain, a free online digital library, has a wealth of quality STEM resources—nearly three thousand videos, Flash interactives, audio segments, images, self-paced student lessons, and lesson plans for teachers that correlate to national and state standards—all available free of charge at <www.teachersdomain.org>. Teachers' Domain resources come from popular PBS shows like *NOVA, Frontline, Nature, Quest,* and *Cyberchase*, and from other public television stations, universities, museums, and government agencies.

This fall Teachers' Domain has created a newly designed website

and new features that include full-screen video, search by standard, and accessibility features that make the media accessible to all users. The image in figure 1 is a snapshot of a resource page and the features available to registered users.

School librarians know that even the best media may be inaccessible because of unreliable Internet access in the classroom. We can work with our teachers to ensure that they have the necessary skills and resources to facilitate offline, as well as online, activities. About half of Teachers' Domain resources can be downloaded onto a flash drive or a desktop to use offline. You can also share and edit (remix) resources to create media mashups. To identify what's permissible for specific resources, look for these icons on the resource page or in search results listings:

Two of the most useful, yet often overlooked, features on Teachers' Domain are Folders and Groups. As a registered Teachers' Domain user, you can create folders that allow you to save and organize your favorite resources from the site, upload your own files, and link to other locations on the Web. (These features are not available to those simply "browsing" the site.) To create a new folder, simply click on "My Folders" at the top of any page. When browsing the site, you can save any resource into your folders by clicking on "Save to a Folder" beneath the resource image. "My Groups" allows you to share your folders with other users. When you create a group, it is assigned a four-digit identification code that can be shared with users invited to join your group. If you need help using folders, Teachers' Domain provides tutorials that can be accessed directly from the homepage. Under Professional Development, click on "Teaching Strategies," then click on "Using Teachers' Domain and its Editions." You will find several tutorials to help you master the process.

Teachers' Domain can be used to extend learning outside the classroom. Teachers or librarians can create student accounts for their students, or if students are over the age of thirteen, they can register and create their own accounts. Parents can also create accounts for younger children or themselves to use outside of school. Teachers' Domain resource pages include citations that allow students to easily use any resource as a source for a research paper or school project.

Here are some of the best STEM-themed collections available on Teachers' Domain:

NOVA <www.teachersdomain.org/special/nova>

Nature <www.teachersdomain.org/special/nat>

Cyberchase <www.teachersdomain.org/special/cyb>

NOVA scienceNOW <www.teachersdomain.org/special/nsn>

Judgement Day: Intelligent Design on Trial <www.teachersdomain.org/special/evol07-ex>

Advanced Technological Education <www.teachersdomain.org/special/ate>

Biotechnology <www.teachersdomain.org/special/biot>

Polar Sciences Collection <www.teachersdomain.org/special/ipy07-ex>

Cool Careers in Science <www.teachersdomain.org/special/city07-ex>

Where Words Touch The Earth <www.teachersdomain.org/special/nasawords>

Engineering <www.teachersdomain.org/collection/k12/sci.engin>

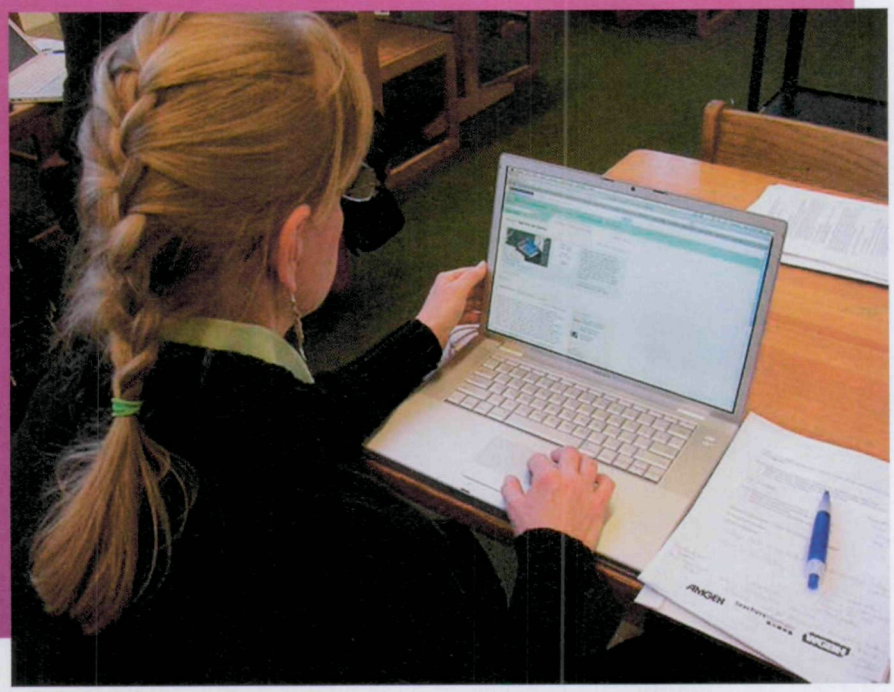
Mathematics <www.teachersdomain.org/collection/k12/math>

The Teachers' Domain website is regularly updated with new features and media collections. To be added this year are an Environmental Health collection and twenty-five new self-paced student lessons that build middle school literacy in the content areas. As a registered user, you can subscribe to the monthly newsletter to learn about additions to Teachers' Domain.

Ideas for Staff Development

Once you learn all about using Teachers' Domain resources, you may want to offer a workshop to educate your staff on this valuable resource. Teachers' Domain has downloadable workshop-facilitator's guides on how to use Teachers' Domain. To access the guides, go to the Teachers' Domain homepage, click on "Teaching Strategies" under the Professional Development section, and then click on "Using Teachers' Domain and its Editions." For beginners, *Introduction to Teachers' Domain Workshop* gives an overview of the website, including how to register and how to find, select, and use the online resources. Other workshops include *Using Teachers' Domain in the Classroom, Using Folders and Groups, Creating User-Generated Media,* and *Technology Guide to Teachers' Domain.*

School librarians are great partners for technology workshops and training. For staff development



these Teachers' Domain professional development resources are great starters and structures that showcase the technology and resource leadership available in the school library. Occasionally, Teachers' Domain will also offer free webinars or workshops at national or regional education conferences on topics such as media literacy, biotechnology, and digital media in the 21st-century classroom.

For teachers who are beginners at using digital media in the classroom, the Teachers' Domain resource "Effective Video-based Lessons" describes the three essential parts of an effective media-based lesson: Frame, Focus, and Follow-up. These guidelines are similar to the well-known KWL Method that asks students to state what they know, what they want to know, and what they learned. These guidelines, created by EDC's Center for Children and Technology and available with additional information at <www.teachersdomain.org/resource/vtlpd.pd.hints.frfofo>, consist of the following:

"*Frame:* Provide a context that helps students pay attention to the main content of the video. Ask students questions about the topic explored in the video to activate prior knowledge. When necessary, tell students enough about the part of the story preceding the segment, so they can follow along.

Focus: Help students notice the important moments in the video by giving them something to look for while they watch. Without a focus for viewing, students see all sorts of interesting details—but not necessarily the idea or information you want them to focus on.

Follow-up: Provide an opportunity for students to summarize what they saw. They will see different things—and not always what you expected them to see! Retelling what they saw helps students consolidate their understanding and remember it."

These three guidelines provide a great way of introducing a topic, reinforcing it, and assessing student mastery of the material.

If you have any questions, or need additional help, Teachers' Domain provides user support. Send e-mail to td_contact@wgbh.org or call (617) 300-3631. The website has FAQs on registering, navigating, or sharing resources <www.teachersdomain.org/faq.html>.

One of the most challenging tasks for school librarians is sorting through the surplus of media available for classroom use. Teachers' Domain assists school librarians in helping teachers find a wealth of quality online resources in STEM. As school budgets get tighter, Teachers' Domain can be a valuable tool used to enhance teaching and learning, without putting a hole in your pocket.

Daniella Quinones *most recently authored "Utilizing Digital Media to Enhance Teaching and Learning" for the NSDL-funded online magazine* Beyond Penguins and Polar Bears *(see Jessica Fries-Gaither's article in this issue). Before becoming a middle school teacher, Daniella led professional development workshops for teachers offered by WGBH's Teachers' Domain on topics that included media literacy, STEM, technology integration, and student-generated media projects.*