A group of fifth graders is at work in the school media center. The students are engaged in an interdisciplinary study that brings together literature, social studies, and visual art. This particular group, selected by their classroom teachers for language arts enrichment, are reading Blue Balliett’s *Chasing Vermeer*, and now the students are viewing online galleries of Johannes Vermeer’s work, comparing the narrative descriptions in the book with images of his paintings. Vermeer’s art is infused with details about everyday life in seventeenth-century Holland. We talk about the messages conveyed through the art. Learning leaps into the creative realm when my students ask the question, “Can we make pictures like these?”

This is not an unusual request from intermediate students at our school. These students are accustomed to problem-based learning projects that integrate literature, writing, research, and technology skills. As they progress from kindergarten through fifth grade, they become increasingly adept at showing what they know in multiple formats. Based on the content of the book and the learning extensions that we have investigated, we design a project.

Always eager to get their hands on digital cameras and computers, the students definitely want to include technology applications. In earlier projects—such as a whole-class collaboration focusing on early explorers the previous semester and the electronic haiku this small group created last year—the students learned how to use filters and add text to their photos. They know how to use imaging software to create layered photos. (See Chapter 2 for more details about this process.) But the students need to
master additional software skills to create images in the style of Vermeer. His realistic paintings were characterized by rich colors and dramatic use of light and shadow—classic elements of Baroque art. I make a mental note to give a whole-class demonstration of some of the advanced tools within the software program (see Can You See It? New Tools for Old Masters for more information).

**CAN YOU SEE IT? NEW TOOLS FOR OLD MASTERS**

Digital software programs offer a variety of tools that can transform your work into a digital representation of Rembrandt—adding richness to the color in your photo compositions, manipulating the light source for drama, and using dodge and burn tools to add mood and subtlety to your images. They can also help to unify the layers of imagery.

Some students used these tools after they combined the layers of their imagery—the background and the middle ground—but before they added their text layer. Most digital software includes saturation tools that can make the colors in your image more muted or vibrant. Adobe Photoshop Elements also has a temperature tool that enables you to adjust your work along the color spectrum, such as making your work appear cooler (blue) or warmer (magenta).

Lighting effects shine through the application of another set of filters. Use these tools to change the direction or intensity of light or to create a dramatic light source. For fine work, use the burn and dodge tools to “paint on” detailed shadow and light. Experiment with these sophisticated applications. You will amaze yourself!

As we studied the online gallery of Vermeer images, we discussed the relevance of the details in the portraits. What was Vermeer trying to tell us about the person in the painting through the clothing, the environment, and the objects included in the composition? We agree that the student-generated images should have a narrative quality—that is, they should tell a story that viewers can accurately interpret—and we decide to use both written and visual narrative devices in the project. We add responsive writ-
ing to the growing list of our project outcomes. This ensures that our visual narratives will be well connected to the state standards for reading and writing at this grade level.

Do we know enough about life in seventeenth-century Holland to create images that will be authentic to the era? We agree that we do not. This means that additional historical research will be in order. It will be my job to find material on this topic, at a reading level that is appropriate for fifth graders and in a format that is accessible for their review.

A research component on Holland’s gilded age may seem a bit of a stretch for ten- and eleven-year-olds, but it relates directly to our literature study, links nicely with previous studies on Europe’s Renaissance, and promises to provide an interesting application of the research skills they have been developing over the past several years. The proposed project also will involve collaboration, as students share and synthesize the information they glean. We decide to use “quick-fact” research (more on this method later in this chapter) to help us gather, organize, and prioritize the information we need.

As our discussion unfolds, we create an outline of needs and outcomes. My teacher to-do list starts to grow as well: I need to assemble a list of kid-friendly historical sites, access our state’s Sunlink online catalog to browse and borrow additional reading material from nearby schools, and compile a folder of stock photo backgrounds to be used in the photo project. Cross-referencing curriculum standards for fifth-grade language and literacy, social studies, visual art, and technology education helps me tighten and refine this project.

This project addresses the following State Curriculum Standards, excerpted from Florida’s Sunshine State Standards for grades 3–5 (State of Florida Department of Education 1996):

SOCIAL STUDIES

• Uses a variety of sources to understand history
• Understands various aspects of family life, structures, and rules in different cultures and many eras
• Knows development in the humanities
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LANGUAGE ARTS
• Clarifies understanding by checking other sources and by discussion
• Prepares for writing by focusing on a central theme and identifying a purpose for writing
• Uses electronic technology to create, revise, retrieve, and verify information
• Creates a narrative in which ideas, details, and events are relevant to the story line
• Understands that word choices can shape reactions, perceptions, and beliefs
• Selects and uses appropriate technology to enhance communications

VISUAL ARTS
• Understands how artists have used visual symbols across time
• Understands perceived similarities and differences between different genres of art

The project also addresses the following standards from National Educational Technology Standards (International Society for Technology in Education 2008):

• Uses technology tools to enhance learning, increase productivity, and promote creativity
• Uses a variety of media to communicate ideas and information effectively

And it addresses these skill standards from Partnership for 21st Century Skills:

• Demonstrates originality and inventiveness in work
• Identifies and asks significant questions that clarify various points of view
• Frames, analyzes, and synthesizes information in order to solve problems and answer questions
• Articulates thoughts and ideas clearly through speaking and writing
• Assumes shared responsibility for collaborative work
• Understands how media messages are constructed, and for what purpose
• Uses technology as a tool to research, organize, and communicate
It may sound like a lot of preparation on the teacher’s part, but the planning frees me to act as a guide and mentor as students work through these multiple processes during the school day. The stage is set for a rich learning experience that will enable students to integrate several subject disciplines, apply sophisticated research skills, and strengthen visual, oral, and written communication.

The initial project concepts will form the backbone of a rubric that will keep students focused and help them assess their progress. The final photographs, along with students’ presentations of their work, will demonstrate mastery of technology, research, and visual literacy skills.

**STEPPING BACK IN TIME**

It’s time to get started. The students’ first job is to create a character who might have lived within the historical period and context suggested by Vermeer’s work. Using online and text research, students develop pictures of citizens in every walk of life—servants, shopkeepers, shippers, adults, children, and people of both poverty and wealth. Being thrifty, we find some items from home and some leftovers from our school Renaissance festival and assemble a community table of props and costumes to stimulate our thinking. Once again referencing the online photo gallery, the fifth graders work together to develop and refine their photo compositions.

“Let’s have more than one person in our photo,” suggests ten-year-old Jewell. I think it would be a good idea to show a lady and a servant together so that people could compare them.”

She enlists the help of her classmate, Adriana, to play the role of the lady’s servant, which expands the original concept. In another section of the media center, some students set the stage for their portrait shoot before they start snapping digital shots.

Meanwhile, Alex, Rebecca, and Jesse, who have already finished their portrait shoot, work at the computer station. Browsing through the folder of stock photo backgrounds located on the school’s student network storage drive, they use computer software to merge their photos with the visual representation of themes and ideas they chose for their portraits.
“I want my writing paper to look like parchment,” explains Rebecca. She uses new software–imaging skills to shade a document she included in her composition to indicate that her subject was a literate person. “And I have to figure out how to make the picture show light and shadow like Vermeer did. I’m going to look at the [photo] gallery again to get some ideas.”

Another student who is new to our school is having trouble merging his images and calls out for help. “Well, I’m stuck!” he says with frustration. I walk over to help him, and another student leans over my shoulder for a quick consultation. The more experienced classmate quickly realizes that the struggling student has accidentally “locked” the layers of the photo application tools (see Can You See It? Merging and Locking Layers). I listen as he patiently coaches his friend out of the dilemma, teaching him how to use the toolbar to add or delete text and special effects.

**CAN YOU SEE IT? MERGING AND LOCKING LAYERS**

Remember those clear report covers? Imagine that you have drawn a simple image on several of those transparent pages. What happens when you stack them together? Of course, you will see all of the images. That’s exactly the way that Adobe Photoshop Elements works. Each layer stacks on top of the other. You can rearrange the layers, delete layers that you no longer want, change the opacity of a layer, and add filter and text layers. This is where building imagery really becomes fun!

A navigation bar on the side lets you see each layer. The bottom layer, that is, the background layer, is always locked. This keeps that layer in one place. Once in a while, students (and teachers, too) accidentally lock additional layers, making it impossible for them to edit or merge the layers. If this happens, the mistake is easy to fix. All you have to do is look at your layer bar, find the layer you are having trouble with, and check to see if there is a “lock” icon beside that layer. Unlocking a layer is as simple as a click of the mouse. Just position your cursor over the lock icon, give it a click, and you are back in business.

In another area, a cluster of students is involved in an impromptu writer’s workshop that includes communicating through text and imag-
ery. Building on their research of life in seventeenth-century Holland, the students are collaborating and coaching each other through a first-person narrative of their imaginary lives as citizens of Delft. They began using thesaurus skills regularly during the previous school year, and they continue to access this tool to choose the strongest, most descriptive words as they develop word pictures of life in historic Holland.

Miranda uses her research about women of that era to develop the character of a shipper’s daughter. She explains her accompanying photograph. “I live in a wealthy house,” Miranda says, “but that doesn’t mean that my life is perfect. I am not allowed to do the things my brothers can do. I want to go on a trader’s ship and make drawings and maps of the things there, but I have to stay at home.”
Her explanation indicates her understanding of the role of women in Dutch society, of Holland’s participation in global shipping, and of emerging cartography skills. Satisfied with her final written draft, Miranda moves back to the computer to add this text overlay to her self-portrait (see Figure 4.1).

Meanwhile, Melissa reads her narrative aloud to the group. “You need an ending,” one student suggests after Melissa finishes. Another classmate compliments Melissa on her sentence describing the fatigue her character feels while attending to the endless duties of a large household (see Figure 4.2).

Alex is new to our school and is just learning how to work with a thesaurus to expand his vocabulary choices. I spend some time showing him how to use the thesaurus, including how to decide when to use simple language and when to select more sophisticated words. “I like the sound of opulent,” he decides, discarding the word rich in favor of this more descriptive choice.

Ordinary People, Extraordinary Times
The skills and processes described in the Vermeer project, and the various forms of communication that go along with it, are prime examples of the range of technology-driven competencies that define today’s literacy. A closer look at the students’ work reveals the rich integration of imagery and text. Students are thoughtfully incorporating selected symbols. They are gathering and interpreting information about the cultural and social framework of Vermeer’s life in many formats—through text, time lines, visual representations, and audio links. And they are collaborating as a learning community. As students flow through these processes, their roles shift from independent learners, to group collaborators, to shared problem solvers and, finally, to creative communicators. All of these processes ultimately synthesize in a meaningful product that demonstrates a student’s newly acquired knowledge and skills.

Creative technology applications are powerful motivators for students of every learning style. Research shows that students remember more when they are engaged in multimodal learning (Metiri Group/Cisco 2008). It remains a very real and persistent part of their world. I have never had a
student choose not to take digital photographs, for example, or decline an opportunity to create projects with imaging software. New and attractive tools of communication can enhance interdisciplinary learning. The vast majority of students are willing to persist with assignments just to get to the “fun stuff” of creating and communicating through technology.

The fact is, a great deal of hard work precedes the visual literacy projects I have described. Partnered with literature and language arts, working within specific disciplines, there lies an important research component—the ability to locate, select, organize, evaluate, and apply information. This process requires students to draw on appropriate resources; read widely; write, edit, and revise; compare and connect; and present information accurately and distinctively. On the information highway, it is where the rubber meets the road.

Figure 4.2  This writing shows Rebecca’s research on medical practices and serious illnesses of the seventeenth century. She also communicates understanding about the role of women and family structure. If you take a close look at her writing paper, you will notice that she used a dodging tool to create the look of parchment.
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WHAT IS RESEARCH, ANYWAY?

Does research involve fact-finding? Yes. Must students access multiple sources of information to engage in research? Absolutely. But the location, selection, and recitation of information, sometimes inelegantly referred to as “read and regurgitate” in educational circles, does not pass muster as true research. At its core, research is a creative process, requiring students to think. The process should be both rigorous and routine, drawing on key concepts from the core curriculum throughout the school year while continually raising the bar for students as they learn how to support and express their ideas.

The National Forum on Information Literacy was formed by the American Library Association in 1989 in response to the dramatic rise in the accessibility of what the organization deemed a “tidal wave of information”—and the accompanying challenges and logistics of using research wisely. (You can learn more about the work of the National Forum on Information Literacy at http://www.infolit.org/.) The forum provides an excellent framework for defining and teaching authentic research skills, specifically, helping learners to:

- Recognize the need for information
- Locate, choose, and organize information from a range of sources
- Create an original response
- Share the information with others

Thorough research requires sustained effort and discrimination on the part of the student. Further, it asks students to challenge their assumptions as new, better, or contradictory information comes to light. As you guide students through the research process (see Can You See It? Info-Savvy Learners—Square One), you will discover that some students will be more adept at critical thinking and creative applications, while others will struggle to connect the topic to the questions and the questions to the answers. Although some students will speed down the road of research—and I have found they are not always the most academically able students, but often those with strong analytical leanings—others will come to a screeching halt...
and wait for someone, anyone, to complete the journey for them. These are the students who ask that dreaded question, “Is this good enough?” Or, perhaps detoured along the path, they become intimidated by the task of putting so many processes together in a meaningful and creative way.

**CAN YOU SEE IT? INFO-SAVVY LEARNERS—SQUARE ONE**

If I had to pull just one rabbit out of the hat of the aggregate learning described in these pages, I think I would have to choose information literacy skills. These skills weave their way through every facet of visual and traditional literacy. We know that the world of information will only continue to expand. Many teachers today find themselves walking the narrow tightrope of protecting their students (Internet sources aren’t rated) and providing some guidance for a door that is wide open to these kids outside of their school day. Most school districts embed firewalls into their network to narrow the range of information that students can access during school hours, and parental controls provide a safety gate for home computers. Nonetheless, we must teach our students how to find their way to the right information and how to evaluate and apply that information. Fear is not an option here. So, where do we start?

Kathy Schrock offers some parameters and excellent evaluative tools on her Discovery School site (http://school.discoveryeducation.com/schrockguide/eval.html). The authors of the Big6, Michael Eisenberg and Robert Berkowitz, have developed a junior version, the Super3, to help our youngest learners get a jump-start on locating, interpreting, and synthesizing information (http://www.big6.com/kids/K-2.htm). Something that has helped me is to strategically place the computers so that I can see each screen from one spot. I also require students to keep an Internet journal of the sites they visit. It’s excellent practice for citing sources—and it keeps them accountable for their time and use of the computer.

The good news is that educational research suggests that critical-thinking skills can be taught, and that students’ ability to analyze and synthesize
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will improve with practice. Acquiring and applying these skills takes time and, like so much else in the educational forum, is developmental. From beginning to end, a well-designed research project requires learners to offer their very best effort. That challenge alone is guaranteed to jettison some students out of their comfort zones. Be prepared for some resistance!

Consider the experiences of Jared, a reluctant reader who was progressing slowly through his independent research project about the history of football. He had a text source appropriate for his reading level but was unable to find age-appropriate information on the Internet. He wasn’t really sure how to evaluate the sources, so he spent a great deal of time trying to read passages that were either too difficult or irrelevant, or both. Then he tried to rely solely on his text source, but because the book also included a substantial amount of information about the rules of the game, Jared kept losing sight of the focus of his research. He became very frustrated, unable to redirect or move forward on his own.

Helping Jared formulate a series of subtopics about the history of football and organize facts under those subtopics got him focused and moving forward. Pairing him with a “critical friend” who shared Jared’s interest in football encouraged Jared to develop a broader perspective about his topic. Reading his work out loud and discussing it with a peer helped him evaluate the relevance of the facts he had gathered and develop a feeling for the way the research fit together. As Jared organized and reread his research, his friend Justin would suggest subtopics or ask questions that caused Jared to discover and plug a few gaps. Finally, selecting an alternate source of information—in this case, substituting an interview with our physical education coach for the initial Internet research—provided motivation and a student-friendly source for Jared’s research. Once Jared had gathered a sufficient number of relevant facts, he picked up steam, and was able to synthesize and present his research confidently.

Breaking research projects into manageable chunks, modeling effective strategies, developing creative and authentic applications of research, and teaching students to reflect on their learning will help them become skillful navigators on the information highway.
Just the Facts, Ma’am

While today’s learners have information at their fingertips, available in various languages, reading levels, and degrees of accuracy, they have to figure out what to do with the data. They must learn how to sift through a mountain of facts, evaluate and select sources, and apply them in ways that reflect their understanding of a subject or idea. This idea comes home to us when we realize that few ten–year–olds can describe Albert Einstein beyond “that scientist guy with all the crazy hair,” or that a mere handful of third graders understand the historical significance of the Fourth of July holiday. So the greater question becomes: Do they know how to find out why Einstein is valued or how to research the origins of America’s Independence Day? In other words, can they use the tools at hand to access and use information intelligently?

The essential research question therefore shifts from where can I find information to where can I find the best information? Addressing the issue of quality is far more difficult than locating a source. There is so much data out there, most of it uncensored, some of it unreliable. Students need systematic instruction and guided practice finding, evaluating, and using research.

The Chicken or the Egg?

Research begins with questions, and those questions are often borne of newly acquired information. Students learn something new and want to know more. They begin to make connections to prior knowledge. As they formulate and investigate their questions, they pick up further incidental information—interesting facts and compelling ideas. Those findings, in turn, generate further questions. Many great philosophers, writers, and scientists have found themselves lost in that rich labyrinth of possibilities, eventually burdened with so many nuances of thought that they could barely navigate their way back to the original question. Our students find themselves in good company as they take on the challenge of research.

Structural models, such as Michael Eisenberg and Robert Berkowitz’s Big6 model (http://www.big6.com/kids/), keep students focused, and help them organize, prioritize, and sift through information and ideas. The Big6 model is presented in developmentally appropriate formats, allow–
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Engaging primary students to grasp basic research skills and then to broaden and deepen those skills as they gain knowledge and maturity.

Research models can also act as evaluative tools; for example, the K-W-L model, developed by Donna Ogle (1986), asks students to evaluate their existing base of knowledge on a given subject, to formulate a series of questions for further investigation, and to describe what they learned as a result of independent research and active reading. Corresponding questions help students measure their progress in reaching the goals of research. Visual, graphical, and writing processes assist students in the synthesis and presentation of the information they collect.

Children are naturally curious. Questions and theories arise as they read stories, study science and history, experience life, and search for their place in the world. We can build on that fresh joy as we help them respond to their questions. Through thoughtful instruction and assessment, we can model and teach sound research skills to students of all ages.

LOOSENING THE REINS

In the spirit of empowering students for lifelong learning, we want to bring them to the place where they are able to use research, writing, and reporting skills for their own purposes. What happens when they are asked to gather information for independent research?

I have abridged a range of research models to develop a four-question sequence that guides my students through these stages of research:

• What do I want to know? (Devising a research topic and questions)
• Where do I need to go? (Identifying sources for research)
• What do I now know? (Gathering and organizing information)
• How will I show what I know? (Sharing findings)

Organized as headings on a checklist, which students keep in their research folders along with their findings, these questions keep them focused and moving forward.

The very first thing that students will need to do is devise a topic for their
research. The next step is to ascertain whether appropriate informational sources are available. ("Appropriate," in this sense, means appropriate to the students' grade and/or reading level.) I remind students that their research can only be as good as the sources they access. The library’s electronic catalog is a good first stop for those resources. Students unable to find the right materials within our collection access our interlibrary loan system to find out whether the materials they need are available from other schools within our district. (Requiring at least one school-based resource goes a long way toward helping students select appropriate topics; many suggested independent studies on Freddie Krueger or Halo have died on the vine in light of this stipulation.)

When they are confident they can find the resources they need, students are ready to address step one in depth, devising a set of questions that pertain to their topic. Formulating specific questions fine-tunes the range of information that students are seeking and helps them to identify appropriate secondary sources. Through these initial processes working symbiotically, we address two basic areas of research: what do I want to know, and where do I need to go (to find information)?

Many students, no matter how many times they have engaged in guided research projects, will struggle with their first attempts to conduct independent research. For example, Brittany became frustrated when she was unable to find the answers to her questions in an independent study of gardening. A closer look at her questions revealed that she was actually searching for information, not about gardens, but about seeds. Fine-tuning the topic to match her areas of inquiry helped her locate the information she needed. William tapped into a wealth of resources about basketball but then realized that the facts he gathered, while related to his topic, did not address any of his questions. He was so excited to make the connection between the questions and the research that he came into the media center on his own time to rework his project.

Some students will get so immersed in the process of gathering information that they can’t seem to make the transition to the next phase of summarizing and synthesizing data. Others will struggle to identify the most basic of facts and put these ideas on paper. Some students, who are great critical and creative thinkers are less adept at reading and need to
be supported in finding, analyzing, and applying information in alternate formats.

Knowing our students’ strengths and weaknesses and recognizing the fluid nature of their skills, depending on the topic and context, is critical if we want to make information relevant and accessible to all. Alternate sources of information, CD-ROMs, videos, books on tape, and the highly visual DK Eyewitness Books series (Dorling Kindersley) are some of the additional sources students can use to explore research topics with increasing independence. And don’t overlook your personal resources and connections. One of my students, Timothy, wanted to learn more about submarines. I put him in touch with a naval submarine officer (my brother Jay) for a telephone interview on the subject. Another expert from the nearby University of Florida graciously agreed to be interviewed by a fourth grader on the topic of Little Big Horn. This telephone conversation provided rich material for Hunter’s delightfully fresh slant on a social studies project entitled “Was General Custer a Good Listener?” (Hunter’s conclusion: he was not.)

A cut-and-paste strategy for organizing research addresses our third question—what do I now know?—by helping students put their findings together and credit their sources. The students use “quick-fact” research pages (see Figures 4.3 and 4.4). The top of each page provides a space to credit the source of information. Below are five sections that students use to record the facts that they gather as they research. Students use one quick-fact page for each information source they access. Each fact section is divided by a dotted line, which the students use to cut their sheets into separate sections. Now they must further analyze the information they have gathered as they physically organize it. The most relevant facts take prominence, with those that seem to support or add additional details beneath. Sometimes students will find during this process that they have replicated facts. Occasionally, they will realize that they have gathered conflicting information from their sources and will go scurrying back to verify their findings and make decisions about the accuracy of their research sources. Sometimes they may see that, while they have a great deal of detailed information about one aspect of their topic, they have barely touched on, or perhaps neglected altogether, other important aspects of their research topic.
**Figure 4.3** A sample quick-fact sheet for Internet sources.
This process nearly always leads to adjustment on the students’ part. They will often go back to their sources or access additional sources to round out their findings. A “critical friend” comes in handy here, someone who can help young researchers craft a body of knowledge by asking questions and...
seeking clarification of the facts that have been assembled. In addition, this is an excellent juncture for the classroom teacher to examine the students’ efforts and provide formal feedback and guidance.

After the students have organized their facts and have made their additions or clarifications, they can use a glue stick to affix their work to a legal-sized sheet of paper. The sources of information are placed below the facts. Younger students can follow the same format. Working in research teams, each child provides one source of information and records his or her findings on a simple, three-line quick-fact page. Team members then work together to organize and evaluate their findings on large, chart-sized graphic organizers. Physically analyzing their research in this way shows students how to arrange their information for maximum impact (see Figure 4.5).

As they mature and get more practice organizing research, students become more confident and sophisticated in their choices. For example, Courtney’s topic “The Life of Harriet Tubman” suggested a chronological
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order because the research was biographical. Courtney organized her findings sequentially, beginning with Harriet Tubman’s childhood as a slave in Maryland and concluding with Tubman’s participation in the women’s suffrage movement. By contrast, Cassia organized her work in “chunks”—identifying connections, and then putting components of related information together. Her research on dogs that work with humans followed a general introduction with subheadings for police and rescue dogs, guide dogs, and hunting dogs. Each of these girls followed a similar system for accessing and evaluating information. But they chose different organizational forms to link their information together in a way that best fit their respective topics. Organizing research findings in a way that makes sense requires thoughtful decision making.

Graphic organizers or software, such as Inspiration or Kidspiration, draw on students’ visual literacy skills to provide a framework for assembling information, helping them make the leap from collecting loosely related facts to synthesizing a body of knowledge. (The Lee’s Summit, Missouri, R–7 School District provides links to a wide selection of graphic organizers, along with ideas and examples for using them. See http://its.leesummit.k12.mo.us/graphic_organizers.htm for more information.) As teachers, we also can model the skills of organizing and synthesizing information, demonstrating how research, writing, and visual imagery can be used to communicate throughout our lives.

BRICK BY BRICK

Most students today respond to the word research by heading directly to the computer. I have to admit that I am first in line to preach the wonders of the Internet. Thoughtful searches through this portal can reveal millions of authentic sources at the click of the mouse.

Yet Internet tracking is just one method of gathering information, and the resources available through computer culling are not limitless. Rigorous research involves finding, evaluating, synthesizing, and applying information, not just looking up a topic on World Book Online and pressing the print button. Authentic inquiry should include a broad range of resources.
and multiple methods of locating them. For example, while students typically know about print and Internet resources, do they also know how to find and evaluate audio and video sources such as movies, television shows, and books on tape? Are they familiar with sources including original documents, interviews, and personal experiences? Can they make use of inferential sources, such as information gathered from literature? There is a valuable place for each of those resources in the investigative process. Effective research employs a variety of perspectives and formats. As teachers, our task is to guide students through the field and show them how to choose and synthesize resources into a unified and purposeful presentation.

Consider the following research activity that tied into the third-grade social studies curriculum and enabled students to explore ancient Egypt using contemporary tools. We narrowed our topic to “King Tut” for the purpose of practicing multiple-source research skills. Using a large paper triangle, sticky notes, and pencils, we worked as a class to build a “pyramid of knowledge” using several formats. A small class set of Tut’s Mummy: Lost . . . and Found by Judy Donnelly, written at a third-grade reading level, was a friendly source for independent reading. A Reading Rainbow video segment filmed in the antiquities section of the Boston Museum of Fine Arts provided an appropriate second source. Internet sources, which I preselected and organized in a folder under “Favorites,” acted as a third source of information.

I chose a range of Internet sources, below, on, and above the third-grade reading level. I looked for sources with a rich balance of visual and textual information and easy-to-follow links. I also searched for a few links with audio and video components so that my struggling readers would be able to gather information efficiently. I wanted to create a way to gather and organize information that would engage auditory, visual, and kinesthetic learners. As students rotated through the information stations during the course of their lesson, they were asked to find three quick facts about King Tut and to write each of those facts in sentence form on a sticky note. The rectangular sticky notes, further organized by subtopic as a concluding activity, would form the bricks of our pyramid of knowledge. Students used the information in a subsequent collaboration to develop summary paragraphs of the findings.
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This process sounds straightforward, and for many students, multiple resource exercises such as this one are easy to do. In its *Information Literacy Standards for Student Learning* (1998), the American Library Association asks students to consider whether “the information gathered is well fitted to the informational needs.” I paraphrase this objective in simpler terms, asking my students if the “answer matches the question.” This inquiry has been met with many a furrowed brow as students grapple with the idea that research should lead to a particular outcome—not just locating a fact, but locating information that is directly relevant to the topic investigated or questions asked. I encounter students at every age and every stage of the research process who have difficulty connecting the fact with the topic, the question with the answer. In this particular exercise, Nate wrote, “Lord Carnavan was losing hope after five years of digging.” It is a fact that relates to the discovery of Tut’s tomb, but Nate was unable to make that connection. In fact, he was not really sure what he had written. He had faithfully copied words from a source (they sounded important) but did not fully understand what he had read.

This provided an opportunity for one-on-one coaching about the relevancy of research, but I also could have designed a mini-lesson to reinforce this point for a small or large group of students who were similarly confused. One of the most important considerations is making sure that the information is on the child’s reading level. The text on many websites is written for an audience beyond the age of eight. In Nate’s case, we went back to the source (National Geographic Kids online, one of the sites I selected for our “Favorites” folder) together, found the context for that statement, read a bit further, and linked the information directly to the topic by adding the phrase, “and searching for King Tut’s tomb.”

Students at the beginning of the research process must be gently and constantly reminded that they need to understand information before they can share it effectively with others. As we gather and note research, we ask ourselves two questions: Do I understand what I just wrote? If the answer is yes, we move on to the second question: Can I organize/phrase/share this information in a way that everyone can understand? This process is modeled many times in the primary grades as we synthesize the information gathered into narrative form. Eventually, the process of research for the purpose of real learning becomes clearer to the students.
For example, the first-grade teachers and I took advantage of a science curriculum study on spiders to model the processes of acquiring, organizing, and applying information. Each first grader was provided with a Spider Science notebook, a collection of index cards in which holes have been punched along the left-hand side. Rubber bands are threaded through the holes and held in place by a tongue depressor “spine.” (This form of binding makes it easy for students to take their pages apart and physically organize and edit the information they gather.) As we read through a range of genres of literature on spiders, students learned that factual information was imbedded into many forms of literature. A thorough discussion of fiction and nonfiction literature was woven through the research as students added to their notebooks. (Interestingly, their information was notated both in text and in visual forms.) We synthesized the students’ facts and developed a web-shaped graphic system, organizing common information and developing subtopics such as what spiders look like, what spiders eat, and so on. As a culminating activity, these young researchers translated their collection of information into colorful drawings of spiders, with supporting visual details to provide context about the habits and habitats of particular spiders (the type of webs woven, the preferred diet, the surrounding environment, the challenge of predators), matching their drawings to text. Technological skills came into play as students scanned their images and linked textual and visual information with Microsoft PowerPoint software. The resulting work was linked together into an electronic book.

WORKING SMARTER. AGAIN.

As mentioned earlier, part of my daily work in the media center involves facilitating literature circles for our third-, fourth-, and fifth-grade students. The students are recommended for these small-group classes by their classroom teacher. Some students rotate in and out for short periods during the school year; others participate throughout the year, depending on their particular learning needs and interests. With a work of literature at the foundation, we engage in integrated instruction—reading, writing, theorizing, investigating, and applying technology. I often will select a book
CHAPTER FOUR

that correlates with grade-level science and social studies as a way to bolster student learning in these subject areas. Let’s take a look at the role that research skills play in an integrated learning environment.

One fifth-grade unit centered on Christopher Paul Curtis’s book Bud, Not Buddy, a work of historical fiction. With skill and love, Curtis manages to impart a view of life in the 1930s through the eyes of Bud, a high-spirited ten-year-old, who tends to surmount every obstacle through his foundation of values, resourcefulness, and humor.

I wanted my students to research the American Depression era but had difficulty finding a range of age-appropriate resources for research on this particular subject. Then it occurred to me that this topic might be just the one to teach primary sources and to practice interview skills. Every student in the group had some family friend or relative who had lived during the Depression. It was an eye-opening connection for these ten-year-olds who, I discovered, rarely view historical events in relation to the real lives of the people around them, and even more rarely connect those to their own lives. As the students shared stories and discussed their interviews, it was clear that a new vocabulary list was forming. Words like bread line, hobo, Dust Bowl, truck farming, and Hooverville emerged. We used that vocabulary list as the basis for our next level of research.

In looking at Internet sources, students came across the compelling photographs of Margaret Bourke-White. The fifth graders were electrified by the power of these images, connecting them with their interviews and discussions, and immediately asked if they could make “pictures like these.” Working within the definition of historical fiction, weaving the stories of actual events through the lives of fictional characters, the students began to gather information about the Depression era and to blend it with original stories. The added challenge of writing in an acrostic format, using the letters of names of their characters as the first letter of each line of their narratives, made the phrasing a bit more poetic and the vocabulary richer.

Because we also had been talking about point of view, we made this a team activity, with each of two characters describing the same events through their particular perspectives. For example, David and Kyle developed a powerful, direct story of two brothers who leave their failing family farm in hope of finding work in a large industrial city (see Figure 4.6).
David and Kyle make revisions to their story of two brothers, Billy and Johnny Lee. In their story, Billy hops a train to get to the city and find work. In his travels, Billy meets hobos, experiences a Hooverville, and tries to evade the railroad security guards. Johnny Lee remains on the family farm and tries to keep things running while dealing with the steady stream of people who pass the farm looking for food or work.

Acrostic writing format abridges and dramatizes the boys’ tale in their finished product.
Samantha and Shelby devised a narrative about a desperate mother and child trapped in a rural setting without resources. Jillian and Kayla wrote a story about two sisters whose relatives were unwilling to take them in after the loss of their parents. The students then assumed the roles of the characters they created, staging and taking photographs to illustrate and support the stories they had developed. Imaging software enabled them to recreate the look of period photographs and to layer their stories over their images (see Figure 4.7 for David and Kyle’s finished product).

These tales were unfailingly dramatic. But they evidenced real empathy, too. The stories, inspired by their interviews with people close to the students and strengthened by their original images, clearly echoed the desperation and courage of many Americans during this period in our history. The unfolding of events within the student narratives—the Dust Bowl, separation of families, and the dangers inherent in train hopping—gave evidence to their research on this period in America’s history.

**AUTHENTIC LEARNING**

A natural response to inquiry, research lies at the heart of authentic learning. As teachers, we cultivate research skills as a way to empower our students to become lifelong learners. The world is at their fingertips, just waiting to be discovered. We can unlock that world for them. Purposefully linked with curriculum, research and higher-thinking skills not only address but power up a myriad of benchmarks and standards. Student research is transformed into creative, applicable, and transferable knowledge when matched with writing, literature, visual literacy, real-life experiences, and technology applications. Guided practice with these components ultimately prepares students for true, independent learning and thinking. And isn’t that, really, where teaching and learning begin to matter?