

Themes or motifs?

Here are some fresh ideas for teachers who want to put more "theme" into thematic units and to make them more than just activities around a topic.

Aiming for coherence through interdisciplinary outlines

Amid the recent surge of reform initiatives, educators have consistently stressed one key recommendation for teachers in the early grades: Instruction should focus on integrated, interdisciplinary activities that revolve around a set of important ideas. (See, for example, the *Position Statement on Interdisciplinary Learning, pre-K–Grade 4*, National Council of Teachers of English, 1995, adopted by the major national subject-matter organizations.) The most frequent method of implementing integrated, interdisciplinary instruction is the thematic unit, in which a common theme is developed and addressed in more than one content area (Lipson, Valencia, Wixson, & Peters, 1993). Such units may vary in length from 2 or 3 weeks up to an entire school year, but in order to be effective, thematic units typically must be broad enough to provide authentic experiences in more than one content area, offer a range of learning experiences for students, and give students choices in the projects they pursue and the ways they demonstrate their learning.

Such integrated instruction—addressing content from several subjects simultaneously—has a number of potential benefits. First, it allows teachers to make better use of classroom time and thus to address content in more depth; by removing artificial divisions among subjects, integrated study helps students see connections within content areas and enables them more eas-

ily to understand important concepts and ideas (Pappas, Kiefer, & Levstik, 1999). In addition, teachers can use an integrated approach to individualize instruction within the context of shared classroom activities: This format provides more opportunities for multiple responses to content, and it allows teachers to build on students' background knowledge and assess their understanding in more varied ways. Finally, integrated instruction allows students to master skills and concepts through the kind of authentic tasks that they are likely to encounter in their lives outside the classroom (Bergeron & Rudenga, 1996). This search for authentic instructional tasks has been a major thrust of many of the recent efforts at instructional reform (e.g., see Newmann, Secada, & Wehlage, 1995; Schlechty, 1997; Wiggins, 1993).

But a number of authors have noted shortcomings in the implementation of integrated thematic units; most notably, they argue that the content of such units is often shallow, and that the activities students engage in frequently fail to teach important skills or concepts (Routman, 1991; Shanahan, Robinson, & Schneider, 1995; Tucker & Coddington, 1998; Wiggins & McTighe, 1998). As we have worked with elementary teachers who are trying to integrate their instruction (whether due to personal commitment or district mandate), we have also noticed a number of problems—including not only the lack of meaningful content, but also the failure

to engage children actively or to capitalize on their strengths, interests, and background knowledge. Indeed, some teachers have told us they tried thematic units for a year or two, only to find that they “didn’t work.” With so many reputed benefits, we wondered, why do thematic units so often fail to live up to their potential?

We have come to believe that one of the most serious shortcomings in such units is that they often do not truly focus on a theme, but instead revolve around what might be called instructional motifs. (Routman, 1991, referred to these as “correlations” rather than themes.) Instead of addressing a significant, unifying theme, these motif-units organize content and activities together simply because they contain or mention a similar subject—bears, cats, dragons, leaves. One of the most common motif-units, for example, is apples: Children split apples into fractional parts, look at apple trees, read about Johnny Appleseed, and write about how they would feel if they were apples. At first glance, these activities appear to involve interesting and hands-on approaches to learning. What drawbacks, then, do we see with motif-units? Many.

First, students who can’t work up a healthy interest in apples have no choice but to wait until the unit is over; the content is usually so limited they have no choice of activities or responses and can find little of personal interest. Similarly, motif-units seldom consider the background of individual students or classes; in our experience, such units are repeated annually, with little adaptation for new students who have their own unique knowledge and interests—first graders this year do the same apple-related activities as those last year and the year before. Perhaps most important, motif-units typically do not focus on the substantive content that students should be learning at school; units on apples, for example, rarely address topics such as the life cycle of plants, the production and distribution of food, or even human nutritional needs. Instead, apples are simply used as a vehicle for practicing unrelated math and language skills. (This lack of attention to content is a common feature of such units; e.g., see Brophy & Alleman, 1991; Silva & Delgado-Larocco, 1993.) As a result, many children never seem sure of exactly what they are supposed to be learning about a unit topic, and they may con-

tinue to experience school as a place for superficial coverage of a limited range of information, unrelated to their backgrounds or interests—precisely the condition that integrated instruction is meant to counter.

We believe that planning thematic instruction requires a different approach to curriculum—one that is more open, flexibly organized, and authentic, and one that is based on consideration of students’ needs and interests. We suggest replacing the term *thematic unit*—with its widely varied meanings and associations—with the concept of *interdisciplinary outline*. We find this new designation useful for two reasons. First, it highlights the importance of helping students develop the knowledge and skills that derive from a variety of academic disciplines, rather than focusing on ill-defined and sometimes trivial motifs such as bears or circuses. Second, it recognizes that effective planning is neither a vague ideal, nor a detailed prescription, but an outline—a well-crafted set of resources and activities that can adapt to the emerging needs and interests of students. In the following sections, we show how one fourth-grade teacher—Leslie Kreimer of Roberts Paideia Academy in Cincinnati, Ohio, USA—demonstrates this approach to integrated instruction through her reflections on her planning, students, and classroom. We present her comments on thematic instruction not so that others can simply model their activities on hers, but rather in the hope that teachers can benefit from Leslie’s insights into the underlying principles of effective units.

Meaningful content

According to Leslie, interdisciplinary outlines must include meaningful content.

Two years ago, I did a little double dipping, integrating two subjects at a time, like writing about a science unit or reading a book for math. But now, science, social studies, and literature flow together, and I integrate math whenever I can. In deciding on the topics, I read over the local promotion standards and the state proficiency standards. They don’t identify specific topics that have to be studied; they don’t say you have to teach “the life cycle of a turtle,” just “explain a series of events.” The standards seemed like a lot of patterns, origins, and history, and also physical and chemical changes, so I saw I could split most of them into two groups—Exploring Our Roots and Changes in Our World.

Teachers have many decisions to make as they plan interdisciplinary outlines. One important decision revolves around the selection of the content to be covered. The primary issue to consider when selecting content is simple: Children have to learn something worth knowing. Among the topics students learn about in Leslie's Changes outline, for example, are physical changes in land, changes in the environment, how animals adapt to these changes, how characters change in literature, and how prices change with supply and demand. In her Roots outline, students learn about their personal and family histories, the origin of measurement and number systems, genetic traits and heredity, evolution, and root words. (See Figures 1 and 2; for another example of a unit centered on the same topic, see Pappas et al., 1999.) Each of these topics—along with the many others that make up the two outlines—addresses meaningful, worthwhile knowledge. Their depth and richness provide Leslie with the chance to plan authentic activities, to adapt instruction to students' needs, and to offer multiple avenues for demonstrating knowledge.

Of course, as teachers plan interdisciplinary outlines, they need to examine and select from appropriate content for their grade levels. This content may be taken from curriculum outlines or programs of study at national, state, district, and school levels. Leslie clearly uses the state and district guidelines; rather than seeing them as irrelevant documents to be placed on a shelf, she regularly consults them to determine what content she needs to teach at her grade level. Her ownership of curriculum and her awareness of existing standards enables her to see how she can make connections for her students: She doesn't simply *follow* a curriculum guide, marching blindly through a series of objectives, but rather *organizes* curricular objectives to meet both the needs of her students and district and state guidelines.

As teachers select content, they should look for logical connections that tie one subject area to another—organizing concepts like changes and roots. It is through this connected content that students see the larger relationships between pieces of information and begin to see school learning as more than separate classes they attend. Teachers should take care, however, to integrate skills and content only when the connections are logical;

teachers should feel free to start by integrating only two subjects—realizing that others may need to be covered separately to meet curricular needs (Schug & Cross, 1998). As Leslie explains, she began by working with only two subjects, eventually adding more, and including content only where appropriate. She does not force integration; she looks for broad topics, "big ideas," that authentically tie together material from multiple subject areas (Lipson et al., 1993).

Authentic activities

Leslie also believes that interdisciplinary outlines involve authentic activities.

To develop activities for a thematic unit, you have to understand how children learn. They don't learn by reading a chapter in a social studies book by themselves and looking up vocabulary words; the textbook doesn't even match the promotion standards, so doing it is just busywork. But if they're doing an activity that's meaningful, and they know why they're doing it, and they see the application, they'll learn from it. At the start of a research project, we talk about why we're doing it, why it's important.

For too many years, classrooms have been dominated by activities that are chosen not because they have any intrinsic meaning or application but because they fit neatly into a prearranged series of skills and can be completed within a predictable time frame. The mania for Dittos and other handouts is the most obvious manifestation of this approach; we've all known teachers who duplicated their entire set of materials for the year before school started. In content areas like science and social studies, as Leslie notes, students often find themselves plowing through textbooks with monotonous regularity—looking up vocabulary one day, reading the chapter the next day, answering questions the next, and so on. Such activities are easy to plan and easy to regulate and manage; in fact, control of the classroom often seems to be the goal of instruction, rather than meaningful student learning.

But most people don't learn very effectively through a series of decontextualized activities. As noted earlier, much of the scholarship on teaching and learning over the last decade has focused on the role of authentic activities. Outside school, people learn when they are engaged in meaningful activities they care about—scientists and historians, for example, learn by conducting

Figure 1
Year 1 web

Shapes and numbers: Where do they come from?

Research how different number systems began; chart instances when Arabic and Roman numerals are used

Read *Grandfather Tang* and work Tangram puzzles comparing perimeter and area

Measure objects with nonstandard and standard units of measurement; compare results

Create multiplication chart; identify squared numbers and the pattern they create in the chart

Look at buildings for geometric shapes; brainstorm which parts of buildings usually have which shapes

Construct a sundial

Genetics/heredity/evolution

Make a wall chart of traits that are and are not inherited

Collect information from relatives on inherited traits (e.g., attached earlobes, fingerprints, widow's peak)

Choose a prehistoric animal species and draw a chart showing its ancestors and descendants

Work in groups to make a display showing how animals are genetically adapted to a particular habitat

Use fossil kit from museum to compare and contrast fossils with each other and with current life

Personal history

Create a time line of important events based on interviews with relatives

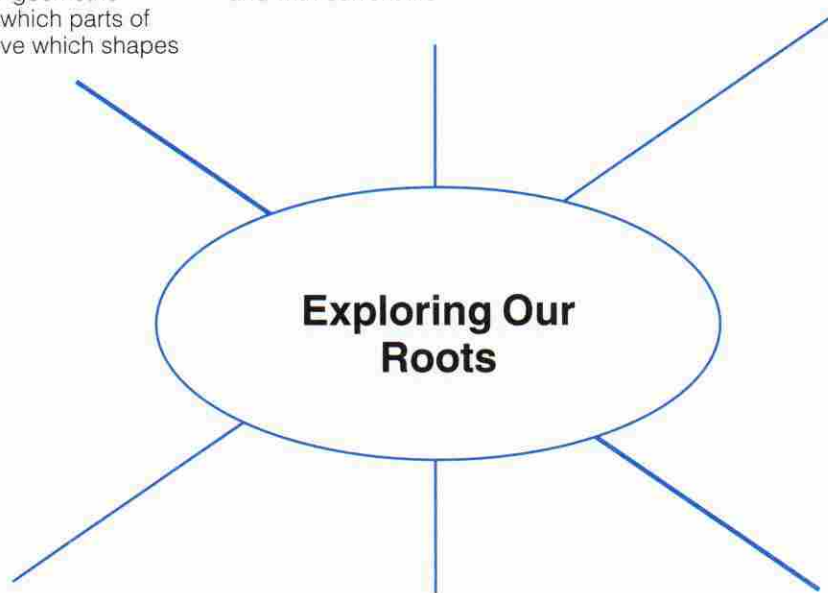
Write a personal narrative about an important event

Create an autobiographical display with artifacts

Multitiered time lines: Combine personal time lines and national headlines

Create a "Memory Box" or time capsule

Read literature and discuss how characters' pasts affect them



Exploring Our Roots

Ohio history

Make "Ohio Star" and other traditional pieces for class quilt; calculate how many combinations of colors are possible in different designs

Read *Warm as Wool* and compare wants and needs in early pioneer families and today

Trace the route of the family in *The Floating House*

Read Appalachian folktales and create new ones

Read African American folktales and create new ones

Immigration

Classify *Americans All* pictures by continent of origin

Locate origins of families in *Everybody Cooks Rice*

Read *Who Belongs Here* and write "I Am..." poems

Work in groups to prepare presentations based on questions in *If Your Name Was Changed at Ellis Island*

Why do we say that?

Interview parents and grandparents about origin and significance of first and last names

Read selections from *Thereby Hangs a Tale* each day

Work in groups to use *Settler Sayings* to create visual displays on the origins of phrases

Survey families for regionally used words and phrases

Chart slang terms and their meanings

See Sidebar on pp. 60 – 61 for books mentioned.

Figure 2
Year 2 web

Shapes and numbers: Where do they come from?

Research how different number systems began; chart instances when Arabic and Roman numerals are used

List items in classroom and school that are classified; brainstorm reasons for classifying

Measure objects with nonstandard and standard units of measurement; compare results

Create multiplication chart; identify squared numbers and the pattern they create in the chart

Illustrate items in classroom that have particular geometric shapes; list ways shapes are used and why shape was chosen

Genetics/heredity/evolution

Make a wall chart of traits that are and are not inherited

Collect information from relatives on inherited traits (e.g., attached earlobes, fingerprints, widow's peak)

Choose a prehistoric animal species and draw a chart showing its ancestors and descendants

Work in groups to make a display showing how animals are genetically adapted to a particular habitat

Family history

Create a visual time line with pictures from students' families

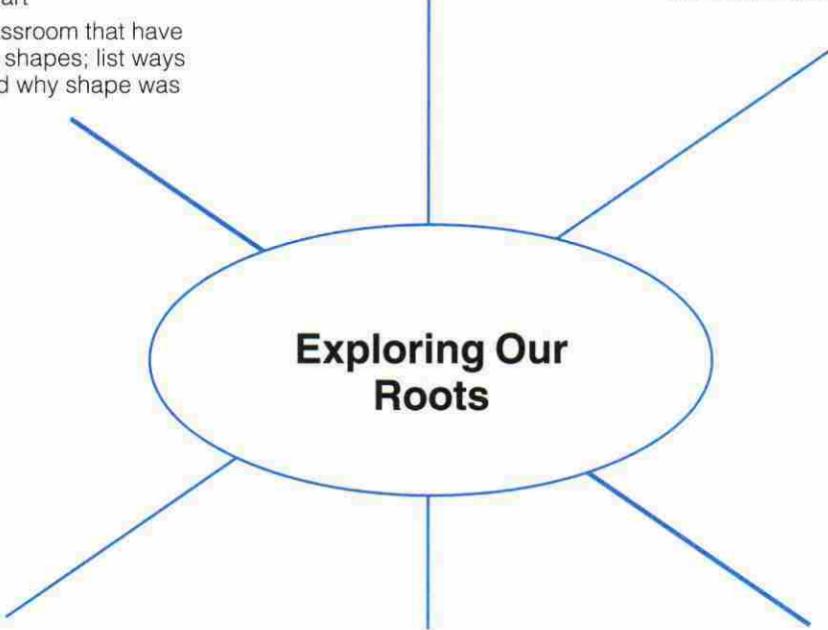
Collect information for Family History Chart

Write memoirs about important people in students' families

Chart movements in students' families (streets, cities, state, countries)

Interview relatives about reasons they have moved

Interview parents and grandparents about their elementary schools



Exploring Our Roots

Ohio history

Work in groups to prepare presentations based on questions in *If You Traveled on the Underground Railroad*

Read *Paperboy* and compare "then and now" pictures from Ohio history

Read Appalachian folktales and create new ones

Read African American folktales and create new ones

Immigration

Read *Who Belongs Here* and write "I Am..." poems

Work in groups to prepare presentations based on questions in *If Your Name Was Changed at Ellis Island*

Choose a region and time period and write dialogues among family members deciding whether to emigrate to the U.S.

Create wall chart of the contributions of different ethnic groups to U.S. culture and society

Why do we say that?

Interview parents and grandparents about origin and significance of first and last names

Read selections from *Thereby Hangs a Tale* each day

Work in groups to use *Settler Sayings* to create visual displays on the origins of phrases

Illustrate literal and figurative meanings of idioms

See Sidebar on pp. 60 – 61 for books mentioned.

experiments or analyzing primary sources, not by answering questions at the end of a textbook chapter. Doctors and welders and lawyers and truckers all learn by practical, on-the-job training and experience in their fields, not by completing a set of handouts; internships and apprenticeships are required in these fields because they cannot be mastered solely by paper-and-pencil instruction. In order for classroom activities to be effective, then, teachers should strive to re-create the kinds of situations in which people learn outside of school. Students should be doing activities that have applications beyond the need to complete the next assignment in the teacher's planbook. Units are most meaningful when they include such authentic activities.

Leslie's outlines include a great many authentic experiences. In science and social studies, for example, students interview relatives or classmates to obtain information, they transform that data into formats that allow them to draw conclusions—charts, graphs, essays, and presentations—and they share their results with one another. Such activities are exactly what scientists, historians, and other researchers do—they collect data from real-world sources (not the table at the top of a handout), they synthesize the data by using a variety of statistical or narrative devices, and they share that information with colleagues and the wider public. Similarly, when students in Leslie's class read literature, they do so not to pass a quiz but so that they can discuss the work or respond to it in journals. In both formats students are encouraged to compare what they have read with their own experiences and with other readings—exactly what readers do outside school. But as Leslie notes, teachers have to help students understand the meaning and purpose of these activities; if students don't understand why collecting data, making graphs, or responding in a journal is important, these can become as meaningless as a set of Dittos.

Students' needs

In Leslie's experience, interdisciplinary outlines grow and change with students' needs.

Units like *Bears and Apples* are very preplanned, and they aren't related to students or what they're doing. A thematic unit will be different every year with different students; it has to be broad enough to expand and contract with students' needs. Last year in the *Roots* unit, they were interested in their heritage as part of the United States—slavery, immigration, and

other things from history; this year, maybe they won't be, so we might spend more time on their personal heritage or their family background. When you plan for a thematic unit, you can't have your semester planned out week by week; you can't plan to do something whether [a particular student] understands it or not. You have to ask: Are you doing what students need? Are they learning, growing, discovering things? A truly integrated theme grows, it builds on what you've been doing; students are constantly going back and pulling out information from what they've learned before.

It's possible to walk into any teacher-supply store and buy sets of overhead and worksheet masters with titles like *Thematic Unit on Immigration* and *Thematic Unit on Dinosaurs*. Aside from whether these topics are truly "thematic" in focus, such packaged activities have the same drawbacks as any set of handouts—they are unrelated to students' needs and interests. In order for instruction to be effective, it must take students' prior knowledge into account by building on what they already know and addressing any misconceptions they may have. As Leslie points out, you can't go ahead with your plans whether students understand the lesson or not; you have to ask whether they're "learning, growing, discovering things." But because every class of students is different, with different mental schemas, packaged materials cannot adequately meet all students' needs. Only teachers can draw out and respond to students' unique experiences, ideas, and conceptions.

Throughout her instruction, Leslie gives students the chance to build on their prior knowledge. The most obvious way of doing this is simply by asking them what they know about a topic before studying it. Because most of her students have never encountered history at school, for example, she begins that portion of the *Roots* unit by asking them what they think history is and what it means to them; she records these answers on chart paper and returns to them periodically throughout the unit—asking students how their ideas have changed since they began and recording these new ideas as well. For more specific topics within the unit—such as immigration or heredity—Leslie achieves the same goal by using K-W-L charts; these give students the chance to identify what they already know (or think they know) about a topic, what they want to know, and ultimately, what they have learned about it. For investigations in science, asking students to make predictions fulfills much

Children's books

Personal history

- Bahr, Mary. (1991). *The memory box*. Morton Grove, IL: Whitman.
- Bunting, Eve. (1995). *Once upon a time*. Katonah, NY: Owen.
- Clifford, Erth. (1985). *The remembering box*. Boston: Houghton Mifflin.
- Garza, Carmen Lomas. (1990). *Family pictures/Cuadros de familia*. San Francisco: Children's Book Press.
- Johnson, Angela. (1989). *Tell me a story, mama*. New York: Orchard.
- Schwartz, Amy. (1983). *Mrs. Moskowitz and the Sabbath candlesticks*. Philadelphia: Jewish Publication Society of America.

Family history

- Bonnors, Susan. (1991). *The wooden doll*. New York: Lothrop, Lee & Shephard.
- Belton, Sandra. (1994). *May'naise sandwiches & sunshine tea*. New York: Four Winds.
- Flournoy, Valerie. (1985). *The patchwork quilt*. New York: Dial.
- Flournoy, Valerie. (1995). *Tanya's reunion*. New York: Dial.
- Levoy, Myron. (1984). *The Hanukkah of great-uncle Otto*. Philadelphia: Jewish Publication Society of America.
- Rylant, Cynthia. (1982). *When I was young in the mountains*. New York: Dutton.
- Weber, Judith Eichler. (1994). *Melting pots: Family stories and recipes*. New York: Silver Moon.
- Weitzman, David. (1975). *My backyard history book*. Boston: Little, Brown.

Ohio history

- Aardema, Verna. (1992). *Who's in rabbit's house? A Masai tale*. New York: Dial Books for Young Readers.
- Aardema, Verna. (1992). *Why mosquitos buzz in people's ears*. New York: Dial Books for Young Readers.
- Arkhurst, Joyce Cooper. (1992). *The adventures of spider: West African folktales*. Boston: Little, Brown.
- Bial, Raymond. (1995). *The underground railroad*. Boston: Houghton Mifflin.
- Chase, Richard. (1973). *The grandfather tales*. Boston: Houghton Mifflin.
- Chase, Richard. (Ed.). (1993). *The Jack tales*. Boston: Houghton Mifflin.
- Hamilton, Virginia. (1985). *The people could fly*. New York: Knopf.
- Hopkinson, Deborah. (1993). *Sweet Clara and the freedom quilt*. New York: Knopf.
- Kroeger, Mary Kay, & Borden, Louise. (1996). *Paperboy*. New York: Clarion.
- Levine, Ellen. (1992). *If you traveled on the underground railroad*. New York: Scholastic.
- McDermott, Gerald. (1988). *Anansi the spider: A tale from the Ashanti*. New York: Henry Holt & Company.
- McDermott, Gerald, & Peck, Tim. (Eds.). (1992). *Zomo the rabbit: A trickster tale from Africa*. Harcourt Brace.
- Sanders, Scott Russell. (1989). *Aurora means dawn*. New York: Bradbury.

(continued)

the same purpose: They record what they think will happen when ice is heated or when a powder is burned, and they check their findings against these predictions.

Another way Leslie builds on what students know is by integrating their experiences into classroom activities. In many of the lessons, for example, students use information from their own backgrounds—writing an autobiography, interviewing relatives about their childhood, collecting information on family genetic traits, or researching family names. Whenever possible, Leslie makes the academic content of the lesson relevant to the knowledge students already have. When students begin to analyze differences in historical and contemporary photographs, for example, she uses pictures from surrounding neighborhoods, with landmarks that will be familiar to students. Similarly, many of the historical topics relate to the aspects of everyday life children already know about—transportation, games, schools, and so on—rather than political affairs with which they are much less familiar. Beginning with topics that are within their experience enables students more easily to comprehend new information.

But building on students' background means more than simply activating their knowledge—it also involves adapting instruction to meet their needs. Some adaptations are relatively small in scale. When students began researching their family names, for example, Leslie found that her African American students often had little knowledge of or interest in those names; they were, however, very interested in the origin of their first names, and when she modified the assignment so that students could focus on first names instead of last, they were able to bring in a much greater wealth of information. Other modifications take place daily, as whole-class or small-group discussions reveal that students know more or less about a topic, or have different interests, than anticipated.

Moreover, a truly meaningful set of lessons will adapt not only to students' prior knowledge but also to their interests (Bergeron & Rudenga, 1996; Walmsley, 1994). Although it comes as no surprise that people learn best when they study something that interests them—and that they resist learning anything simply because they're told they have to—such common-sense observations often play little role in the design of

instruction. Students rarely have the opportunity to make meaningful choices about the direction of their studies. In Leslie's class, though, students have choices about both the direction their lessons will take and the topics they will study within each portion. Although the entire class studied historical changes in everyday life, for example, it was the students themselves who developed the specific list of subtopics, and they split up into small groups, choosing the one that interested them most. Similarly, groups of students chose the specific habitats that interested them during their study of adaptations.

In addition, Leslie allowed the entire unit to flow in the direction that students found most interesting. As she noted above, some years students may be more interested in aspects of national heritage, such as slavery or immigration, while other classes may want to focus on their personal or family heritages. This is one of the most difficult aspects of interdisciplinary outlines, for it makes planning more difficult and implementation less certain. Teachers must simultaneously *overplan*—making sure they have a variety of resources and activities to accommodate students' interests—and *underplan*—remaining flexible instead of spelling out each day's and each week's activities. This kind of planning goes against the grain for teachers, for they're accustomed to getting the most out of their limited resources by specifying the pace and direction of instruction in great detail; indeed, such planning often is advocated in university programs and expected by school administrators. But by building in as many choices as possible, Leslie makes sure that a greater portion of students stay engaged and interested in the topic, and that they feel the unit is theirs, rather than a program imposed from outside.

Teacher mediation

Leslie thinks that interdisciplinary outlines require teacher mediation.

In doing a research project, students want the answers just to be there, like in a textbook, and a lot of teachers make the mistake of throwing them to the wolves. But activities can't be busywork; if they can do it without your assistance, they're probably not learning anything from it. I have to show them how to do their projects, but without treating them like babies. The first time is always the hardest, but then it's easier next time. The first time students do a report, we come to-

Children's books (continued)

- Sanders, Scott Russell. (1992). *Warm as wool*. New York: Bradbury.
 Sanders, Scott Russell. (1993). *The mystery man*. New York: Bradbury.
 Sanders, Scott Russell. (1995). *The floating house*. New York: Atheneum.

Immigration

- Dooley, Nora. (1991). *Everybody cooks rice*. Minneapolis, MN: Carolrhoda.
 Freedman, Russell. (1980). *Immigrant kids*. New York: Scholastic.
 Howlett, Bud. (1993). *I'm new here*. Boston: Houghton Mifflin.
 Knight, Margy Burns. (1993). *Who belongs here? An American story*. Gardiner, MN: Tilbury House.
 Levine, Ellen. (1993). *If your name was changed at Ellis Island*. New York: Scholastic.
 Stanek, Muriel. (1989). *I speak English for my mom*. Niles, IL: Whitman.

Why do we say that?

- Funk, Charles Earle. (1986). *Heavens to Betsy! and other curious sayings*. New York: Perennial Library.
 Funk, Charles Earle. (1993). *Thereby hangs a tale: Stories of curious word origins*. New York: Harper & Row.
 Kalman, Bobbie. (1994). *Settler sayings*. New York: Crabtree.
 Lee, Mary Price. (1985). *Last names first—and some first names too*. Philadelphia: Westminster.
 Meltzer, Milton. (1984). *A book about names*. New York: Crowell.
 Terban, Marvin. (1996). *Scholastic dictionary of idioms*. New York: Scholastic.

Shapes and numbers: Where do they come from?

- Adler, Irving. (1967). *The calendar*. New York: John Day.
 Apfel, Necia H. (1985). *Calendars*. New York: Franklin Watts.
 Cribb, Joe. (1990). *Money*. New York: Knopf.
 Lauber, Patricia. (1990). *How we learned the earth is round*. New York: Crowell.
 Myller, Rolf. (1991). *How big is a foot?* New York: Young Yearling.
 Schmandt-Besserat, Denise. (1999). *The history of counting*. New York: Morrow.
 Sitomer, Mindel, & Sitomer, Harry. (1976). *How did numbers begin?* New York: Crowell.
 Tompert, Ann. (1990). *Grandfather Tang's story*. New York: Crown.
 Ziner, Feenie, & Thompson, Elizabeth. (1982). *Time*. Chicago: Children's Press.

Genetics, heredity, and evolution

- Aliki. (1990). *Fossils tell of long ago*. New York: Crowell.
 Cole, Joanna. (1989). *Evolution*. New York: Harper & Row.
 Dunbar, Robert E. (1978). *Heredity*. New York: Franklin Watts.
 Gamlin, Linda. (1993). *Eyewitness science: Evolution*. New York: Dorling Kindersley.
 Goor, Ron. (1984). *All kinds of feet*. New York: Crowell.
 Rupert, Mark. (1990). *The first people*. New York: Bookwright Press.
 Showers, Paul. (1982). *Me and my family tree*. New York: Crowell.

gether and develop a topic sentence together, and model how to do it. Then with their next report, they come up with their own topic sentences; some need more help, but some can do it on their own.

Leslie's quote points to a key challenge of interdisciplinary outlines—finding activities that are at the right degree of difficulty, and then helping students learn from those activities. Authentic instruction often requires that students engage in research, organization, synthesis, higher level mathematical or language skills, or a combination of all of these, and students understandably have difficulty with such tasks. As Leslie says, they expect that the answer will “just be there, like in a textbook.” Because students find such projects difficult, even frustrating, teachers sometimes seek out activities that are easier for them to complete. But while easier projects may be exciting, and may include a high degree of interest and involvement, if students can complete them without assistance they're probably not learning very much. The activities are then just busywork, as Leslie noted. For lessons to be educationally sound, they must involve students in acquiring skills and knowledge they didn't have previously. Students have to be learning something.

In order for students to learn from difficult projects, of course, teachers have to help them: They have to provide the scaffolding that will enable students to complete the activities, first with assistance and, ultimately, on their own. This kind of mediation is at the heart of all teaching, but in interdisciplinary outlines teacher mediation becomes both more necessary and more complicated. Because large-scale or long-term activities have a multitude of component skills, and because it is not always easy to predict which ones students will need help with, teachers have to be able to identify on the spot the areas where students need assistance and must be ready to provide that help when needed—not by completing portions of the task for students, but by leading them through processes they will ultimately master. As Leslie explained, the first time students do a report, the whole class may work together to develop topic sentences as she models the process for them. For the next report, some students will be able to write topic sentences on their own, while others may continue to need her help.

Variety of resources

Leslie knows that interdisciplinary outlines require a variety of resources.

With integrated units, they have the chance to use information over and over in different contexts, and they have to be exposed to different ways of learning. You have to have a variety of techniques: hands-on lessons, open-ended activities, critical thinking, discovery lessons, different ways of organizing information, graphs, charts, paired activities, whole-class lessons, small-group work. And you have to have enough resources; I spent hours at the library looking for literature books for these projects. I have 150–175 books on each of the unit topics, and that's still small, that's not enough.

In order to make possible all of the aspects of thematic instruction that we have stressed (meaningful content, authentic activities, growing and changing with students' needs, and teacher mediation), teachers need to evaluate carefully the resources available. Authentic activities require a variety of reading materials, at a variety of levels, addressing topics in a variety of ways (Walmsley, 1994). Adapting units to students' needs and interests is possible only if teachers have sufficient resources to choose those that best fit their students. Teachers have little chance to mediate if resources are so limited that they can only read aloud to students, or if students are all reading the same limited material. Finally, content can only be sufficiently addressed if a variety of sources allow students to have multiple exposures to that content in different contexts. Leslie clearly thinks through the breadth of content she wants to cover, the kinds of activities she hopes to have students complete, and the formats through which she would like to present the content to her students. As she notes, five books per student is still a relatively small collection of material if students are to examine concepts in multiple contexts at any level of detail.

As teachers consider interdisciplinary outlines and the resources required, they have two major decisions to make. First, advanced planning is clearly indicated to determine that sufficient resources can be gathered. Teachers need to decide ahead of time which topics seem appropriate, then check on available materials. Local libraries sometimes help teachers compile sets of books, video materials may be ordered, Internet sites can be found, and speakers may be contacted. Second, teachers need to consider what op-

tions they have if available resources are not found. It may be that topics can be broadened, but sometimes teachers will need to opt for different units for which more resources exist. It is clear that for interdisciplinary outlines really to develop students' understanding of related concepts, a variety of materials on a variety of levels must be accessible.

Move beyond motifs

Elementary teachers face constantly increasing demands on their time and effort: They are encouraged (or cajoled, or mandated, or brow-beaten) to cover more content, to hold students more accountable for learning, to address the needs of a wider variety of students, and to include more authentic activities, more higher order thinking, and more learning styles. For teachers to survive these pressures they will have to rethink the way they structure their teaching. Interdisciplinary outlines are one way to meet these demands in a meaningful and effective way. When teachers like Leslie implement such units, they focus on the content students need to learn, they build in diverse response activities and student choice, and they engage in the teacher mediation needed for children to learn from authentic tasks.

But too many units fail to live up to these standards; motif-units, as we have called them, undermine the potential benefits of integrated instruction. Revolving around packaged handouts or cute but superficial activities, such units can reinforce the worst failings of elementary instruction—low-level skills, trivial content, activities unresponsive to students' needs or interests, and the widespread mania for worksheets. Under such conditions, it is little surprise that some teachers find that their attempts at thematic units "don't work," for their efforts may amount to nothing but a more time-consuming way of organizing instruction. In order for teachers to make the most of integrated units, they will need to move beyond motifs to more carefully planned interdisciplinary outlines—units that include important content, that grow and change

with students' needs and interests, and that involve authentic instructional tasks. We hope the children's books we recommend in the Sidebar help all those teachers like Leslie as they plan future lessons.

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