What is inquiry learning, and what does it look like in practice? How do library media specialists and classroom teachers integrate an information process model like Pathways to Knowledge with inquiry learning? With these questions in mind, it seemed appropriate to first develop a scenario that shows students engaged in inquiry learning and using the Pathways model as a practical framework to illustrate the principles of inquiry learning. As you read the scenario at the beginning of this chapter, keep in mind that the discussion of inquiry learning that follows frequently refers back to it. The scenario is based on a Heroes unit, and that Heroes Planning Guide is included in Appendix B (see Figure B.1).

**SCENARIO 2.1**

**Heroes Unit**

The middle school students in Mrs. Sanchez's class had enthusiastically participated in the panel discussion with several guest athletes from their local university who were popular and successful. Five athletes (two basketball players, one football player, one volleyball player, and one swimmer) came to talk with students. The primary focus of this discussion was the challenges of being perceived as a hero by campus students and many others in the extended university community. The athletes, two women and three men, each spoke for a short time about their lives and what had happened along the way to help them be successful. Students asked perceptive questions about differences between sports and also about gender. For example, they wanted to know if the male basketball player was considered more of a hero than the female player and how each felt about that perception. They also discussed the athletes' ideas about personal characteristics of athlete heroes in relation to some of the nationally recognized athletes.

The next day Mrs. Sanchez and her students met in the library media center. She asked students...
to work in small groups to brainstorm a list of heroes. The class then came back together as a large group and constructed a web based on their brainstormed list of heroes. They organized the web by job or professional category (e.g., sports figures, artists, musicians, government leaders, film stars). Mr. Thomas, the library media specialist, talked with students about resources they might use to develop their background knowledge about heroes. They spent some time gathering information and expanding their list of heroes. Mrs. Sanchez asked students what they might like to know about these heroes and how they might proceed with this inquiry unit. As their inquiry into heroes developed, students frequently made reflective entries in journals and engaged in small group discussions that led them to question their knowledge about heroes and the new information they were finding.

After spending several days in the library media center, the students decided they would each investigate two heroes. Their research questions would be: (1) Who are these people, and what has made them famous? (2) What (if any) life-changing events occurred in the lives of these people? (3) Why are these people special? In addition, the students formed small groups that would each be responsible for developing a common list of characteristics about their individual heroes. As a final activity, groups would present their list of hero characteristics and the large group would reach consensus on one list of shared characteristics.

Students gathered information, wrote journal entries about their information and inquiry process, continually evaluated information, and held periodic small group discussions about the characteristics of heroes. As their work progressed, they decided to do presentations about their heroes and invite parents and community people. They organized their information, used timelines to visually show the events of a hero's life, and created storyboards to design their presentations.

Mrs. Sanchez suggested they use a rubric to evaluate the presentations; she and the students spent part of one class period constructing the rubric (see Figure B.2 in Appendix B). The students thought that the resulting rubric helped them understand how to develop a quality presentation. On the day of the presentations, the class list of hero characteristics was posted in the front of the classroom. As students presented information about their heroes, Mrs. Sanchez engaged the audience and students in discussions about how their characteristics were reflected in the heroes they were presenting.

On the final day of their heroes inquiry unit, students wrote a response in their journals to the question, "How do heroes influence my life?" which allowed them to demonstrate their understanding of their research questions.

When we were in school, typically our teachers gave us a reading assignment in our textbook. Most class time was spent listening to a lecture. Depending on the class, there would be some discussion, but the focus was on providing the "right" answers. Debate was not typically encouraged. We often had worksheets to complete with fill-in questions that required information from our textbook. We gave reports on topics assigned by the teacher and we gathered that information from the textbook, library books, or magazines. Tests were usually multiple choice or fill-in-the-blank questions, with an occasional essay question. We realize our school memories may be older than yours, but we suspect this scenario is still being repeated in some schools today.

The traditional approach described here is based on behaviorist learning theory and has affected curriculum and instruction for many years (see Figure 2.1, page 26). Behaviorists suggest that there is a confined body of knowledge that can be taught and tested; hence, there are definite right and wrong answers to questions. Traditional
teachers impart knowledge, and students are considered vessels to be filled, which is a passive approach to learning. Traditional curricula are written with behavioral objectives, and the primary resources are textbooks and teacher lectures. Evaluation is typically based on objective tests. Behavioral objectives tend to foster fragmentation, and the curriculum is often broad and shallow. Usually there is little higher-level thinking in the traditional curriculum. Much of the traditional curriculum is focused on the knowledge or fact level, with memorization of knowledge.

Mrs. Sanchez's students (Scenario 2.1) are studying heroes. In a traditional hero unit, students might typically select a hero from a list generated by the teacher. Each student would write a report or perhaps give a presentation about this hero, but little activity would engage them in thinking critically about the hero characteristics or how those characteristics might relate to their own lives.

Constructivist learning theory, developed by cognitive psychologists, suggests that learning is "the active building of knowledge through dynamic interaction with information and experience. Cognitive psychologists define learning itself as the active building of knowledge through dynamic interaction with information and experience" (AASL and AECT, 1998, p. 2). Constructivists believe that we have a schema in our brains, and we learn by making connections to prior knowledge, constructing new understandings, and connecting those to our schema. Much of the new perspective on brain-based learning supports this learning theory.

Contemporary curriculum design is based on constructivism and engages students in active and student-centered learning experiences. Common characteristics are apparent across all types of contemporary curriculum design. "These characteristics are: critical thinking, authentic context, depth of content knowledge, learner choice and engagement, and interactive knowledge construction" (Pappas, 1998, p. 29).

**Figure 2.1 Learning Theory**

<table>
<thead>
<tr>
<th>Behaviorism</th>
<th>Constructivism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional curriculum design is characterized by:</td>
<td>Constructivist curriculum design is characterized by:</td>
</tr>
<tr>
<td>.teacher as knowledge provider</td>
<td>-teacher as guide</td>
</tr>
<tr>
<td>.student as passive learner</td>
<td>-student as active learner</td>
</tr>
<tr>
<td>.curriculum as a confined body of knowledge</td>
<td>-curriculum that reflects essential understandings</td>
</tr>
<tr>
<td>.objective evaluation (i.e., tests)</td>
<td>-authentic assessment (i.e., performance demonstrations)</td>
</tr>
</tbody>
</table>

**INQUIRY LEARNING**

Inquiry learning is a foundation element of constructivist learning theory and authentic curriculum design. *Information Power* states that "the information search
process mirrors this description of the learning process: students actively seek to construct meaning from the sources they encounter and to create products that shape and communicate that meaning effectively" (AASL and AECT, 1998, p. 2).

Inquiry is an investigative process that engages students in answering questions, solving real world problems, confronting issues, or exploring personal interests. The notion of inquiry appears in many educational disciplines. Karen Sheingold (1987), Director of the Center for Children and Technology at the Bank Street College of Education, suggests that "(i)nquiry is a complex process that includes formulating a problem or question, searching through and/or collecting information to address the problem or question, making sense of that information, and developing an understanding of, point of view about, or 'answer' to the question" (p. 81). Joy McGregor (1999) suggests that "inquiry learning is also known as discovery learning [and] ...is typically student-centered, with teachers acting as guides and coaches rather than as knowledge providers" (p. 34). Mary Dalbotten (1998) believes "the overall process requires that students apply analysis, synthesis, and evaluation skills as they find and use information and make generalizations." Even though the steps appear to be linear, "in actuality they are cyclical or recursive...inquiry in real life is messy and chaotic" (p. 32).

Inquiry requires students to be active rather than passive learners, which means that teachers and library media specialists must engage them in a learning task that allows meaningful choices. There is a social context to inquiry learning in the sense that students need opportunities to discuss and share new ideas. Such discussions allow students to discover new ideas, see relationships between ideas, and build new knowledge in ways that might not be possible if students were left to learn on their own (Pappas, 2000).

Inquiry learning has four important elements-learner engagement, questioning, applying an information process, and constructing new understandings-which are practiced by learners within a learning community. A learning community is composed of learners, both children and adults; knowledgeable resource people; and information resources. (See Figure 2.3, page 29.) ***Note: unable to scan figure 2.3***
Inquiry begins as an individual becomes engaged and pursues a problem that needs resolution or a personal interest or issue. Students who pursue inquiry must have
owner-ship of the problem or issue rather than having that problem be imposed upon them by a teacher. Questioning permeates inquiry. In the early stages of inquiry, a student focuses on "What do I already know or want to know about my issue or problem?" Applying an information process allows students to gather, evaluate, and use new information. As students move deeper into inquiry, a recursive process ensues as they gather information, question, and reflect, then gather information again, questioning, synthesizing, and evaluating until they have successfully constructed new knowledge.

Questioning transcends all components of inquiry learning. Students should be encouraged to frequently raise new questions that surface as a result of the information they have been gathering. Questioning can be fostered by teachers and library media specialists through coaching activities. This might mean providing students with writing prompts or the use of models that lead to questions (Rankin, 1999). As students become more adept at this questioning process, they should be encouraged to develop questions without prompts from teachers (Pappas, 2000).

**INQUIRY LEARNING IN PRACTICE**

Inquiry learning is student centered, which means that students have ownership in the process rather than pursuing a project that has been assigned by the teacher. The students in Mrs. Sanchez's class (Scenario 2.1) became interested in heroes following a panel discussion in their classroom with several prominent university athletes. With some coaching and facilitating by their teacher, these students began to pursue an inquiry project about heroes. Unlike some hero units, in this one the students planned to go beyond the investigation of one hero into a class profile of hero characteristics developed through collaboration and consensus. Critical thinking therefore became an important focus.

Questioning, including reflection, is an element of inquiry learning. Brainstorming and webbing are useful strategies to enhance questioning in the early stage of inquiry. The students in Mrs. Sanchez's class worked in small groups to develop webs focused on types of heroes and then specific heroes. They used their webbed information to develop several research questions to follow as they gathered information about individual heroes. As their inquiry process developed, students engaged in questioning through reflective journal writing, small group discussions, and consensus building. Questioning and reflection are skills that must be developed through practice. "Teachers and library media specialists can foster this questioning and reflection by using prompts" (Pappas, 2000, p. 29). Examples of prompts that Mrs. Sanchez provided for her students include the following questions:

What was the most important thing you learned today?

Was there any information you found that surprised you? Why?

How does the information you located today answer your research question?
If the information you located today does not answer your research question, what is your next step? (Pappas, 2000, p. 29)

Inquiry requires students to find information from many different information providers and resources. The learning community is important as students look for information beyond the walls of their school. The students in Mrs. Sanchez's class used a variety of tools in their school library, including periodical databases, the catalog, and Web tools like directories and search engines. Many students wanted to have a personal interview with their heroes. Sometimes the hero was a local person, and the interview could take place in person or on the telephone. In other cases the hero was a national figure and not easily available by telephone or in person. The Web has a variety of options for contacting prominent people. Sometimes e-mail exchanges or chat room interactions can be arranged.

Primary source documents can be found at local historical societies, government offices, museums, historical landmarks and parks, and on the Web. There are often Web sites about heroes such as George Washington or Abraham Lincoln where personal or professional documents are available. The Library of Congress's American Memory Project includes a significant number of primary source documents. Mrs. Sanchez's students planned their search strategies, identified appropriate keywords, initiated searches, evaluated the results, recorded new information, and evaluated their information for accuracy, biases, and relevance to their research questions.

Using information and constructing new understandings requires students to engage in reflection and critical thinking. "Reflection is a process of thinking about what you know, questioning new information, making connections to prior knowledge, or evaluating information" (Pappas, 2000). Rankin (1999) believes that "the daily use of a journal is one of the best ways to build metacognition in a research project" (p. 44). Students also should organize their information so they can look for patterns, trends, sequences, and contrasts, then analyze and evaluate. To compare characteristics of heroes, students in Mrs. Sanchez's class used timelines and Venn diagrams. Their final activity was to construct a list of hero characteristics that they developed through consensus, a task that involved organizing their information, synthesis, evaluation, and negotiation skills.

**INQUIRY AND PATHWAYS TO KNOWLEDGE**

The Pathways model provides the information process and thus the strategies that students need as they pursue inquiry. Inquiry learning and Pathways represent a recursive, nonlinear learning experience, which is underscored on the graphic version with the band effect and arrows between stages with double arrowheads (see Figure A.1 in Appendix A). Questioning, including reflection and evaluation, is an important element within inquiry learning, and this element appears as a strategy on the Pathways model.

When the students in Mrs. Sanchez's class listened to the university athletes and asked them questions, they were showing curiosity, which is part of the Appreciation stage of the Pathways model. These students brainstormed a list of heroes and constructed a web. Both brainstorming and webbing are Presearch strategies. They developed research questions-also a Presearch strategy. Students gathered information
and used strategies from the Search stage. They made the decision to give presentations about their heroes that required them to organize their information and use timelines-strategies that fall within the Communication stage. When they gave their presentations they used a rubric the class had helped to develop as a tool for both peer- and self-evaluation-strategies in the Evaluation stage.

Rubrics are an important assessment tool for inquiry learning. They provide a "precise and concrete description of successful performance. A rubric is a scaled set of criteria that clearly defines for the student and the teacher what a range of acceptable and unacceptable performance looks like" (Donham, 1998, p. 9). The North Carolina Department of Public Instruction has a Web site that includes a section on constructing rubrics that you might find useful. An example of a rubric is Figure B.2 in Appendix B.

INQUIRY LEARNING CHANGES TRADITIONAL ROLES

Inquiry learning changes the roles of students and teachers. Teachers (i.e., class-room teachers, library media specialists, special teachers, etc.) become coaches, facilitators, and tutors. The teacher as coach monitors the learning activities of students and interacts with students to keep them on track. Sometimes that interaction takes the form of asking probing questions to foster critical thinking, or perhaps guiding consideration of an idea or concept related to their research topic that had been overlooked. A coach’s role is not to tell students what to do but rather to nudge them so they can figure things out for themselves.

In a coaching role, the library media specialist might prepare a pathfinder that would help students locate information rather than pull all the resources on a topic and put them on a cart. The primary role of the facilitator is to remove impediments or roadblocks so learning can occur. Depending on the age of the students, a facilitator must anticipate potential problems and find solutions. As a facilitator, a library media specialist might provide mini-classes or written instructions for using databases so that students could use the technology on an as-needed basis rather than demonstrating the use of the database to all students regardless of whether they have a need.

In her facilitator role, Mrs. Sanchez (Scenario 2.1) arranged for the guest athletes to visit in the classroom. She also worked collaboratively with Mr. Thomas, the library media specialist, to help students with the search part of their unit. In a tutoring role, teachers and library media specialists might work one-on-one with a student teaching specific searching strategies or following the format for a bibliographic entry. Figure 2.4, page 34, shows the changing roles of a teacher (classroom teacher, library media specialist) in inquiry learning.

The students’ roles also change. In inquiry learning, students are responsible for establishing the focus of their research and developing research questions. Learning that is student-centered requires some form of meaningful mental engagement on the part of the student. Giving students choices means we also expect them to deal with the consequences of their decisions, although there is some type of safety net in place. Inquiry learning engages students in social interaction and small group work. Students who have no experience working in groups often cause dysfunctional groups. Some type of training for cooperative learning should take place, provided by the teacher in a coaching role.
Inquiry Learning Changes Roles

No longer is learning an experience that is poured into the learner by a teacher but rather the learner is now responsible for constructing his or her own personal meaning. That means learners have a decision-making role in the development of the learning plan. Collaboration and interactivity become important activities in the learning process. (Pappas, 1999a, pp. 28-29)

<table>
<thead>
<tr>
<th>Learner</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learner…</td>
<td>The teacher…</td>
</tr>
<tr>
<td>is actively engaged in learning</td>
<td>designs curriculum that effectively engages learners and is based on core understandings</td>
</tr>
<tr>
<td>independently follows a process to locate, use and evaluate information to construct new knowledge</td>
<td>facilitates the learning process by establishing a learning environment that enables learners to be independent</td>
</tr>
<tr>
<td>engages in interaction with other learners to enable knowledge construction</td>
<td>acts as a coach by posing provocative questions that guide learners to think critically and reach a depth of content knowledge</td>
</tr>
<tr>
<td>works collaboratively with other learners</td>
<td>enables the authentic assessment of the inquiry process and learner products</td>
</tr>
<tr>
<td>gathers information using the multiple resources of the learning community</td>
<td>facilitates and coaches collaborative learning experiences</td>
</tr>
<tr>
<td>values all forms of literature and creative expression</td>
<td>works collaboratively with the LMS and other classroom teachers to plan, implement, and evaluate authentic learning</td>
</tr>
<tr>
<td>practices ethical behavior when using information or technology</td>
<td>facilitates connections with the learning community</td>
</tr>
<tr>
<td>engages her/his natural sense of curiosity to solve problems or gather information about personal interests</td>
<td>fosters an appreciation for curiosity, discovery, literature, and other forms of creative expression</td>
</tr>
<tr>
<td>self-evaluates the inquiry process and any products</td>
<td></td>
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</tbody>
</table>

MANAGING THE INQUIRY LEARNING ENVIRONMENT

The learning environment in a traditional school tends to be closed, with limited connection to the community. Teachers instruct in their self-contained classrooms and tend to view themselves as self-sufficient when providing students with resources beyond the information available in their textbooks. In a constructivist classroom, the learning environment is open, with many connections to the learning community. It is important for teachers to understand that the shift from a traditional classroom to one that
is constructivist and authentic does not happen overnight but rather takes time and experience. There is an intermediary stage that we label "thematic." A thematic curriculum design may incorporate some of the elements of authentic learning but not all and may reflect some of the characteristics of constructivism.

Typically, a unit revolves around a theme, students have some choice in their learning activities, and they engage in gathering information from multiple resources. Often, the unit focuses on disparate activities that are theme-based and lack a focus on the big ideas usually reflected in essential questions. Authentic learning involves critical thinking, depth of content knowledge, meaningful student choice, an authentic context, interactive knowledge construction, and the application of information-seeking as a process (Pappas, 1999a).

A learning community is "the global web of individuals and organizations who are interconnected in a lifelong quest to understand and meet constantly changing information needs" (AASL and AECT, 1998, p. 48). It holds the learner at the center, "but all people engaged in the community have the potential to be learners and teachers" (Pappas, 1999b, p. 30). Technology has greatly enhanced the learning potential within a learning community by enabling connections with information, experts, teachers, and other learners around the world.

Students who engage in inquiry need access to quality resources and information, and it is important that this access be available as their needs require. Flexible access to the library media center is an important requirement in a learning community. However, there are also other information providers within the learning community, such as the public library, local museums, the historical society, or a nature preserve. People are an important resource, and these might be experts on the Web, members of the local government, or grandparents who can provide a personal historical perspective. Primary source documents take on a special importance when students pursue an inquiry project, because these enable a connection with the real world. They may be available nearby, at the local historical society but also on the Web. Documents include letters, personal papers, diaries, legal documents, ship manifests, and so forth.

An open environment can make learning come alive for students, but there are also challenges that must be handled by teachers in their role as facilitator. For example, authentic learning experiences can be enhanced if students can go to a museum, the historical society, the mayor's office, and similar places, but these field trips are sometimes difficult to facilitate. The challenge teachers and library media specialists face is providing these authentic experiences without engaging in large numbers of field trips (Pappas, 2000).

All members of the learning community must work together to make these learning experiences happen. Teachers, working collaboratively with the library media specialist, might take part of a class to visit the local newspaper, while the rest of the class gathers information in the library media center. The cordless telephone, speakerphones, and teleconferencing also enable conversations with community people without requiring the complications of a field trip.

Parents, grandparents, and other members of the community will find the notion of a learning community very different from their school experiences. Involving community members in the inquiry learning experiences of students results in a two-fold
reward. First, they can actually benefit from involvement with students who are working on an inquiry project. Students learn from the community members, and those adults might learn something from the students. Second, asking (for example) an editor from the local newspaper to visit the school and talk with a small group of students allows for an exchange of information without the complications of transporting those students off the school grounds. Also, the school visit allows the editor (or any community member) to see excited students engaged in a meaningful learning experience.

The part of inquiry learning that seems to be most challenging for teachers is the fact that their students will all be working on different projects and will be responsible for acquiring slightly different content knowledge. In short, they will not all be on the same page in the textbook at the same time. A traditional teacher's first question is, "How will I manage this?"

One strategy is to put students into small, collaborative learning groups. Organizing groups of students so that they are all working on the same task or project does not guarantee that learning is taking place. A mistake that teachers often make is assuming that students know how to function in small groups, and they may not. Collaborative learning requires teaching students group skills; for example, the role of a leader in the small group, delegating tasks to group members, listening, and respecting the ideas of others. Cooperative Learning (Kagan, 1994) is an excellent resource that teachers can use to help students be more productive in small groups.

Students typically do not know how to plan and organize their learning. Teachers who are successful with inquiry learning often use different types of organizers to help students put structure into their learning. For example, the students in Mrs. Sanchez's class created webs to organize their initial brainstorming information. Sometimes teachers encourage students to gather initial background information and then expand their webs into mind maps. Students were journaling throughout the Heroes unit in Scenario 2.1. As students began to plan their inquiry strategy, the information in their journals could be used within this planning process.

Mrs. Sanchez's students used timelines and Venn diagrams to establish a sequence of events and to compare the characteristics of their heroes. Organizers might also fall in the category of advance organizers. An advance organizer establishes some structure for organizing information without requiring prescribed responses. For example, a search log is an advance organizer. Over time, students should develop an understanding of which organizers they need for specific tasks, a skill that ultimately enables them to become independent learners. There are some excellent organizer Web sites, and several are included in the resource list at http://www.pathwaysmodel.com/resources/weblinks/.

Planning is another important aspect of managing the inquiry learning environment. Collaboration requires teachers and library media specialists to plan together so all will know their roles in the unit. Collaboration is more than identifying resources for a unit; it involves co-teaching.

Students should engage in planning activities if they are making decisions about their own learning. It is important for them to see their teachers planning and working together because that provides them with a model for their own behavior. Planning must
include an element of flexibility, because inquiry learning is nonlinear and students might need to return to an element of the inquiry process. For example, the questioning process often uncovers a missing piece or a broader perspective, causing students to change their plan. A checklist is a useful organizer that allows students to track their progress in relation to their plan.

**DESIGNING AN INQUIRY UNIT**

Because inquiry learning requires student buy-in, motivating students' curiosity to a level that has the potential to actively engage them in the inquiry process becomes a high priority. Mrs. Sanchez (Scenario 2.1) used the panel discussion with prominent local athletes. There are many strategies teachers can use to begin an inquiry learning unit, and sometimes the problem, or students themselves, will raise topics for inquiry. Some of these strategies are reading a compelling story, posing an intriguing problem, or viewing a gripping video.

An inquiry unit requires collaboration between the teacher and library media specialist. Typically, some form of planning guide is used. (An example of a planning guide for Scenario 2.1 is Figure B.1 in Appendix B.) An initial planning session took place between Mrs. Sanchez and Mr. Thomas, the library media specialist. Working together, they developed the essential understandings and questions for the unit and the assessment criteria. In this type of collaborative planning, Mr. Thomas might have been the one who suggested they begin the unit by asking the university athletes to visit and participate in a panel discussion. At this stage an initial time frame of three weeks could be established for the unit, with the understanding that student needs and interests might bring about some adjustment in time.

Mr. Thomas agreed to an initial search for information about those heroes that have often appealed to students in past units. He suggested they bookmark some Web sites to help facilitate student background information searches. Both Mrs. Sanchez and Mr. Thomas were in agreement that journaling should be an important part of the unit. Mrs. Sanchez asked Mr. Thomas if students could hold their brainstorming session in the library media center, with both of them facilitating the exercise, and Mr. Thomas agreed. They scheduled another planning session after the fourth day of the unit. At this point, both teachers thought that they would have a sense of the additional needs students might have in terms of mini-lessons and tutoring requirements.

At the next planning session, Mr. Thomas volunteered to help read journals and meet with several of the small groups for discussions. He suggested that mini-lessons on keyword searching; evaluating information for relevance, accuracy, bias, and currency; and use of graphic organizers would be useful for students. Mr. Thomas also suggested that he teach a review session on *Electric Library* and *SIRS Researcher* for those students who needed extra help. Mrs. Sanchez stressed the importance of engaging students in a questioning process as they gathered information. They both talked about using the journals to support the questioning process. Mrs. Sanchez said students wanted to give presentations about their heroes and use both *PowerPoint@* (2001) and *HyperStudio@* (2001). They decided to invite the technology teacher, Mrs. Allen, to their next meeting.

Another planning session was held several days later, and Mrs. Allen joined them. They talked about the need for students to use a storyboard to plan their presentations.
Mrs. Allen said students had learned to use *PowerPoint* in their last computer mini-course, and she thought that they could probably create the presentations they needed with only minimal review. She thought they should concentrate on *PowerPoint* rather than trying to help students use both programs. Mrs. Sanchez and Mr. Thomas agreed. They made arrangements for students to have access to the computer lab for several days. They also talked about assessment strategies and tools. Mrs. Sanchez suggested they engage the students in developing a rubric that could be used for peer- and self-assessment of their presentations. They discussed some primary criteria for the rubric so they would be able to guide the conversation with students. Mrs. Sanchez asked Mrs. Allen to participate in the rubric development exercise with students. Mr. Thomas and Mrs. Sanchez discussed their strategy for facilitating the consensus-building activity for developing a composite list of hero characteristics.

At an informal hall meeting several days later with Mr. Thomas, Mrs. Sanchez asked if students could give their presentations in the library media center. She had invited parents and some local community people to be in the audience for these presentations. She also asked Mr. Thomas if they could videotape the presentations, and he agreed.

When the unit was completed, all three teachers met to evaluate it. They decided to brainstorm a list of the positives about the unit as well as suggestions for change. Mrs. Sanchez had asked her students to evaluate the unit, and their feedback was included in the lists. Student feedback varied about the opening activity of the unit. Some students really enjoyed the opportunity to meet with athletes from the university but wondered if it would be possible to involve some professional athletes in the future. Other students thought there was too much emphasis on athletes at that stage. All three teachers agreed that the unit was worth repeating in another year.

**CHANGING LEARNING**

The inquiry learning process described in this chapter represents change across the educational community. One or two people might initiate the change process, but systemic change requires collaborative efforts and buy-in from library media specialists, teachers, principals, curriculum directors, and superintendents. Changing from a traditional curriculum to one that is authentic will require several years of incremental changes to the design of curriculum, instructional strategies used by teachers, schedules of students in both elementary and secondary schools to allow for flexible and open access to school libraries and technology, and planning time.

This change process can be a challenge in today's standards-based environment. Many state standards have been written using goals that reflect critical thinking and problem solving. There is a great deal of pressure for students to score well on the state tests based on these standards. In this situation, inquiry learning has great potential to help students be more successful on the tests because this type of learning focuses on higher levels of thinking and gives students opportunities to practice problem solving and critical thinking. However, some state standards are still focused on the knowledge level
of learning, with a very specific focus on facts. Making the shift to inquiry learning will be difficult when that is the case.

Making the change to inquiry learning requires significant time spent in professional development for teachers because inquiry learning is fundamentally a different way of teaching. It means changing the learning environment in classrooms and the school. It may mean shifting some monies now earmarked for textbook adoptions to multiple resources and technology for classrooms and the school library. Making the change requires adopting an information literacy curriculum that is integrated across all curricular areas and involving parents and the community in the change process. Change that is evolutionary is much more likely to be lasting than unsupported change mandated from above. Therefore, changing slowly and seeking buy-in from all players in the process is very important.

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WEB RESOURCES

Note: All Web addresses accessed December 21, 2001

