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Identifying the Inquiry-Based School

What Does an Inquiry-Based School Look Like?

There is growing concern among educators that, for all our efforts at reform, students are not able to demonstrate the depth of understanding that they need to confront real-world problems. While content knowledge and skills are important and necessary targets for teaching and learning, we also need to focus on the thinking skills and habits of mind that lead to greater understanding. This is the defining quality of an inquiry-based learning environment.

To get a true feeling for what such an environment looks like, we must observe what occurs in a classroom. Here is a possible scenario.

► *Fifth graders are studying colonization as part of a year-long thematic investigation of "change over time" that correlates with state content standards in social studies. In this unit, their framing question is, "How did colonization bring about change?" This question is posted on a large sheet of newsprint in the classroom. Students work in teams at tables, at the computers, and at the whiteboard on various stages of their projects. One team is composing a "fifth grade compact" akin to the Mayflower Compact. Another team is preparing a pictorial timeline of the period, which will be displayed in the library media center. A third group is working on their living museum presentation of life in colonial America, which will be staged at the school's Learning Fair. Throughout the unit, students move back and forth between classroom, computer lab, and library media center as they wrestle with:*

- *refining their research questions.*
- *using primary sources such as ships' logs and journals of colonial leaders.*
- *retrieving information that satisfies their needs.*
- *generating more questions.*
- *seeking additional resources.*
- *determining the usefulness and accuracy of their information.*
- *putting information together in a meaningful and effective way.*

This chapter:

- Identifies characteristics of an inquiry-based school.
- Compares and contrasts the practices of inquiry-based and conventional learning environments.
- Suggests action strategies in creating an inquiry-based school.
- Discusses the role of the library media program in such an environment.

The instructors—teacher, technology coordinator, and library media specialist—work as a team and help students to problem solve what they want to accomplish. Much of their assistance is in the form of questions such as, “Could you go over exactly what you did?” “Where did you encounter a problem?” “What are some other ways you might attack this problem?” Students spend time in brief, on-the-fly conferences with their instructors. Students also compose short entries in their “thinking journals” to reflect on these problems. In addition, they consult with other student teams that might be experiencing similar difficulties.

The teacher regularly brings the teams together to debrief and to focus their attention on a large class matrix being developed about the changes during the colonial period and their probable causes.

What can we extract from the above scenario? Several characteristics of an inquiry-based environment emerge:

Questioning is at the center of the learning experience.

Inquiry inspires an excitement for learning. In the scenario presented, the unit itself is framed by an essential or big question. With the help of their instructors, students also create more specific questions that are related to their own research projects. As they collect information, they are encouraged to generate more questions that provoke deeper levels of understanding. As they stumble and hit roadblocks, instructors guide students to think through their problems by asking additional questions about strategies used and new options to try.

Students help to negotiate the direction of the learning.

Instructors practice the art of guidance and facilitation as they work with students. While direct teaching is still a valued part of the overall learning experience, instructors spend more time listening to and observing what students do and asking questions that give them further insight into what students actually know. Through this process, students realize the legitimacy of what they want to know and gain confidence in finding their own answers to questions.

Learning is social and interactive.

Students work in groups. The teacher teams with colleagues on the staff. The synergy of these exchanges brings substance and richness to the entire learning discourse. By working cooperatively and collaboratively, people often discover creative solutions to difficult situations and develop respect for diverse perspectives on a topic or an issue.

Solving problems is an integral part of the process.

The ability to recognize problems and to devise strategies to confront them is an essential life skill for students. They need to challenge themselves with questions such as, “Why didn’t this work?” “What can I do next?” Being able to apply systematic reasoning strengthens students’ abilities to distinguish causes from the symptoms of problems. It also fosters a reexamination of alternative strategies to resolve problems.

Students learn by doing.

The spectrum of activities in a unit or a project reflects both physical and intellectual engagement, i.e., what some educators call hands-on and minds-on interaction. Students in the fifth grade scenario are using the tools of a historian when they examine primary documents to support their findings. They perform tasks that require higher order thinking as they formulate questions, identify steps in completing their projects, and implement their action plans. Some activities are overt, i.e., the students are constructing things or doing live demonstrations. Other activities that deal more centrally with the students' thinking processes are not as directly observable. However, students can prepare journal entries that describe their thinking. Instructors can also confer with students to better understand the rationale and motivation behind a student's actions.

Products and performances reflect application and transfer of learning.

In their products, students not only demonstrate what they understand from their readings, discussions, and observations; they also display how they can transfer this learning to another situation. For example, in the scenario presented students created a "fifth grade compact." To do this successfully, they had to first understand the basic premises of a compact such as the one devised by the Mayflower colonists. By applying their understanding, students exhibited the depth of their own newly acquired knowledge.

Learning is authentic.

The learning experiences are linked to students' personal lives or they are connected to larger social issues. Importantly, students' products and performances are intended for audiences other than the teacher. The students wrestle with questions such as, "How does this influence my own life?" "Why does this matter in today's world?" "How can I share what I know with other people?" In short, students come to realize that what they are learning truly matters. They discover a purpose for learning and for communicating that learning. To move students from fact-centered questions to these types of questions requires continuous modeling and thinking aloud with students. They need to see and to discuss the levels of questioning possible.

Assessment is continuous.

Assessment is done continuously and by both instructors and students. It can take many forms including observations, conferences, graphic organizers, and journals. Importantly, the tools selected for assessment must clearly address the learning outcomes desired. The critical questions to ask in determining assessment measures are: What do we expect students to demonstrate? How might we best measure this performance?

How Does an Inquiry-Based Learning Environment Differ from a Conventional One?

Numerous educational leaders, among them Perkins (1992, 1991) and Wiggins and McTighe (1998), have identified the attributes of high quality schools. They concur that schools which produce stimulating learning communities offer learning experiences that blend knowledge, skills and thinking processes. Figure 1.1 profiles the distinguishing characteristics of inquiry-focused schools contrasted with those of conventional schools:

Figure 1.1: Comparison of Conventional and Inquiry-Focused Schools

Attributes	Conventional school	Inquiry-focused school
Students	Passive learners	Active, engaged learners
Teachers, library media specialists	Content-oriented Teacher as information provider	Student-oriented Teacher as facilitator
Scheduling	Rigid	Flexible
School culture	Bureaucratic	Collaborative
Curriculum and instruction	Textbook-driven Teacher-focused Breadth emphasized Topic-oriented Fragmented	Standards-driven Student-negotiated Depth emphasized Thematic or problem-based Integrated
Assessment	Evaluation at the end Right answers are stressed Teacher assesses Grading is the goal Asks, "what do we know?"	Assessment is ongoing Diverse responses are encouraged Students and teacher assess Goal is improving learning and teaching Asks, "how do we come to know?"
Resources	Restricted to resources available in the classroom	Expands to resources beyond the school
Technology	Focus on learning about technology	Use of technology as a tool for learning

We can now use the characteristics of an inquiry-focused school that have been identified in Figure 1.1 to analyze the fifth grade scenario presented earlier (see Figure 1.2).

Figure 1.2: Analysis of Fifth Grade Unit According to Characteristics of an Inquiry-Focused School

Attributes	Inquiry-focused school	Fifth grade example
Students	Active, engaged learners	Students work in teams to solve problems, conduct research, and communicate findings.
Teachers, library media specialists	Student-oriented	Instructors practice active listening, facilitative questioning, close observation to guide rather than direct students.
Scheduling	Flexible	Students move between classroom, library media center, and computer lab as needed.
School culture	Collaborative	Teacher, library media specialist, and technology coordinator work as a team in planning and co-teaching the unit.
Curriculum and instruction	Standards-driven Student-negotiated Depth emphasized Thematic or problem-based Integrated	The colonization unit is thematic and based on content standards. Students select specific focuses for their research and choose the formats for their final presentations. The overarching question demands deeper analysis and synthesis. Social studies, language arts, fine arts, and information literacy are integrated in this unit.
Assessment	Students and teachers assess Diverse responses are encouraged Goal is improving learning and teaching Assessment is ongoing	Students keep journals throughout the project. Instructors continually monitor student progress. Instructors encourage thinking and actions that reflect independent but thoughtful responses. Assessment informs changes to teaching and learning strategies.

The most telling difference between the inquiry-focused school and other schools is a profound shift in emphasis from textbook-dictated teaching to student-focused learning. Faculties start to ask, “How do students learn?” “Do we encourage students to formulate their own ideas based on data they collect?” “Do we foster the transfer of learning to new and different situations?” “Do we have extended conversations with students regarding their learning?” “Do we encourage such conversations among students?” “Are students relating their learning to the real world?”

In inquiry environments, students demonstrate understanding as they explain how something works, interpret the meaning of text, give examples or analogies to clarify ideas, show how things are alike and different, and develop generalizations based upon facts (Unger, 2002; Newmann & Wehlage, 1993; Perkins, 1991). These and other performances provoke learners to strive for deeper levels of comprehension.

How Do We Create an Inquiry-Based Learning Environment?

Creating an environment that supports inquiry begins with the school community's consensus that its mission is developing students who are critical thinkers and problem solvers. While most schools would hardly argue that this is a central goal for them, building a school culture in which such learning actually occurs requires a hard-nosed examination of actual practices.

Wehlage (1999) in his evaluation of Library Power schools, indicated the dilemma and disconnect between mission and actual school practices. Our work with schools in our own state and in other states corroborates the observations below:

- Students work independently more often than they do in teams.
- Inquiry as a process of learning is not clearly evident in practice (e.g., hands-on activities may not be connected to analysis or building evidence).
- The lion's share of the annual school budget is spent on textbooks and workbooks. At the same time, the library media center budget is dwindling.
- Professional development is conducted largely as one-shot efforts with limited, if any, follow-through during the school year.
- Technology training usually focuses on the technical aspects of using software programs rather than the learning implications of technology use.
- Classroom teachers lean heavily on evaluation at the end rather than ongoing assessment. Quizzes and tests remain the norm.
- Staff time for collaborative planning is minimal and incidental. There is no training for working effectively in collaborative groups.
- Professional development focuses on separate strands for teachers and for library media specialists.

To effect real change, a school community must wrestle with the following essential questions:

- What should students learn?
- How should students learn?
- How should learning be assessed?
- How might technology support learning?
- What interactions and relationships enhance learning?
- How can we promote continuous school-wide improvement?

In Figure 1.3, we suggest how a school might respond to these questions and the types of action strategies that lead to substantive change.

Figure 1.3: Building an Inquiry-Based Environment: Examples of Action Strategies

Essential questions	Possible action strategies
What should students learn?	<p>Conduct retreats to shape school's overall vision and mission.</p> <p>Establish articulation committees across departments or grade levels to build curriculum around big ideas that connect to the real world.</p> <p>Focus on thinking processes as well as content knowledge and skills.</p>
How should students learn?	<p>Build professional development opportunities to design learning environments that promote investigation, higher level questioning, and hands-on activities that lead to understanding.</p>
How should learning be assessed?	<p>Build professional development opportunities to clarify learning outcomes and design measurements that help to assess outcomes.</p>
How might technology support learning?	<p>Build professional development opportunities to integrate technology into learning experiences.</p>
What interactions and relationships enhance learning?	<p>Emphasize collaborative partnerships.</p> <p>For example, provide quarterly planning time for grade level or departmental curriculum planning.</p>
How might continuous school-wide improvement be promoted?	<p>Provide administrative leadership in establishing a comprehensive school improvement plan.</p> <p>Use the plan to guide the school in achieving its goals.</p> <p>Involve key stakeholders as members of various committees working on different facets of the plan.</p>

What Role Does the Library Media Program Play?

Information Power: Building Partnerships for Learning (AASL & AECT, 1998) challenges library media specialists to rethink their roles as teachers and as instructional partners. Harada (2003) contends that library media specialists are strategically positioned to work with entire school populations and to examine curriculum from a big picture perspective.

In an inquiry-based school, library media specialists are key team members in identifying the skills and habits of mind that nurture thinking in the various disciplines and in the development of information literacy. They can assist their school teams in making the following types of connections (Dalbotten, 1997):

- In history, students formulate questions, obtain data from both primary and secondary sources, evaluate the information in terms of its accuracy and authority, and identify propaganda or distortion. They analyze their data and construct arguments or summarize findings. Assessment is built in to their ongoing work.
- In science, students create testable hypotheses, design and conduct experiments and investigations, revise explanations using logic and evidence, and communicate and defend their results. They assess their progress and evaluate their final product.
- In the information search process, students identify their information need, generate questions that further define the need, devise strategies to locate and retrieve relevant information, evaluate and organize findings, and communicate what they learn. They continually examine what they are learning and how they are learning it.

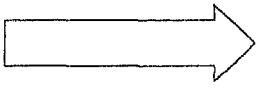
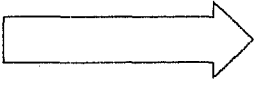
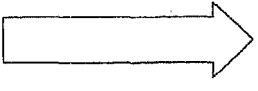
Whether it is a historical study, a scientific investigation, or an information problem, there are similar thinking skills and dispositions reflected in all of these processes. The thinking skills involve:

- Recognition and articulation of a problem or an issue.
- Location and critical retrieval of information to investigate the problem or issue.
- Organization and synthesis of collected information.
- Interpretation, analysis, and use of information.
- Preparation and communication of newly acquired knowledge.
- Ongoing assessment and evaluation of work.

Figure 1.4 presents one example of how thinking skills might be aligned with what students learn in the classroom and the library media center.

As students progress through the information search process, they pose questions and gather information needed to solve problems. As one question is probed, others present themselves, leading students into more complex layers of knowledge. The effectiveness of the process lies in a student's ability to manipulate the information so that deeper levels of personal understanding are achieved.

Figure 1.4: Example of Aligning Thinking Skills and Attitudes with Learning in the Classroom and Literacy Media Center

Thinking skills/attitudes	Classroom	Library media center
Be curious and explore.	Explore a general topic: view videos and TV, talk to people, go on field trips, engage in class discussions.	Explore a general topic: browse shelves and Internet sites.
Recognize and articulate a problem or issue.	Formulate a focus for project: create webs, confer with others, generate questions.	
Plan and be strategic. Identify how learning will be assessed.	Plan the project: set goals, identify tasks, and assign responsibilities and deadlines.	Plan search strategies.
Retrieve and evaluate information. Organize and synthesize information.	Collect relevant information: emphasize accuracy of information and authority of sources.	Collect relevant information: set criteria for good notes, use multiple resources, use graphic organizers, and cite sources.
Interpret, analyze, and use information. Build explanations and understandings.	Analyze data. Construct arguments or summarize findings.	Evaluate information: examine collected information, generate more questions, and seek additional information.
Prepare and communicate newly acquired knowledge.	Prepare and present: clarify purpose, identify audience, select presentation form, draft, revise, rehearse.	
Assess and evaluate product and process.	Reflect: design assessment tools; conduct self, peer, and instructor assessments.	

Conclusion

Information skills are among the basic skills students need to succeed in this century (Marzano, 2001; North Central Regional Educational Laboratory, n.d.). If students are to be adventurous thinkers, they need access to resources that will extend their thinking and suggest new paths to knowledge. To be problem finders and investigators, they must experience and reflect on the diverse problems that exist in the world. They must learn reading and research strategies that enable them to interpret complex ideas.

In an inquiry environment, the library media center is more than a physical collection of resources. It is a place where questions can be raised and problems posed. It is a portal to the knowledge banks of the world. It is a learning center where students develop the skills to manage an ever-increasing volume of information. The library media center is the epicenter, the heartbeat, of the school.