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Turning Fiascos into Fiestas: Building Successful Inquiry Experiences

by Annette Lamb and Larry Johnson

Over the past decade, educators have stressed the importance of creating exciting and intellectually stimulating environments where students are actively involved in constructing their own understandings. Whether it's designing a WebQuest to spark curiosity in science or establishing an oral history project to spur interest in local history, inquiry-based projects are a great way to build higher-order thinking skills. When school library media specialists and classroom teachers collaborate on the development of these projects, the outcomes can be powerful. However what happens when they don't meet expectations?

A leading ornithologist wants you to design a bird exhibit to be part of the celebrations next May...

This scenario, when first posed to students, sounded like the beginning of an exciting inquiry adventure. However when the classroom teacher and media specialist reflected on the completed unit, the results were disappointing. Most learners simply answered the required questions, then copied Website examples for their exhibit. Although students met the minimal standards, the projects lacked the creativity, depth of thought, and transformation of information the educators were seeking.

How do we design assignments that are more than simply "question and answer" activities and encourage students to view inquiry as a multi-dimensional environment with cycles, spirals, and branches of thought? How can we engage students in activities they will find meaningful, relevant, and rewarding? The key may be in the types of metacognitive scaffolding we provide for students as they engage in inquiry activities.

Metacognition involves awareness of one's own thinking and application of problem solving strategies for particular situations. These "learning to think" environments can be achieved when school library media specialists and classroom teachers partner on the design of learning experiences that emphasize the importance of inquiry as a process. Many information inquiry models (i.e. I-Search, Big6, Research Cycle, REACTS) and inquiry-based approaches (i.e., WebQuests) incorporate metacognitive scaffolds to facilitate thinking. For example, at a critical juncture in the assignment, students may be asked to create a chart to help them organize their findings, reflect on their progress, and refine their questions.

In a study focusing on middle school social studies research projects, Wolf, Brush, and Saye found that metacognitive scaffolds such as those found in information inquiry models like the Big6 are needed when students complete unfamiliar tasks involving complex content. These tools also help students maintain moderate and high confidence levels (self-efficacy) during the project.

Scaffolding provides learners with temporary structure for tasks just beyond their independent abilities at particular points in the learning process. Effective scaffolds reduce student frustration and facilitate success by helping them deal with complex activities. Bernie Dodge identified three types of scaffolds for inquiry projects: **reception** to assist learners in gathering and organizing information, **transformation** to help students apply information, and **production** to facilitate information presentation and communication. Tools such as journals, timelines, charts, and concept maps contribute to understanding by helping students organize and record their thoughts.

Concepts maps have become a popular tool to promote metacognitive thinking. In a study of high school students, Carol Gordon found that students who used concept maps in their search process were more likely to make metacognitive judgments that led to successful searching.

Learning is more likely to occur when students create understanding through relevant experience rather than simple information gathering activities. Violet Harada studied how journal writing deepens students' cognitive and affective awareness of the information-search process. She found that journaling helped students gain confidence in the information search process and also helped instructors design more effective feedback and support.

The key is providing the metacognitive scaffolds students need at particular points in the inquiry process. In other words, educators need to look for those points in the project where students can choose the "low level thinking" road or the "high level thinking" road. Then develop activities and tools that will guide students down the "high road." This type of planning can change your inquiry fiascos into learning fiestas!

Let's explore some teaching strategies that librarians at all levels might use to scaffold metacognitive activities and enhance inquiry-based projects. We'll use our bird migration project for specific examples.

Asking Meaningful Questions

- **Brainstorming.** Rather than providing students with a list of questions to answer, get students involved in generating ideas. Increase the relevance of projects by allowing students to lead discussions and select the questions of most interest. Use brainstorming techniques to get students thinking. For example, what are student questions about migratory birds and International Migratory Bird Day? What birds live in Indiana? Why?
- **Deep Thinking.** Discuss the difference between low level questions and high level questions. Ask them to think about the questions they ask. Help them extend their exploration by asking "how" and "why" type questions. For example, we've created a list of Indiana birds. But, why do some of the birds fly south in the winter and while others stay in Indiana year round?
- **Prompts.** Provide prompts to facilitate questioning. Jamie McKenzie suggests the use of a Questioning Toolkit to promote different types of question such as essential, subsidiary, hypothetical, telling, planning, organizing, etc.
- **Linkages.** Use questioning throughout the activity, not just at the beginning. Help students identify questions that lead to other questions. Encourage the use of evidence as the basis for further questioning and linking information.

For example, we know that some birds carry disease. How might migration patterns spread disease such as bird flu?

Organizing and Recording Thoughts

- **Journals.** From spiral notebooks to blogs, there are many tools to help students record their thoughts and work out solutions. For some journaling activities, the commenting functions available in blogs are useful in allowing peers and teachers to make suggestions and provide prompts.
- **Organizers.** Concept maps, post-it notes, timelines, and flip chart paper can all be used to help students manage ideas and resources. Flexible tools such as post-it notes and software such as *Inspiration* allow students to try out different ways of organizing information and seek out patterns in the data. By providing starters and templates, teachers can guide learners who need help with classifying information. As educators monitor student progress, they can provide strategies to help students develop their organizational skills.

Broadening Perspectives

- **Expand Resources.** As students weigh the evidence, be sure that they're using a variety of resources. Many students find comfort in particular resources such as the encyclopedia or Google. Ask students to compare the information gained from electronic databases, Websites, books, and other sources. Help them develop strategies for selecting resources to meet particular needs. For example, eNature's [ZipGuides](#) provides a way to search for local wildlife anywhere in the United States. [All About Birds](#) provides tools for bird identification.
- **Share.** From online forums to classroom jigsaw discussions, students need opportunities to bounce around their ideas and generate new ways of thinking. Rather than seeing these sharing opportunities as a culminating activity, build them in throughout the process. At each phase of your project, provide opportunities for students to share their findings, reflect on their progress, try out ideas, and enhance their questions.
- **Participation.** Joining a large scale project provides learners with relevant experiences beyond the class. For instance, there are many national and international birding projects (i.e., [Journey North](#), [eBird](#), [Birdhouse Network](#)) that could be used as a way to involve students in broader understanding of ornithology.
- **Online Interviews.** Ask students to go beyond the general information found in reference materials and seek out specific information relevant to their interests. Why not interview the state ornithologist by email? What local birds could be incorporated into the exhibit? What's unique about the bird migration through our state?

If you would like to learn more about this topic, you might want to read:

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