

# Projects That Power Young Minds

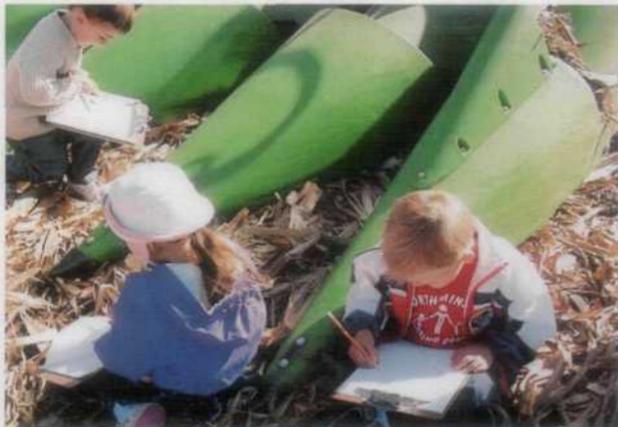
*From preschool on, projects launched and led by children's curiosity engage them in high-level thinking and academic skills.*

Judy Harris Helm

The kindergartners were making paper-plate spiders. They accordion-folded strips of paper, glued them around the plate, counted to eight, and put two large circles for eyes on top. The students practiced small motor coordination, following directions, identifying shapes, and counting. The teacher wrote the word *spider* on the board for the students to copy. They seemed to enjoy these hands-on sensory learning experiences.

In another kindergarten, a student brought in a realistic toy spider to show the class. The students responded with enthusiasm. The teacher brought out books with pictures of real spiders, which led to a conversation about the similarities and differences between the spiders in the books and the toy spider. The teacher placed the toy spider and the books in the art area for sketching. The students asked her to write *spider*, *eyes*, *batry spider*, and *fuzzy legs* for them to copy. They eagerly asked a number of questions and talked about how they could find the answers. An investigation of spiders was born.

These two spider experiences both used young children's natural sensorimotor approach to learning. Both teachers focused on a topic of interest to kindergartners. The depth of the content, the skills students developed, and the long-term effect on these kindergartners' future learning,



At Discovery Preschool in Peoria, Illinois, students draw combines (above) and list items containing corn (facing page) as part of a project investigating corn.

however, differ significantly: The second project generated deeper learning.

## Child-Initiated Approaches

Teachers can organize learning experiences for young children in many ways. These approaches can be arranged on a continuum of how child-initiated they are, meaning how much of a role children have in determining the direction of study (see fig. 1, p. 60). The paper-plate spider activity is an example of an *integrated concepts* approach, whereas

the more extensive investigation of spiders that took place in the second classroom is a *project*. Projects are multidisciplinary, thought-provoking, and emotionally involving.

All these approaches are valid and valuable ways to teach young children, and they often exist side by side in the same classroom. A unit on seasons can occur in the same classroom as a project on the hospital and direct teaching of literacy concepts.

Although all approaches can be valuable, spending too little time on the

child-initiated side of the continuum may be harmful. Teacher-determined content and instruction of single skills and concepts are important but should not be the only teaching approaches used in prekindergarten and primary classrooms. When classwork never ventures into teacher-directed inquiry or project work, students are less likely to develop the higher-level thinking skills of analyzing, hypothesizing, predicting, and problem solving. Teacher-centered approaches can limit

continuum is often recommended, and in some cases mandated, for children at risk. Martin Haberman (1991) labels these teacher-controlled approaches *directive pedagogy*, part of an ineffective *pedagogy of poverty* that limits students' achievement and thirst to learn. Decades of research on successful teaching in schools that have a high percentage of children in poverty suggest it is better to deemphasize teaching discrete skills in isolation and to emphasize fostering connections

The project approach responds to children's curiosity and makes project work generative and engaging.

young children because this is a period of rapid intellectual growth. Research into early cognition indicates that by the time children are 4 years old, they have developed a complex, interconnected knowledge base about the world and how it works. Catherwood, who has reviewed early cognition research, believes that the task of early educators may be to help children further articulate their knowledge and link that knowledge to their verbal expression. Experiences that support the child in making connections, according to Catherwood, "enhance the richness of neural networks in the child's brain" (1999, p. 33).

For children in the early years of schooling, project-based learning is easily implemented through the *project approach*, a three-phase structure for in-depth study of a topic that interests students (Helm & Katz, 2001; Katz & Chard, 2000). Following the three phases of Beginning, Investigation, and Culmination (see fig. 2, p. 61) helps teachers respond to the children's curiosity to make project work generative as well as engaging.

Project work that captures students' curiosity motivates them to learn emerging academic skills, such as decoding, getting meaning from text, writing words, creating diagrams, and counting. Although thematic teaching and teacher-directed inquiry may provide practice in these academic skills, graphing or charting items that the *teacher* selects is less motivating for students than tallying and charting to

students' vocabulary growth, as we can see by comparing the first spider experience with the second, and they are less likely to motivate students to learn academic skills. Making paper-plate spiders is unlikely to broaden or extend children's knowledge about real spiders and living things. Such activities are shallower, less productive uses of learning time, and they neglect learning goals that affect students' school achievement and possibly their future career choices.

Unfortunately, teaching on the single-concept, teacher-centric side of the

between academic learning and the students' personal worlds (Knapp, 1995). Studies suggest that formal, didactic instruction in basic skills may produce more positive results on standardized measures in the short term compared with approaches that give students more initiative, but will not produce higher school achievement in the long term (Golbeck, 2001; Marcon, 1995, 2000).

### Projects in the Early Years

Project-based learning is an excellent way to make learning meaningful for

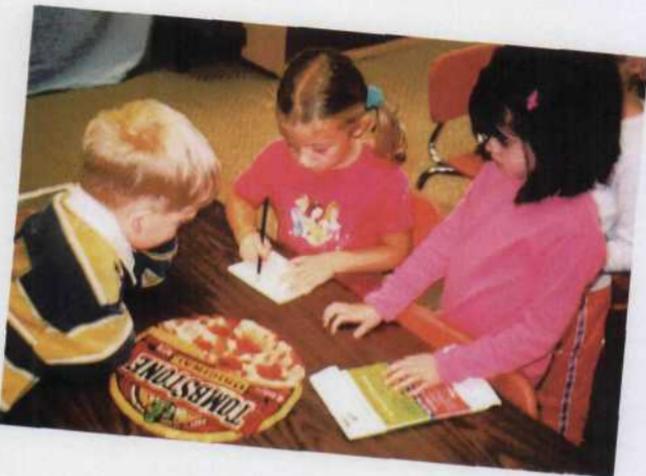
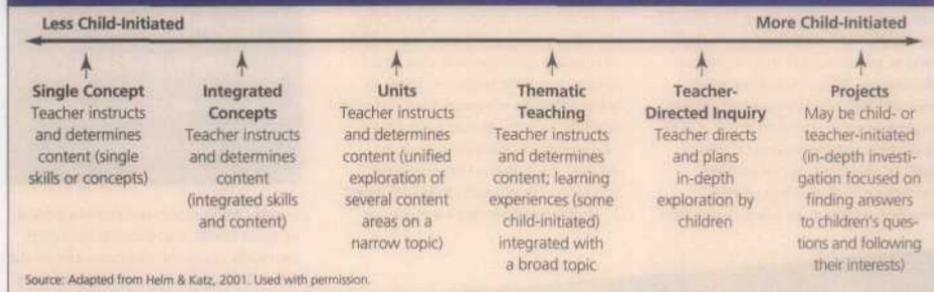


FIGURE 1 Degree of Child Initiation in Teaching Strategies



answer their *own* questions. Making paper-plate spiders is unlikely to spark many questions about real spiders. In contrast, studying a realistic model resulted in enthusiastic, inquisitive comments: "He's got long legs!" "He's got knees!" "How many knees does he have?" Such questions as "How does it eat?" or "Will he bite?" validate reading and listening to informational text, an important experience for young children (Duke, 2004). As students focus on finding answers to their own questions, they successfully extract meaning from text.

### Quality Counts

Encouraging projects and adopting the structure of the project approach in early classrooms, however, may not necessarily result in rich, meaningful learning experiences for children. Projects, like any other learning experience, vary greatly in quality. In *The Power of Projects* (Helm & Bencke, 2003), Lilian Katz suggests paying attention to three elements to ensure that a project has depth and engages children's minds: the processes, the content, and the products.

### Processes That Inspire Thinking

Project work for young children should lead to higher-level thinking—questioning, hypothesizing, and

predicting—not just to factual recall. When children have questions, encourage them to predict the answers, then check to see whether they were close. Urging children to wonder how things *might* work enables them to not only think creatively but also see how creative thinking can be practical as they learn how things actually *do* work.

Thinking symbolically, or using one thing to represent another, is a foundation for all academic skills. Creating models, such as a paper-plate spider, requires symbolic thinking. However, in making the paper-plate spider, does the child see a spider in his or her mind, or is he or she copying from the teacher? Who did the symbolic thinking in this activity? Attempts to provide hands-on sensory experiences to young children often result in *teachers* thinking symbolically (using soap to represent snow, for example), which may or may not transfer to students.

In the quest to be developmentally appropriate, it may seem safest to keep concepts simple and rely on our own symbolism. It is difficult for a teacher of young children, especially children with limited language facility, to know what the students can understand and what symbolism is appropriate. However, when teachers follow students' interest and use students' questions as the focus of project work, they usually arrive at

the appropriate level of symbolic thinking.

Sometimes that level may be a surprise. During a project exploring corn at Discovery Preschool, the students were intrigued by the idea that corn could become other things. The project became focused on the question, What things have corn in them? The students interviewed an expert from a corn processing plant. Then these 3- and 4-year-olds learned how to find the word *corn* on ingredient labels, and they collected packages of products with corn. One student woke her mother in the middle of the night to fetch the frozen pizza wrapping from the garbage to see whether the pizza had corn in it. Children learned to not only read and write the word *corn* but also write the names of the items they collected. If the teacher were planning a thematic unit on corn for preschoolers, she would probably not have included label reading as a main activity.

### Rich Topics

Topics selected for projects should be deep wells of potential learning. Either the student or the teacher may initiate a topic of high interest, but even teacher-initiated topics must tap into true child interest to motivate meaningful study. A unit on teddy bears (a typical kindergarten theme) can integrate concepts of

size and shape and provide a subject for literacy activities. A project on *real* bears, however, integrates these same concepts with in-depth understanding of living things, their habitats, and geography—foundational understandings for science study.

Children often surprise us with the depth of their learning when we follow their interests. They not only learn that fire trucks have hoses but also learn about the kinds and lengths of hoses, their uses, and water pressure. And in a project on the drive-up bank, a 1st grade class learned all about air and vacuums.

Project topics that inspire curiosity and tap into many subjects increase vocabulary and language competence. Some educators attempt to justify the current emphasis on single-concept, direct instruction for children at risk by citing the need for these children to catch up to more economically advantaged peers. Children of *any* income level, however, do not learn literacy skills solely by drilling and practicing phonemes.

According to the report *Eager to Learn* (Bowman, Donovan, & Burns, 2001), early learning programs will affect school achievement only if these programs provide the quality of learning experiences associated with higher socioeconomic backgrounds. Projects that children enjoy provide such experiences. Meaningful project work gives young children reasons to read and write and models of adults using literacy skills.

A project on real spiders not only introduces more *words* than does making paper spiders, but it also teaches *concepts* that distinguish different kinds of spiders. Listing, describing, defining, sorting, and webbing with words are

In high-quality projects, teachers anticipate, rather than determine, the direction of the project.

common activities in projects with even the youngest children. Meaningful experiences with many words benefit children from minority, English language learning, or low socioeconomic backgrounds (Moats, 2001).

Content deepens when the teacher integrates curriculum goals and standards into projects. This process is challenging, however, because in high-quality projects, teachers anticipate, rather than determine, the direction of the project. Teachers have to anticipate

the direction and depth of students' interests and plan for concepts—and needed skills—likely to be encountered. For example, if students are interested in knowing how many hoses are on a fire truck, the teacher can prepare them for a site visit by teaching them how to tally.

### Meaningful Products

Products students create in the culmination phase of projects need to be the result of students' understanding. All projects end in reflection and sharing what was learned, but such sharing varies from simply telling a story in a book to open houses and public displays. Young children often create a play environment (such as a hospital) and play in it as a final event. For a pet store project, the teacher could have collected shoeboxes and told the students to make animal cages; instead, she let the students create their own pet store. They recognized the need for cages, studied different animals' needs, and designed cages using the classroom's collection of scrap materials.

Meaningful products—along with other project documentation, such as photographs, journals, and portfolios—provide rich evidence for monitoring individual students' growth, assessing a group's progress, or satisfying accountability requirements. Children are most likely to produce their best work when they are emotionally involved with the product.

Young children come to school with great curiosity and enthusiasm for learning. Even very young students—especially those at risk of academic problems—benefit from learning meaningfully through projects. But enjoyable, hands-on work is not enough if it is all launched

FIGURE 2 The Three Phases of a Project

#### Phase 1: Beginning

- Identify potential topic initiated by children.
- Build children's background knowledge.
- Narrow topic further.
- Help children create list of questions to investigate.

#### Phase 2: Investigation

- Collect resources for investigating topic (books, videos, artifacts).
- Help children use resources.
- Arrange to meet with experts on topic.
- Arrange field site visits.
- Note new questions.
- Help children record and represent what they've learned.

#### Phase 3: Culmination

- Guide children to reflect on what they've learned.
- List what children know now.
- Help children find a way to share their learning (make a book, give a presentation, visit another class).



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and planned by teachers. We also need to turn on the power of young children's minds by listening to them and following their lead. ■

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