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ARTICLES

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Using Picture Storybooks to Support Young Children's Science Learning

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Children's books are an important classroom resource for the study of animals because it is not practical for students to study many animals in their natural habitat. This article is the result of a collaborative research project undertaken by a science methods specialist and a children's literature specialist. We analyzed books about animals that contained both narrative and expository writing and determined the best books that facilitated science learning. We share our criteria for book selection and examples of books that meet these criteria. Many support science learning in classrooms allowing children to make observations, raise questions and form conclusions from evidence.
“Remember that story about the spider laying its eggs in the corner of a window where the birds couldn’t see them? That is a good example of camouflage,” recalled Katie as she and her partner were discussing a school assignment on camouflage. Katie remembered the science knowledge from a children’s picture book about spiders that she had recently read (Dewey, 2002). For children, learning about animals can and should be dynamic. They should be allowed to make observations, raise questions and form conclusions from evidence they have collected. This is the essence of science learning. However, children must be given a multitude of opportunities to probe, poke, and peek into their own backyards or galaxies far away (Fredericks, 2003). These opportunities can be supported by the wealth of information available in science picture books.

Picture books about animals, when scientifically accurate, have the advantage of presenting children with close up pictures. A picture book can do a lot that cannot be accomplished in a classroom. The pictures freeze time, so a reader can pore over the details in a way that would never happen if the animal were moving. Children, who are afraid of animals like spiders, can fearlessly explore a book on spiders and perhaps develop a reasoned appreciation of the arachnid. Illustrations can magnify size so that students can see a microscopic or tiny organism in observable detail. Animals rare in nature can be seen in a picture book. Picture books give readers a good description of events that are not usually seen even by a careful observer. The words provide readers with good science content in a structured, easy to follow way. Explanations accompany the illustrations. A story allows the reader to follow an animal’s life through time--through seasons, weather, and the quest for survival. A book can portray the whole life cycle of the animal whereas in class it can be told but not seen, for it might take a year. A book can raise questions, provide experiences for observation and carefully guide readers toward arriving at a valid conclusion.

Children’s books about science often contain information and stories not accessible from direct observation or other media. Many are high quality books that can support science learning in classrooms. Galda (2001) states that the selection criteria of accuracy and literary merit help teachers discover books that broaden and deepen the information
available to students in the science curriculum. Kaser (2002) discusses how scientific principles can be embedded in a rich foundation of literature and therefore attract student readers; students who read more learn more science content knowledge. Some books combine a narrative storyline with an expository informational piece, usually at the end of the book. Such books provide two different modes of learning science content.

This article is the result of a collaborative project undertaken by a science methods specialist and a children’s literature specialist. The purpose of the project was to identify storybooks appropriate for supporting learning of science among young children and to suggest criteria that can be used by classroom teachers in selecting storybooks with science themes for use in their classrooms. Specifically, we focused on books related to animals. We analyzed books about animals that contained both narrative and expository writing and using the criteria identified, determined the best that support science learning. We share our criteria for book selection and provide teachers with examples of children’s books for teaching science concepts and ideas.

Children’s books are an important classroom resource for the study of animals because it is not practical for students to study many animals in their own habitat. However, as noted by Marriott (2002), who examined 1,074 picture books, most transform and domesticate animals and their habitats in ways that give students misleading information. Therefore, it is important to critically examine the existing books to make sure that the information they contain is correct and that any imbedded messages are valid science content knowledge.

The book formats that were examined move from a story form to an expository information page, usually at the end. Picture books appeal to all ages of students and they provide support for learning visually through both pictures and words. Further, the different types of text, narrative and expository, target different kinds of readers – those who typically prefer fiction and those who find nonfiction more satisfying. For these reasons we sought books with a storyline that would draw readers into the content, but also contain accurate information about the animal and its habitat. We veered away from books that embellish the
truth or modify it for aesthetics. If it is a book for science learning, it needs not only contain valid science knowledge but where possible allow the readers to make observations, and raise questions toward understanding their world. Ultimately a good science picture book not only satisfies a reader’s curiosity but also leads to more questions being asked and answers pursued (Nevett, 2003). Our criteria for book selection include:

- Accurate science content
- Accurate, realistic illustrations with photographic quality
- Accurate relational sizes and proportionality for illustrations; magnification needs to be obvious
- Different perspectives of the animal – illustrations or narrative
- Animal in natural habitat (setting)
- Well-written and entertaining, but with good science knowledge text
- Writer’s ability to tell a story without embellishing the truth
- Precise accurate scientific terminology
- Communication of accurate science information

**Book Examples**

**Themes of Observing Nature**

There are two kinds of books that share the wonder of observing nature. One is a backyard nature book that depicts the interesting wildlife in our everyday world. The other introduces children to exotic or nocturnal animals and their environments. Many books have story characters that are actually observing animals. Since observation is a scientific skill and a key to learning about natural phenomena, this factor could be an influential aspect of some books. The implication that it is important to observe animals could leave a lasting impression upon student learners.

"Backyard Science"

A number of books portray story characters that explore animals in environments near their homes. In a dual plot book, *Once I Knew a*
Spider (Dewey, 2002) an NSTA Outstanding Science Trade Book winner, a pregnant woman describes the life cycle of a spider to her unborn child. The arachnid builds a web and catches prey as the woman watches from her window each day. The verbal description of the spider, web creation, and reproduction are accurate, with the eggs being "each the size of a pinhead" (p. 8). The spider places the egg sac in darkest corner of the window frame where birds cannot see it. The book contains good science content and attractive, accurate illustrations by Jean Cassels, yet is an engaging, dramatic story of the lifecycle and survival strategies of a spider. Author Jennifer Dewey has written 50 books with natural history content. On the last page are author's notes with science content knowledge about spiders.

A squirrel teaches an anthropomorphic groundhog how to plant his own garden in How Ground Hog's Garden Grew by Lynn Cherry (2003). Typically the animals-as-people technique, signals that the book will be fictional and not scientifically accurate, but this book is an exception. Author/illustrator Lynn Cherry uses the borders to accurately display many different kinds of seeds. Tomatoes stand out as different from peppers, and the many varieties of peas and beans are distinctive. Ground Hog collects seeds from a variety of fruits and potato cuttings, prepares the soil, and composts leaves. They make potato cuttings from sprouts, plant seeds and label the vegetable patch. Both animal characters water the seeds and seedlings emerge, so they replant the seedlings to give them more room. More animals come into the picture; a wren, praying mantis, bees, and butterflies. The praying mantis says — "if you promise not to harm us with bug spray we birds and insects will help you with your garden. We will eat the harmful insects that hurt your plants" (p.24). Again animals talk, but they define interdependence.

In Butterfly Count (Collard, 2002), Amy and her Mother visit the Nora Belle Prairie Restoration Project, named after Amy's great-great-grandmother who settled in the tall grass prairie at a time when thousands of regal fritillary butterflies danced in the sky. During the annual Butterfly Count, Amy spies one of the rare fritillaries in the Prairie being restored to attract the native animals. The butterflies in the illustrations are pictured and described at the end of the book. The
illustrator consulted scientists and visited the prairie reserve to create accurate portrayals of the butterflies and their prairie environment.

In *Crawdad Creek* (Sanders, 1999), a girl narrates her frequent visits to the creek behind her house with her brother where they find fossils, an arrowhead, a salamander, crayfish, dragonflies, turtles, frogs, fish, whirligigs, beetles, damselflies, and “critters so small we had to spy them with a magnifying glass” (p.23). The large watercolor scenes by Robert Hynes are appropriate to the portrayal of a creek. These are complemented with close-up pictures of a variety of animals and also to compare size relationships. While this book might be good for inspiring children to be curious and to take an inquiry approach to the study of science, it lacks additional scientific information on the many animals that call the creek home.

In *Whales Passing* (Bunting, 2003), a father and son holding binoculars, observe a pod of orca whales. The father explains that they may have come from cooler seas and the exquisite ocean paintings by Lambert Davis show the variations of blue in the ocean. The boy points and counts five whales. The father, with more experience identifies the pod, the type of whales and makes inferences about where they could have come from. The son observes, “I watch the drifts that are the breath” (p. 6), as the illustrations show them diving above and below the water. The boy questions, “How do they know which way to go?” (p. 11). Drawing on his experiences and observation, the boy infers that the whales have signposts like a sunken ship or an ocean mountain, below the surface of the water to guide them. He wonders if whales talk and his father explains that they don’t, but they do communicate by whistling, making clicking sounds and squealing. The questioning approach is a great way to learn science as the observation, and questions raised at the beginning become clarified toward the end of the story. An information page on Orcas is at the end including a clarification of them being dolphins and not whales.

In *Swimming with Dolphins* Lambert Davis (2004), tells the story of dolphins as observed by a girl and her mother. Using simple language, he describes the grace and beauty of a pod of dolphins as they spin, turn, glide and slap their tails through the clear blue water of the ocean. The
author’s note provides extensive information about dolphins, their habitats and life history, and also mentions other marine mammals such as whales and porpoises.

In a stunning photo essay by Bruce McMillan (1995), two children in Iceland join many others who stay up late at night to help baby pufflings who accidentally land in the village, fly back to the sea. A fact sheet on Puffins and Pufflings and a bibliography are on the last page of the book. This book goes a step beyond close observation of animals to share the experiences of children who take action to save the lives of the birds that become confused by night-lights in their town.

What is notable about these books about observing animals is the way they draw the reader into the setting and habits of the animals while inspiring curiosity. The sense of wonder about the animals and their actions can set the stage for young scientists to be more observant of their local natural environments.

Exotic Ecosystems

Similar stories about observing animals occur in books with exotic ecosystems. The most common ecosystem we found in this type of picture book is the rain forest. *Red-eyed Tree Frog* (Crowley, 1999), a NSTA Outstanding Science Trade Book winner, describes a night in the life of a red-eyed tree frog, photographed by Nic Bishop. Unlike the macaw and the toucan that will soon go to sleep, the nocturnal, red-eyed tree frog wakes up and goes through a process of food selection. Photographs and illustrations show a variety of potential food sources for the red-eyed tree frog.

At the same time, the frog is a source of food for the boa snake. Luckily, he leaps out of the path of its flickering tongue. The frog’s graceful leap with the extended legs, the landing, the perch and the capturing and devouring of the moth, are shown in the photographs. These captivating photographs also bring into vibrant focus the greenery of the rain forest in which the color of the frog is camouflaged. The author’s note takes the form of—"Did You Know?" (p.30), and provides information about red-eyed tree frogs, noting that the close-up
illustrations in the book make the red-eyed tree frog look bigger than its actual size of about two inches.

The ultimate observation of an exotic environment is likely to occur during an eco-tour. Ted and Betsy Lewin took an eco-tour in Uganda in 1997 and describe their observation in *Gorilla Walk* (1999). The book starts with a three-page introduction to mountain gorillas. Then, the Lewins take readers with them on their eco-tour, describing the vegetation, the gorilla tracks and other animals in the ecosystem. The watercolor illustrations extend across full-page spreads and include labeled drawings of the animals and the vegetation as they trek through Uganda’s national forest. A two-page Mountain Gorilla Fact Sheet is at the end of the book.

Close observation of animals in their habitats is an important route to developing science knowledge. Reading books in which characters observe their environment, participate in community activities toward preservation or take a tour or fieldtrips reinforces the notion that observation is an essential skill in learning about one’s environment.

**Animal Biographies**

Another type of book that includes both a story and information about animals is what we term “animal biographies.” These books imply observation, but because animals move and mature over time, are really more like a biography of the animal or a year in the life of the animal. They emphasize the changes that take place across time in an animal’s life.

With sparse text, Johnathan London writes about a year in the life of a ptarmigan, the Alaska state bird, in *Gone Again Ptarmigan* (2001). The emphasis is on the characteristics of the Ptarmigan that allows him to escape the predators along his migratory path. For example, having the feathers that change with the landscape and “having molted from winter to white to summer brown they settle down disguised as a jumble of barren rocks” (p. 17). On each full spread page Jon Van Zyle, the artist, carefully includes inset pictures that support and capture the key ideas being discussed.
At the beginning of *Flute's Journey: The Life of a Wood Thrush* (1997), Cherry tells readers about the wood thrush "whose existence depends upon the tropical rain forest in Monteverde, Costa Rica, the northern forest of the Belt Woods in Maryland, and all the places in between" (p. 2). After thanking a huge list of people who helped her research this book, she shows two children observing the behavior of a fledgling that they name Flute and tells the story of this individual wood thrush through his migration back to the same spot where he was born. This is a highly detailed story with realistic watercolor paintings, maps, and birds in borders around the end pages. Chock full of information, the book is equally about the environmental message of a vanishing ecosystem and about the bird's life.

April Sayre, a birdwatcher, explains what you should do if you hear a honey guide bird in Kenya. In *If You Should Hear a Honey Guide* (1995), readers follow the bird past many animals created in elegant watercolor, gouache, and pastel media, to the source of the honey. The story indicates that the bird knows where the honeycombs are but is unable to reach them for food; hence he guides the reader on a journey to procure the honey and be favored with honeycomb. Readers are urged to take some of the honeycomb out of the nest and place it where the honey guide can eat it. The last page gives information about the honey guide bird and the state of its natural habitat.

Books on animal biographies contain the life histories and tell the stories of the animals' growth, development and survival. They provide a rich avenue for readers to observe the animals and to note important details that are captured in time.

**Themes of Preservation**

Many of the books that tell a story about an animal in nature involve preserving animals from extinction. There is a definite attempt to raise global awareness of the interrelationship that exists among all animals and the place of humans in impacting the delicate balance. The information the authors share at the end of the books includes organizations established to preserve the species and some history about the events that led to the animals' demise.
Lonesome George the Giant Tortoise (Jacobs, 2003) describes how George, the last surviving Pinta Island giant tortoise lives as his environment is destroyed. In addition to information about this specific tortoise, such as weight, structure, function and habits, we learn general information about the species. Vivid description of tortoise and the environment are supported by the illustrations. Three goats are introduced to the island and soon increase in number, stripping the island bare of vegetation so that tortoises are forced to climb steep slopes in search of food. This is dangerous and the other tortoises do not survive. Wardens from the National Park stumble upon George who is transferred to a research station on another island in the Galapagos. The author's note contains information about activities that lead to the extinction of the tortoise, with a map of the Galapagos Islands on front and back endpapers of the book.

Several books by Jonathan London follow the quest for food and survival of a condor, a whale, a grey wolf, a red wolf, and a panther. In Condor's Eggs, (London, 1994) with illustrations by James Chaffee, two California condors live among the rugged slopes of an inland cliff. There is a vivid description of the condor in flight, riding the warm air above the clouds then gliding over a hidden lake, circling and finding his meal. A bird of prey, he is described as, "carrion-eater, bone picker and nature's cleaner" (p. 9). After his meal, he flies back to his high cliff cave, where his mate has supported their egg with pebbles, and they take turns keeping it warm. The illustrations capture well the size of the birds and the height that they usually fly. The Afterword is provided by Robert Mesta a condor recovery program coordinator. The California Condor is the rarest and largest bird in North America. Today, there are only 27 remaining birds, all living in zoos.

In Baby Whale's Journey (London, 1999), sparse text and large colorful illustrations with many shades of blue in the water, show the mating and birth 16 months later of a baby sperm whale. The book discusses the safety of whales swimming in a pod, and depicts an encounter with a squid. An Afterward gives factual information about the sperm whale and guidelines for sharing the book with children.
In *Panther: Shadow of the Swamp* (London, 2000), a panther nestles among the saw grass of the Everglades. The oil paintings, by artist Paul Morin, bring to life the saw grass surrounding the swamp with palm and other woody trees in the distance. As the panther moves out of hiding to hunt for food, other animals are introduced. He moves silently through the cypress and strangler fig plants, scouts the wetland and finds a wild hog. The panther then glides through the cypress swamp and back to her hidden den where her three kittens await to be fed with their mother’s milk. At the end of the book is a map of the United States showing Southern Florida and the Everglades. Information about the Everglades as a fragile ecosystem of interconnected lakes, rivers and wetlands and home to the panther is also included.

In a similar story, *The Eyes of Gray Wolf* (London, 1993), the illustrations by Jon Van Zyleare are spectacular, supporting the simple poetic text of a Gray Wolf as he travels along the snow clad ecosystem in search of food but ultimately finds a mate. Gray Wolf’s pose against the backdrop of a large golden moon is one that readers will remember for a lifetime. The piercing eyes of the wolf and the color scheme of the Alaska’s snow clad terrains draw readers into the beauty of the ecosystem as well as the story of survival. The note from the author provides a list of organizations working to preserve the wolf and reintroduce them into their native habitats. A map of North and South America shows where the wolves can now be found.

In *Red Wolf Country*, by Jonathan London (1996), the reader follows two red wolves that roam the coastal wetlands in search for food during the spring. They encounter a skunk and a farmer who tries to shoot them. They find the perfect spot for a den where She-Wolf delivers wolf pups. Robert San Souci, a noted wildlife illustrator paints glowing portraits of these animals in their native habitat. The publisher (Dutton) donates a portion of the proceeds from the book to further the work of those protecting the red wolf.

Children are naturally curious and have many questions about the world around them. Some of these questions are about natural phenomena, changes in nature and about plants and animals. Many are answered in formal classrooms but the judicious use of high-quality
nonfiction books can open up doors of understanding and comprehension of nature (Fredericks, 2003). Books about animals offer opportunities for science learning beyond the formal learning environment. Not only do they provide information about the animals, but good books explore the animals in their natural habitat, and bring to the fore other science related concepts such as predator/prey relationships, adaptations and lifecycles. These books also can be understood without fostering alternative conceptions.

Each of the books in this section highlights an endangered species and describes its habitat and the reasons for its endangerment. These books invite activism. Their stories move readers to want more information, but they also want to lend a hand to try to save the animals. Therefore these make great books for classroom projects to support the organizations working to rescue the animals from extinction.

Conclusion

We have provided here convincing evidence that picture books that tell a story about animals can also be useful as a part of a science curriculum because they contain accurate information both in text and illustration. We utter a caution here. When writers create a story there is license to use interesting prose. For science books, the prose needs to be specifically tailored to contain accurate scientific terminology. For example, in describing the movement of a panther through a swamp, London (2000) writes, “She glides silently and melts into the green silence of the swamp” (p. 5). Melts in science is a change of state from solid to liquid and could be a source of a later alternative conception. The idea to be communicated seems to have been camouflage. Authorial license could create alternative conceptions if not edited carefully by a science educator. Many of these books anthropomorphize animals to the extent that the animals are given names, such as Lonesome George for the last land turtle on one of the Galapagos Islands. As long as the rest of the story is scientifically accurate, this name-labeling does not appear to be a problem. As educators, we note however that it is important that information in books does not initiate the development of alternative conceptions. Researchers have highlighted the negative impact that such alternative conceptions can have on children’s learning (Barnett, 2002;
Henriques, 2002; Osbourne & Freyberg, 1985; Posner, Strike, Hewson & Gertzog, 1982; Stofflett & Stoddart, 1994). They contend that alternative conceptions are persistent and despite carefully planned teaching strategies they have the capacities to interfere with learning in science.

A growing number of educators have embraced the enormous value and impact that books have on science learning (Frederick, 2003; Kaser, 2001; Rice, 2002). Specifically, Kaser (2001) points out that literature in the field of science should not be the end of curiosity but should lead readers into a personal interaction with nature (p. 349). In many ways picture books allow teachers to energize the science program and demonstrate the logical connections that exist between classroom learning and the natural world outside the classroom. For example in the book, Once I Knew a Spider (Dewey, 2002), the vivid description of the lifecycle of the spider, and the intricacies of spinning the web in preparation for catching food and laying eggs provide both a foundation and a launching pad for students’ self initiated discoveries. The foundation is set for the reader to become immersed in the dynamics of specific science topics, such as arachnids or an exploration of patterns of nature. Very important, too, is understanding the science background of both author and illustrator of the book.

Picture books can provide readers with an array of science information in a welcome and familiar format. These visual cues/illustration can enhance our understanding of the animals within their habitats and their relationships with factors such as rain, snow, changing seasons or predator/prey relationship. Books cannot replace first hand experiences with learning about animals, however they can bring to students the world of animals that would not necessarily be readily accessible. They can also encourage observation, and be the catalyst for the kind of dialogue that is essential to critical thinking. When selecting books for classroom, teachers should consult the award winners in National Science Teachers Association’s Outstanding Science Trade Books for Children list that is published annually in the March edition of Science and Children, and can be accessed at www.nsta.org. Noting publishers such as the national Geographic Society can be another source to selecting appropriate picture books to enhance science learning.
References


Children’s Books


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Deconstructing the *Accelerated Reader Program*

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Teacher implementation of the Accelerated Reader Program is as widespread as it is diverse in terms of classroom and campus application. This manuscript highlights the findings of an informal, pilot study that examined four categories regarding the Accelerated Reader Program. They are: 1) assessment, 2) aesthetics and text interaction, 3) motivation, and 4) book selection.
Purpose of the Study

The purpose of this study was to deconstruct and examine teacher implementation of the Accelerated Reader Program. Due to its growing popularity and widespread implementation, we found it useful to examine the various aspects of the program and how teachers are integrating these within the context of their language arts curriculum. This study focused on four main categories pertaining to issues involving the Accelerated Reader Program. They are: 1) assessment, 2) aesthetics and text interaction, 3) motivation, and 4) book selection.

Introduction

The Accelerated Reader Program (AR), School Renaissance Institute, is a literature-based reading program that is gaining popularity in classrooms and districts across the nation. The program is credited for its perpetuation of improved test scores and for fostering a love of reading. Students are afforded the opportunity to select their own reading material (within the limitations of a predetermined “reading level” and within the limitations of books that are on the AR list) and are assessed based on computerized multiple-choice tests. The implementation of a reward system is often established where students receive points for completion of books and success on tests.

Current modes of reading instruction place heavy emphasis on the isolation of reading skills and programmatic approaches to the implementation of specific goals and objectives through adherence to district scope and sequence lesson plans (Slattery, 1995a). The AR program exemplifies the type of programmatic approach that many teachers implement due to their district’s decision to purchase and promote it. The purpose of this manuscript is to not only deconstruct four main aspects of the program, but to also share data from a pilot study conducted with practicing teachers who use the AR program. In the following sections, our viewpoints regarding AR are based on anecdotal evidence through observations and first-hand accounts with parents and teachers. This qualitative assessment will be supported by quantitative data that collected through random sampling of one-hundred teachers.
Deconstructing the Accelerated Reader Program

from two districts in the southwest region of the United States. Sixty-seven teachers responded to the surveys (See Appendix).

Discussion

Assessment

McLaren (1994) proposes that mainstream educators use assessments that are driven by technical knowledge whereby students are sorted, regulated and controlled based on empirical methods such as standardized test scores. In reference to the AR program, Carter (1996) found that part of the AR propaganda suggests that the program leads to higher scores on standardized tests. She further asserts that there are much more effective methods for achieving the same goal – not to mention cost-efficient benefits as well. In the AR program, students are required to take a placement test (STAR – Standardized Test for Assessment of Reading) at the start of the program to ascertain their “reading level” and post tests to measure comprehension. Advantage Learning Systems claims to give a reading level that is based on the students’ zone of proximal development (ZPD) (Advantage Learning Systems, n.d.) and students are to read only books within their prescribed ZPD. The reading level determined at the start of the program is passed along to parents and librarians in an effort to keep the students reading within their purported reading level. Biggers (2001) discusses the invalidity of the STAR by stating that it more accurately reflects a cloze-procedure than a placement test. She further notes that the STAR is void of oral reading comprehension opportunities or any other methods whereby a teacher can observe the reading behaviors of their students (Biggers, 2001). “Advantage Learning Systems never cites Lev Vygotsky’s (1986) work that originated the concept of the ZPD, which he defined as a dynamic continuum of independent and assisted abilities” (Biggers, 2001, p. 72). The consequence of such invalid assessment instruments is the misinformation to parents and teachers regarding the reading abilities or even reading potential for their children. In our informal research, we learned that some librarians are reluctant to allow students to check out books of their choice because they are considered too difficult or too easy (it was not in their ZPD).
Almost half the teachers surveyed revealed that they allow students to read books that were above their reading level some of the time. While sixty percent allow students to read books that fell below their reading level some of the time. Twenty-four percent said that they never allow students to check out or read material that is below their reading level. We found it alarming that almost a quarter of these teachers refuse to allow students to enjoy a book that is considered too easy for them. Conversely, only half the teachers seemed to find merit in allowing students to read challenging material that may be considered too difficult for them.

Slattery (1995a) proposes that modern emphasis on assessment has been on quantitative measures such as test scores and measurable outcomes that are behaviorally observable. At the conclusion of a book reading experience, children are to take tests to measure their comprehension. The five, ten, or twenty (depending on the level of the book) items on the multiple-choice tests are basic knowledge and comprehension level questions that are limited in their capacity to invoke higher-order thinking. Greene (1978) criticizes practices such as these stating that schools and districts are training children to perform to a certain standard rather than emphasizing critical thinking. She points out that technology and a focus on measuring basic competencies are replacing "...emancipatory thinking and critique" (p. 57). As classroom teachers, we were surprised by the emphasis that parents and administrators place on test scores since authentic assessment items such as portfolios, student writing, student projects, and observations provide a much more qualitative kaleidoscope of how students are progressing in school. However, the AR program omits these types of assessments and doesn't even "suggest written responses, extension activities, or repeated interaction with the text" (Biggers, 2001, p.73). In our surveys, we learned that sixteen percent of the teachers never use the AR comprehension tests for assessment of reading skills while thirty-eight percent sometimes used them. These percentages allotted for half the teachers in terms of those implementing the AR comprehension tests on an infrequent basis. However, the other half frequently to mostly implement the AR comprehension tests. We were encouraged to learn that only one percent always implements the AR comprehension tests in assessing the reading skills of their students. Given that over half the
teachers frequently rely on these assessments, we conclude that students in those classrooms may be missing out on the type of critical-thinking, higher-order, and aesthetic activities that are crucial to a well-rounded literacy program. This is discussed more thoroughly in the following section.

Aesthetics and Text Interaction

In Democracy and Education, Dewey (1916) discusses the value of integrating purposeful activities and choices of alternatives in an effort to make teaching aims more flexible. He states, “The aim must always represent a freeing of activities. The term ‘end in view’ is suggestive, for it puts before the mind the termination or conclusion of some process” (p. 123). He emphasizes the necessity of making the process and product work together to provide for the most enriching learning experience. The culminating activities for many students as they finish an AR book are the computerized, multiple-choice tests. This seems to greatly contrast the type of aesthetics and self-reflection that Greene (1978) believes invokes higher-order thinking skills. Dewey (1938) identifies the need for students to be exposed to a variety of equipment, toys, and games that serve as a social set-up under which they can interact. Spring (2000) asserts that students need opportunities to talk about critical issues with each other as well as engage in community activities. If students are limited to the post-tests provided by the AR program, they are missing out on the myriad of opportunities to engage in aesthetic response and creative endeavors related to reading experiences. Slattery (1995a) asserts that children also need opportunities to engage in hermeneutic circles whereby they share their interpretations in a non-threatening environment.

The purpose of investigating aesthetics and text-interaction was to determine if teachers were implementing additional project ideas or aesthetic integration with the AR program. Forty percent of the teachers surveyed revealed that they implement student project-related activities as a form of reading assessment some of the time while thirty percent revealed that they frequently use project-related activities in their classrooms. According to this data, most teachers involved in this study recognized the merit in providing opportunities for students to engage in
more than just AR tests. We have observed teachers who also engage their students in literature circles, story retellings, teacher-student conferences, writing activities, and other aesthetic text interactions. However, according to the data in the previous section, we still see over half of the participating teachers who rely on the AR tests in determining reading skill proficiency—namely comprehension.

As part of our interest in the AR post-tests, we had an undergraduate elementary education class that was studying Bloom’s Taxonomy evaluate some of the AR post test. We had ninety students evaluate twelve different tests from levels three through eight of the AR program. The students were to evaluate each question and determine what level of Bloom’s Taxonomy the questions addressed. As a whole, the students analyzed nine-hundred and sixty questions. They found that seventy-one percent were from the Knowledge Level of Bloom’s Taxonomy and twenty-one percent were from the Comprehension Level of Bloom’s Taxonomy. These bottom two levels of Bloom’s reflect questions that call for basic recall of specific facts and details or prompt students to remember main ideas. Carter (1996) notes that children need school libraries and classrooms to be places where children engage in critical thinking activities that prompt them to evaluate and synthesize the information that they are reading. The questions were not found to promote application, analysis, synthesis, or evaluation of the material presented in the text. The unfortunate consequence of this is that students who are only taking the tests to measure comprehension fail to engage in the critical components of a well-rounded literacy program. Furthermore, in the classrooms where teachers are frequently relying on the AR to measure reading skills, it is clear that the only reading skills measured are comprehension and knowledge. An added consequence is that in many cases, the only measures of comprehension are the AR tests. As Biggers (2001) states, “The only thing a child must do to demonstrate comprehension and readiness to progress to the next level of books is score highly on the AR tests” (p.73).

Motivation

McLaren (1994) challenges teachers to question pedagogical practices that involve the use of rewards and punishments as control
Deconstructing the *Accelerated Reader Program*

Deconstructing the *Accelerated Reader Program* devices. The AR program utilizes a computerized point system whereby students earn points for completion of books and success on tests. Points are used toward the advancement of goals set by teachers in regard to individual reading levels of the students. Goals are usually set within a six-week grading period. Slattery (1995b) states, “In the postmodern curriculum, it does not make sense to evaluate lessons, students, and classrooms based on predetermined plans, outcomes, or standards…” (p. 624). Slattery (1995b) further asserts that adherence to predetermined goals alters the possibility and reality of a natural course of action that takes into account the randomness and chaos that dominate classroom life. We are reminded of a teacher we observed making her students sit out at recess toward the end of the six weeks if they had not reached their AR goal. The students somberly sat out at recess or stayed in the classroom reading in an effort to earn the deficient points.

Slattery (1995b) asserts that by lessening our emphasis on time constraints, educational experiences will become more meaningful to both teachers and students. Allowing students the opportunity to set their own goals and reach those by their own schedule may prove more meaningful than taking away privileges such as recess and forcing children to read. As we enter many school buildings, we can’t help noticing the large bulletin boards in the main foyers that portray the names, and in some cases photos, of the schools’ *Accelerated Reader All Stars* (or whatever slogan they have given to acknowledge the students who have reached their reading goals). According to Slattery (1995a), competitive motivation of this nature is in stark contrast to a philosophy that advocates cooperation over competition. Dewey (1916) may have questioned whether the activities leading to this type of extrinsic motivation hold any internal continuity. Teachers should consider whether children are reading to satisfy the external factor or if they are reading out of internal satisfaction that could result in life-long reading habits. Clearly, the children who were forced to miss recess were satisfying the teacher’s external drive for recognition while their own internal drive (at that moment) was probably to participate in recess.

Motivation through the point system was *always* implemented by over half the teachers surveyed. Fifty-four percent of the teachers surveyed indicated that they *always* recognize students who reach their
goals while fifty-eight percent reported that their schools always give special recognition to those who have earned the most points. Some interesting treats for children earning the most points were photos on the school's bulletin boards, ice-cream socials, principals who shaved their heads, AR store shopping, and even limousine rides. Unfortunately, we observed that the children who are earning the most points were those who were already high achievers in reading. Carter (1996) states that these types of tangible rewards may actually lessen a child's motivation to read and that such extrinsic motivators devalue reading, in and of itself. In their study with more than 1,500 students from 10 middle schools in Michigan, Pavonetti, Brimmer, and Cipielewski (2003) found that “readers are not motivated by a computer bookkeeping system” (p. 309). The researchers conducted research on the AR program based on their love of reading and belief that “students will not become lifelong readers from tests or points or incentive programs” (Pavonetti, Brimmer, and Cipielewski, p. 309).

**Book Selection**

One of the positive aspects of the AR program is that students are given the freedom to choose the books that they want to read. Again, Dewey (1938) states that student interest and choice will greatly impact the learning experiences of the students. The choices that they make will be meaningful and relevant to them, thereby increasing their internal motivation to read and making the educational experience match their realities. However, there are limitations to this freedom in regard to the AR program. The books that students select must be from the AR list (that is, the schools have bought the assessment discs for certain books), and the books must be within their reading level. We are concerned with the wide variety of books that children are missing out on because they are not yet on the AR list or because financial limitations of the district restrict the number of titles that they can purchase. Fifty percent of the teacher's surveyed said that they encourage the reading of the AR books all of the time. A teacher informed us of a student who would not read a recently released Phillip Pullman novel that she suggested because it was not yet on the AR list. This is alarming to us due to the fact that book selection of this nature is not indicative of real-world reading or the perpetuation of establishing life long reading habits including selection
Deconstructing the *Accelerated Reader Program* of books based on personal interest and inquisition. We have personally never bought, checked out, or read a book because it was on the AR list or any other propagandized establishment. In a 1995-1996 survey of schools using the AR program, Carter (1996) found that while the number of children checking out library books had increased, the books that they were checking out were almost exclusively AR titles.

We were encouraged by a small number of teachers who allowed students to read books that were not on the list and/or were above or below their assigned reading levels. We spoke to teachers and librarians who worked together to reward points based on books that were not on the AR list. The teachers created their own point system in keeping with the school’s motivation system and in helping each student (who so desired) to have their photo placed on the “All-Star” wall. Although Carter (1996) claims that the AR program handcuffs students’ abilities to develop independent book selection techniques, innovative techniques like this circumvent the limitations of the program and center on learner development.

**Conclusion**

Seventy-five percent of the teachers surveyed use the AR program as a focus of their reading instruction. Greene (1978) discusses the necessity of teachers in becoming reflective practitioners who question the pedagogical trends that they are adopting. Doll (1998) alerts educators to become more conscious of the systems of control and the political power that is influencing teaching practices and ways of thinking about the educational process. Researchers Pavonetti, et al. (2003) found that students participating in the AR program did not read more once the program was over than they had prior to their participation and did not develop life-long reading habits like the program claims to do. An interesting aspect regarding their study was that students involved in the AR program actually read more during the school year and during the promotion of reading, but did not sustain these reading practices once the school year was over (Pavonetti, Brimmer, and Cipielewski, 2003).

With such heavy emphasis being placed on the adoption of the AR program in districts and schools across the country, it is important to
consider some modifications and ways of enriching the program to best meet the needs of all students and to actually promote lifelong reading habits. A few modifications could include, 1) allowing children to engage in authentic types of assessments such as portfolios, student writing samples, projects, and grand conversations in efforts to ascertain their reading interests and general reading ability, 2) surveying children to determine the factors that are motivating them to read, 3) avoiding the use of AR tests as their only form of assessment, and 4) allowing students to have more choice in their reading selections.

It is hopeful that teachers will begin to move back toward a more independent and flexible approach to teaching thereby emphasizing more student choice, aesthetic opportunity, inquiry, internal motivation, critical thinking, ambiguity, art, and hermeneutics. Teacher will then place emphasis on time constraints, reading abilities, competitive atmospheres, external motivation, and social control.

References


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Appendix

Teacher Survey Implementation of Accelerated Reader

Please rate the following statements according to this scale:
5-Always  4-Most of the time  3-Frequently
2-Sometimes  1- Never

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<tr>
<td>1. The AR program is the focus of my reading instruction.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>2. My students are engaged in independent reading of books and novels.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>3. The basal reader is the focus of my reading instruction.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>4. I use the AR program for student assessment of reading skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>5. My students earn points for reading books that are not on the AR list.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>6. My students are allowed to read books that are above their reading level.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>7. My students are allowed to read books that are below their reading level.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>8. I encourage books that are not on the AR list.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>9. I encourage books that are on the AR list.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>10. I use treats and prizes as rewards for earned AR points.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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11. I give treats and prizes to students with the most AR points. 1 2 3 4 5

12. I give treats and prizes for students who have reached their AR goals. 1 2 3 4 5

13. My school recognizes students who have earned the most AR points. 1 2 3 4 5

14. My school recognizes students who have reached their AR goals. 1 2 3 4 5

15. My students earn a grade for reaching their AR goals. 1 2 3 4 5

16. My students are required to reach a certain AR goal within each six weeks. 1 2 3 4 5

17. My students are required to reach a weekly AR goal. 1 2 3 4 5

18. My students are allowed at least 30 minutes a day of reading time. 1 2 3 4 5

19. My students are allowed more than 45 minutes a day of reading time. 1 2 3 4 5

20. My students are more motivated to read as a result of the AR program. 1 2 3 4 5

21. I conference with my students about what they are reading. 1 2 3 4 5

22. I offer specific feedback to students regarding their books. 1 2 3 4 5

23. I provide various activities pertaining to the literary elements. 1 2 3 4 5
24. I implement at least one group novel study each six-weeks.

25. I use the basal reader along with the AR program.

26. I use student projects as an assessment tool for reading skills.

27. I use journal writing as an assessment tool for reading skills.

28. I encourage students to read from a variety of genres.

29. I have noticed an improvement in the reading comprehension of my students as a result of the AR program.

30. It is my perception that students’ scores on standardized tests have improved as a result of the AR program.
Based on a portion of the results of a research project that explores the possibilities of using Mandarin children's literature for cultural understanding between the students of Taiwan and Mainland China, this paper discusses in depth what existing U. S. research may or may not help in constructing Mandarin reading lists and thus provides insights for applications in other settings. It also comes up with a new strategy for cultural understanding with twin texts from two cultures.
Children’s literature has long been a vehicle for fostering cultural awareness and understanding, both within a country to promote multicultural education (Bieger, 1995; Diamond & Moore, 1995; Norton, 1990; Rasinski & Padak, 1990; Thompson, 1993; Walker-Dalhouse, 1992; Wham, Barnhart & Cook, 1996); and across nations to foster a global perspective (Diakiw, 1990; Labbo & Field, 1998; Lo, 2001; Stan, 1999; Thompson, 1993). Among articles and studies examining children’s literature for use in cultural studies with students, some propose theoretical models for integrating multicultural literature into the curriculum or for studying multicultural literature (Bieger, 1995; Norton, 1990; Rasinski & Padak, 1990); some suggest general guidelines for selecting multicultural or international literature (Lo, 2001; Yokota, 1993); some provide specific recommended reading lists (Diakiw, 1990; Labbo & Field, 1998; Lo, 2001); and still others offer examples of learning activities and student’s responses (Diamond & Moore, 1995; Walker-Dalhouse, 1992).

This study explores the possibilities of using Mandarin children’s literature for cultural understanding between the students of Taiwan and Mainland China. Since there is no Chinese study to build upon in this field, the researcher borrowed the theoretical framework from the United States and adapted it to fit the Chinese context. Taiwan and Mainland China share the same roots of Chinese culture, but subtle cultural differences do exist not only because of geographical division, but also due to separate political and social systems developed over the last half-century. Recently, with more frequent and closer interaction for economic and political reasons, time seems to be right to help students across the Straits to get to know each other better with the help of children’s literature.

Based on a portion of the results of a research project funded by the National Science Council of Taiwan on cultural exchange through children’s literature and e-mail based correspondence between children in Taiwan and Mainland China, this paper shares the process of the first two phases of the project: constructing Mandarin reading lists for cultural understanding and developing relevant learning activities. The purpose of this paper is threefold. First, by carefully examining the U. S. literature on how to select children’s books for cultural understanding,
this paper discusses in depth what existing research may or may not help in constructing Mandarin Reading lists. This discussion, in turn, can provide insights for applications in other settings. Secondly, after presenting a review of literature on how to design activities for cultural learning, this paper also has come up with a new way of helping students to develop cultural awareness and understanding. As there is relatively limited published research that provides concrete examples of relevant activity design, this part also adds an alternative dimension to the existing possibilities. Finally, this paper can serve as a direct resource for students in Hong Kong, Singapore, and other parts of the world where there are children whose primary language is Mandarin, so that they can learn more about the cultures of these two regions.

**What existing research may help in constructing the Mandarin reading lists?**

In the first phase, bearing in mind the purpose of constructing Mandarin children’s literature book lists for cultural understanding between the students of Taiwan and Mainland China, the researcher was curious about the following questions and found the U. S. experience helpful. 1) What is culture? 2) What are the general guidelines to follow when selecting books for cultural learning? 3) At what ages are children most receptive to learning about other cultures? And 4) what genres are most suitable to be used as the medium for cultural understanding?

With regard to the first question on the definition of culture, the researcher found that dimensions of culture include life styles, the family, recreation, feasts and holidays, values, customs, languages, work, beliefs and so on (Banks, 2001; Corsini, 1999; Diamond & Moore, 1995; Merriam-Webster’s Collegiate Dictionary, 1993).

For the second question on guidelines of selecting books for cultural learning, the researcher agrees with the argument made by Lo (2001) that, to avoid stereotyping, the most authentic materials by which to study another culture are books written by authors from that culture for the participants of that culture. Then, in order to provide guidelines for selecting multicultural or international literature, based on suggestions made by Yokota (1993) and Lo (2001), the researcher proposed a work
appropriate for cultural learning should 1) have cultural accuracy; 2) be rich in cultural details; 3) contain in-depth treatment of cultural details; and/or 4) provide insights into multicultural or cross-cultural differences.

Concerning the third question on the ages when children are the most receptive for cultural learning, generally speaking, children ages 10 to 13 are more receptive than others when it comes to learning about people from other countries (Evans, 1987). Educators also agree that the most appropriate age to introduce children’s literature for a global perspective is at the elementary level (Diakiw, 1990; Monson, Howe, & Greenlee, 1989; Stan, 1999).

And finally, regarding the fourth question on the genre most suitable for cultural learning, literature is recognized to be a powerful way to transport students to places and cultures different from their own. After conducting research in both elementary and middle school classes, Norton (1990) proposed a comprehensive five-phase model for studying multicultural literature: 1) general traditional literature; 2) traditional tales from one area; 3) autobiographies, biographies and historical nonfiction; 4) historical fiction; and 5) contemporary realistic fiction, poetry, and biography written for children by authors whose work represents that cultural group. A closer look at research that provides reading lists or cited examples of books for cultural learning (such as in Bieger, 1995; Diakiw, 1990; Labbo & Field, 1998; Lo, 2001; Rasinski & Padak, 1990; Walker-Dalhouse, 1992) reveals that contemporary realistic fiction and historical fiction were the most popular kinds of genre, and folktales were also used in some situations.

Therefore, the researcher decided to construct two book lists. The first is a reading list consisting of books from Taiwan which have to be:

- contemporary realistic fiction or historical fiction;
- at the reading level of the fifth and sixth grades;
- written by Taiwanese writers;
- within the guidelines for selecting for cultural learning defined earlier;
- of a high literary quality (which is a general rule for any reading list); and
published after 1985 (since children's literature is a relatively new field across the Straits and most books have been published after that time).

The second reading list applies the same guidelines for books from China written by Chinese authors.

What existing research may not help in constructing the Mandarin reading lists?

In the process of constructing book lists of children's literature in Mandarin for cultural understanding between students of Taiwan and Mainland China, the researcher found it hard to locate any research that provided guidelines on specific procedure one should follow to come up with a recommended reading list or even a couple of titles for cultural learning.

The researcher asked three experts on Taiwanese children's literature, all college professors who teach children's literature courses and are very active in the field, to each recommend ten works for a Taiwanese children's literature book list with the guidelines mentioned in the earlier section, in order to construct reading lists in a more objective manner. Similarly, for the Chinese children's literature book list, the researcher invited three Chinese children's literature experts with the same background to each offer ten titles of works. However, because China is very large and has various coexisting subcultures, the researcher asked the Chinese experts to focus on books that represent the culture of the highly populated area along the coast, including Peking and Shanghai.

At the beginning, the researcher thought that the experts had been given an easy task because they had been given such specific guidelines; nevertheless, these experts reported being challenged by the idea of what a good work for cultural learning about a specific region is, or what kind of work possesses "cultural representation." In other words, even though they were aware of the dimensions of learning about culture and the criteria that good books for cultural learning should possess, they still had no clue on how to proceed with the selection. Among the hundreds
of qualified works of fiction written by their own authors for fifth and sixth graders from 1985 to the present, where should they start? This situation is similar to inviting experts from the U. S. and from the United Kingdom (or Canada or Australia) to recommend books for cultural learning about their own country. There are simply too many possibilities. Since the researcher was unable to locate related literature and to provide theories for the experts to follow, she decided to remain open-minded and ask the experts to develop their own orientation.

After the recommended titles were collected and the complete lists were constructed, it was interesting to find each Taiwanese expert has his own philosophy about "cultural representation." One expert was inclined to pick up books casually from the long book list, because he worried about "cultural over-representation" by ten books. Another expert favored historical fiction and problematic fiction. He said historical fiction provides more cultural details and explanations for already existing values and customs; and problematic fiction manifests the problems children in Taiwan encounter. The third expert approached this task by first selecting the most distinguished children's book writers in Taiwan and then selecting from their works in order to represent the unique faces of Taiwan. Since the three experts all had their particular positions on book selection, it was not surprising to find they tended to pick multiple titles by an author on their own list but there was little consensus among experts on whose works to pick. On the other hand, the three experts from Mainland China had quite the same idea on whose works to pick. This is because a lot of children's literature in Mainland China is published in children's periodicals and only some of them are favored enough by the publishers to be printed in the format of books. The experts were in general agreement on selecting children's works that were published as books and had received various kinds of awards, along with other criteria mentioned earlier.

While existing research implies how to come up with a recommended reading list or a couple of titles for cultural learning, the children's literature experts in this study offer us some explicit directions: 1) randomly select from a long list of qualified titles; 2) purposefully focus on particular genres (such as historical fiction or problematic fiction); 3) select the most recognized authors and then pick
Children's Literature for Cultural Understanding

out works with rich cultural content; and 4) select titles that have received various awards and then pick out those with rich cultural content (Chen, 2004).

A strategy for cultural understanding with twin texts from two cultures

In the second phase of developing cultural learning activities based on works from Taiwanese and Chinese reading lists, the researcher found several useful approaches or strategies in the U.S. research. First, with a single work about a particular culture, teachers can always apply the “Webbing” approach to develop a thematic unit and focus more on topics of the cultural domain for the purpose of improving cultural awareness and appreciation (Diamond & Moore, 1995; Huck, Helper & Hickman, 1993). Second, with a collection of works about a particular culture, teachers can develop a language chart to guide discussion across cross-cultural books. For example, in a unit on visiting South Africa, the chart may consist of elements of title and author, genre, characters and region, theme of story, events that provide cultural insights, and vocabulary of the cultural group (Labbo & Filed, 1998). And finally, Bieger (1995) and Rasinski & Padak (1990) suggest a four-level model for integrating children's literature for cultural learning into the curriculum, based on Banks’ (1988; 1989) theory. The lowest level is the “contributions approach”, where students read about and discuss holidays, heroes, and customs. The second level is the “ethnic additive approach”, where content, concepts, and themes that reflect other cultures are added to the existing curriculum without changing its structure. The third level is the “transformation approach”, where the structure of the curriculum is changed to enable students to view problems, themes, concerns, and concepts from the perspective of different ethnic and cultural groups. And at the highest level “social action approach”, students identify social problems and concerns and then make decisions and take action to resolve them. This model in some degree echoes the four goal areas emphasized in teaching a global perspective: knowledge, abilities, valuing, and social participation (Evans, 1987).
In addition to the above approaches and strategies, the researcher and the elementary school teachers who participated in developing learning activities for this project also thought that another meaningful strategy for cultural learning would be to present twin texts from the two cultures. Texts should share the same theme or overlap on important topics; cultural similarities and differences could then be compared and contrasted. We came up with three examples where this strategy could be used.

(1) *Young Dragon Boat Team* by Li Tung (1993) from the Taiwanese reading list and *A School with Classrooms Made of Grass* by Tsao Wen Hsuan (1997) from the Chinese reading list have been put together as a twin set. Because these two authors are recognized as the most representative children's literature writers from their region, especially for their language use, an enjoyable cultural learning activity focuses on the differences in Mandarin usage between Taiwan and Mainland China. When students finish reading these two works of fiction, among various learning activities, for instance, a Taiwanese teacher can invite his students to find out what the unfamiliar words, phrases, and sentences they have encountered in the mainland book mean. At the same time, this Taiwanese teacher can also invite his students to find examples of dialect and slang usage in the Taiwanese book and to decode their meanings. In this way a teacher can enhance students' cultural awareness of language use and the origins of certain colloquial expressions.

(2) *Map Girl and Whale Boy* by Wang Shu Fen (1999) from the Taiwanese reading list and *A Boy Named Chia Li; A Girl Named Chia Mei* by Chin Wen Chun (1994) from the Chinese reading list have been put together as a twin set. These two works are both contemporary realistic fiction that depict typical modern boys and girls in an urban setting. In the first book, a girl who loves to study maps and a boy who is crazy about various kinds of whales are two good friends in school. In the second book, Chia Li and Chia Mei are twin brother and sister. Here, the sex role can be the focus. A teacher can invite students to pick out adjectives for the male and female characters in both books, to cite the emotional reactions of the male and female characters in both books, and/or to see how the male and female characters interact with each other
in both books. By guiding students to compare and contrast the similarities and differences of how male and female characters are treated in these two books, and to express and reflect on themselves, a teacher can stimulate students’ cultural awareness and understanding and help students’ to examine their own value.

(3) *I Love Green Turtles* by Tzu An (1998) from the Taiwanese reading list, and *Cheng’s Pet Turtle* by Liu Ho Ming (2000) from the Chinese reading list form the third set of twin texts. The first book tells the story of two boys and their affection toward Green Turtles, an endangered species. The second work is about a boy, Cheng, and his pet turtle; and a memorable incident in the story is Cheng’s confusion over whether he should kill his pet turtle in order to treat his father’s illness. A teacher can invite students to describe the relationship between the human beings and turtles as depicted in both works and then encourage students to do a little research on the Internet on how people treat endangered species in Taiwan and in Mainland China. The focus of this set of twin texts is on cultural similarities and differences across the Straits with regard to attitudes toward animals, especially endangered species.

Although the strategy of using twin texts provides an alternative way for promoting cultural awareness and understanding, it should be kept in mind that this is only done when it is meaningful. Moreover, it should be used with caution so that we do not over-generalize with only a few works on cultural issues; it is best used in combination with other kinds of approaches and strategies mentioned earlier.

**Final Words**

Children’s literature is a good medium for vicarious learning. This paper shares the results of the first two phases of a research project that explores the possibilities of using Mandarin children’s literature for cultural understanding between Taiwanese and Mainland China’s students.

In the first phase of constructing Mandarin book lists for cultural learning about Taiwan and Mainland China, the researcher found the
U.S. research helpful in deciding what kinds of book genres were best for promoting cultural learning; what ages was most appropriate for introducing books for cultural learning; and what general guidelines one could follow when selecting books for cultural learning. The researcher also found the researchers quite vague in describing exactly how they came up with specific recommended reading lists or titles for cultural learning. Both general guidelines borrowed from the U.S. research and possible procedures generated from this study provide insights for application in other settings, especially when educators intend to construct reading lists for cultural understanding across regions that share the same language.

In the second phase, developing learning activities based on the Taiwanese and Chinese reading lists, the researcher discovered, in addition to approaches already suggested by existing research, a strategy of using twin texts from two cultures for cultural understanding. This paper offers three examples on how to employ twin texts, to explore the cultural similarities and differences across the Straits with regard to language use, gender roles, and attitudes toward endangered species. However, this strategy should be used only when it is meaningful.

The complete Mandarin reading lists and activity designs for cultural learning between Taiwanese and Mainland China’s students are posted at http://mx.nthu.edu.tw/~suychen/ where the researcher intends to create the first Taiwan-based website emphasizing children’s literature and classroom instruction (Chen, 2003). Educators and students from other parts of the world where there are children whose primary language is Mandarin can make use of the website.

Finally, the identification of possible books for cultural learning and the development of feasible learning activities are only the first two steps on the long way to accomplishing multicultural education with a global perspective. In the implementation phase, teachers should take students’ reading responses into consideration, remembering that children’s books should not be treated as vehicles for instructing young readers in cultural customs, but rather as stimuli for children to think and discuss, and to achieve cultural understanding and appreciation in social interaction.
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References


**Children’s Books**


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From *The Popcorn Book to Popcorn! Multigenre Children's Books*

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Multigenre texts are a recent trend in children's books. These types of books can enhance students' comprehension and provide models of various types of writing genres. They can be used in differentiating instruction and increasing fluency when transformed into readers' theater texts. Many examples of multigenre books are provided in this article.
It all started with *The Popcorn Book* (dePaola, 1978). This two-level book featured a story about a boy preparing popcorn, while also sharing numerous facts about popcorn and instructions for making popcorn. Then *The Magic School Bus* books by Joanna Cole and Bruce Degen told stories of Ms. Frizzle's outrageous field trips within the context of numerous facts about various science topics.

The number of books written in more than just one genre of writing has recently increased. For the purposes of this article they will be referred to as multigenre books. These multigenre books have a growing audience. "As writers and illustrators continue to expand and experiment with the traditional boundaries of genre, and as teachers and students explore the roles of genre as both readers and writers, we are likely to see those clearly defined lines become even more blurred over the next several years" (Laminack & Bell, 2004, p. 248).

Reading multigenre books, along with interactive class strategies, can certainly boost students' comprehension and enjoyment of various topics (Camp, 2000). In addition, multigenre books model for students the types of multigenre writing they might try. Instead of writing a report on Sacajawea, for instance, Allen (2001) describes how a 5th grader wrote not only a traditional report about her, but also a free verse poem, an acrostic poem, a repetitive poem, a limerick, an obituary, a Lewis and Clark poster, a newspaper article, simulated character journal entries, and a fictional story. In so doing, this student really came to know Sacajawea in a deeper way, rather than just reporting facts about her life. Students could be encouraged to do this type of multigenre writing as well about a topic of interest to them. An example of Kathy's writing in many genres about corn is included in the appendix as an example of this.

Reading multigenre books aloud can be an opportunity in differentiation. The text of the book could be turned into a readers' theater script, with struggling readers reading the less difficult text and more fluent readers reading the more technical vocabulary contained in the informational text.

There are a variety of children's books recently written in multigenre formats. The books included in the following list could serve
as models of multigenre writing and could be used for differentiated reading as well. As readers and writers read and examine such texts, the books can serve as excellent models that may inspire students to try writing in a multigenre format also.

**Concept Books with Facts at the Back of the Book**

The book *Feathers for Lunch* (Ehlert, 1990) is about birds features pictures of birds tempting a cat with facts about each bird at the back of the book. This book easily transforms itself into a readers’ theater script. The facts about each bird could be inserted into the text as each bird is revealed in the illustrated pages.

*Readers’ Theater Example*

The text says: “He’s looking for lunch, something new” on the page that shows a robin. A readers’ theater script might look like this, including the facts about the robin included at the back of the book:

**Narrator:** He’s looking for lunch, something new.

**Robin:** Don’t eat me! I’m an American Robin. I live throughout the United States and Canada and I eat insects, earthworms, snails, grubs, berries, and seeds.

Readers are asked to guess which animal each animal part belongs to, and how it is used in Jenkins’ and Page’s (2003) book *What do you do With a Tail Like This?* The different animal parts include nose, ears, tail, eyes, mouth, and feet. On each page, the question is asked, such as “How are these noses used?” and the following page gives the answers. The authors include detailed information on each animal shown in the book, at the end. This was a Caldecott Honor Book in 2004.
Oppenheim's (1995) *Have you Seen Trees?* is a celebration of various trees displayed in this concept book with facts about each tree at the end of the book. This book could also be used as a readers’ theater script by inserting the facts listed in the back of the book within the text of the book.

**Fictional Texts with Facts Inserted**

In *My Teacher Likes to Say* by Brennan-Nelson (2004), confusing expressions spoken by teachers and other adults are depicted as children imagine them. One example is an illustration of a child and a stuffed animal, both with buttons covering their lips, and the expression “Please button your lip.”

Factual information for further discussion is included on each page; on the “button your lip” page, the author offers information on the evolution of buttons, zippers, and Velcro in our society. Written in rhyme, this book is fun and informative.

In a series of books: *Mouse and Mole and the All-Weather Train Ride* (Cushman, 1996); *Mouse and Mole and the Christmas Walk* (Cushman, 1996); *Mouse and Mole and the Year-Round Garden* (Cushman, 1994); the top of the page features a story about Mouse and Mole, while the bottom part of the page is a fact box about something in the story. For instance in the weather book, tornados, hurricanes, etc. are explained in the fact box at the bottom of the page.

In *Miss Alaineus: A Vocabulary Disaster* (Frasier, 2000), a fifth-grade girl, working hard to learn new vocabulary words for a class assignment, learns that “miscellaneous” is a collection of unrelated objects, not a woman named “Miss Alaineus.” This humorous book is a gold mine for interesting vocabulary words placed throughout the story. Along the page margins are alliterative sentences for each letter of the alphabet.

Keller (2000) authored a fantasy story about classroom of teeth includes many facts about teeth, a history of tooth care, and categories of teeth (incisors, canines, premolars, molars) titled *Open Wide: Tooth*
School Inside. This book is full of information within the context of a story. It also includes many plays on words and tooth puns.

The Scrambled States of America (Keller, 1998) posed the question what if the states all wanted to change places? Florida and Minnesota, Virginia and Idaho....if the states switched positions, how would they all like it? When it happens in this book, great fun ensues, as each of the states gets a rude awakening about climate conditions they are not ready for. The facts listed at the end of the book on each of the 50 states make this a great social studies reference book.

In I've Got Chicken Pox (Kelley, 1994) a young girl gets the chicken pox and deals with the itches while at the bottom of the page a new “Pox Fact” appears describing what the chicken pox are, how to relieve the itching, etc.

As a group of children take a field trip in outer space, they send postcards home and describe their travels along with facts about space. Facts are inserted in the post cards and in sidebar conversations between the characters in the illustrations in Leedy (1993) Postcards from Pluto: A Tour of the Solar System.

Logan’s (2004) The 5,000-Year-Old Puzzle is a fictional account of the archaeological expedition of 1924 to discover a secret tomb belonging to Queen Hetep-heres in Egypt is chronicled with journal entries on one side of the page and lots of information in the form of facts, photographs, and maps on the opposite page.

In O’Connor & Hartland (2003) The Perfect Puppy for Me! a young boy thinks about the puppy he would like to choose. He relates facts about dogs he learns throughout his process of selecting a puppy. Dog facts appear in the illustrations, as side bars, etc.

A fanciful tale by Priceman (1994) How to Make an Apple Pie and See the World takes the reader traveling the globe for just the right ingredients for making an apple pie: to Italy for semolina wheat for the flour, to France for farm-fresh eggs, to Sri Lanka for cinnamon, etc. A recipe for pie crust and apple filling is included at the end.
Activity Example:

The endpapers of this book’s hardcover edition depict world maps, showing all of the continents in which apple pie’s ingredients are grown and gathered. As a social studies project, students could complete small group research reports on the various continents, countries, and products. Map skills could also be incorporated into the lesson. An extension activity might be to investigate a different recipe’s ingredients, and where in the world they can be found.

Informational Texts with Two or More Levels of Information

*Boston Pilgrims vs. Pittsburgh Pirates, 1903: The Story of the First Modern World Series* (Campbell, 2002) is an excellent account of old-time baseball, written at a level youngsters can understand, incorporating history and our national pastime. The book includes photos, illustrations of early baseball uniforms, bats, and gloves, as well as box scores of the first modern World Series. For further reference, the author has included a bibliography and an index.

*Wild About Dolphins!* (Davies, 2001) is everything you wanted to know about dolphins is offered in this enthusiastically-written book. Both younger and older readers will enjoy seeing the photos, diagrams, and maps of where to find dolphins. The author also includes lists of frequently asked questions, and the many different types of dolphins and descriptions of them.

*Don’t Know Much About the Pilgrims* (Davis 2002) is one of a series in the “Don’t Know Much About.....” books. This book features factual details and illustrations depicting the life of pilgrims who sailed aboard the Mayflower. Written in question and answer format, the text includes sidebar facts, a recipe for “Pilgrim bread,” old-fashioned terms for foods, and a map of present-day Plymouth Plantation Site.

As a young child and her mother visit the ocean, they appreciate the shells, flowers, and other aspects of the ocean in *Out of the Ocean*

While telling the history of the apple and how it came to be in North America, Gibbons (2000) inserts “apple facts” within the colorfully illustrated pages in *Apples*. Some items include the anatomy of an apple, a diagram of an apple blossom, products we get from apples, common apples grown in America, how to plant and care for an apple tree, recipes, and a diagram of how an apple cider press works. This is a great book to use in the fall season.

*Grandma Elephant’s in Charge* (Jenkins, 2003) is a descriptive book about a family of elephants with added facts on each page about elephants written in a different type script. The end of the book gives more facts about elephants. Beautiful paintings give added tribute to this magnificent animal.

Laundau’s (2003) *Popcorn!* is a fact book about popcorn including not only the history of popcorn, but also nutritional information, directions for making popcorn in various ways, and recipes. Far from being just a nonfiction book about popcorn, the variety of genres within this one book give the context of popcorn’s popularity as a snack food. See Appendix for multigenre writings about corn and activities.

Each one of the books listed below is a great example of multigenre writing. The books give facts, timelines, charts, graphs, songs, histories, how to pieces, etc. about the topic. These books would serve as good resources for students interested in writing about their favorite topic in many different ways:

- *The Life and Times of the Apple* (Micucci, 1992)
- *The Life and Times of the Honeybee* (Micucci, 1997)
- *The Life and Times of the Peanut* (Micucci, 1997)
- *The Life and Times of the Ant* (Micucci, 2003)

All of Pallotta’s alphabet and counting books feature information for both younger and older elementary students. Illustrations are detailed
and authentic, and facts are presented in a humorous way. They are listed below:

*The Icky Bug Alphabet Book* (Pallotta, 1986)
*The Underwater Alphabet Book* (Pallotta, 1991)
*The Furry Alphabet Book* (Pallotta, 1991)
*The Icky Bug Counting Book* (Pallotta, 1992)
*The Freshwater Alphabet Book* (Pallotta, 1996)

Solheim’s (1998) *It’s Disgusting and We Ate It! True Food Facts from Around the World and Throughout History* offers a rollicking account of strange food customs, with humorous illustrations and captions accompanying the text. Information in the book shows poems about foods, recipes, world maps labeled with different food customs as the endpapers of the book. Chapter titles include “From mammoth meatballs to squirrel stew,” and “If you think that’s sick, look in your fridge.” For students who love “grossology,” this is the book for them.

One survivor on the Titanic was a small stuffed polar bear, the beloved toy of eight-year-old Douglas Spedden, whose wealthy family all arrived home safely after the disaster in Spedden’s (1994) *Polar the Titanic Bear: A True Story*. This book is written through the voice of Polar, the little bear who went along on an extensive European voyage with the Spedden family. The book has detailed watercolor illustrations, as well as actual photographs. In a scrapbook-like style, the author has also included authentic artifacts such as postcards, ticket stubs, luggage tags, and a telegram from the Speddens, informing their relatives that they were safe.

**Poetry with Facts**

*Too Many Rabbits and Other Fingerplays About Animals, Nature, Weather, and the Universe* (Cooper, 1995) features poems about animals, nature, weather, etc. are featured in this book. Included with the poem are actions to accompany the poem and a paragraph with facts about the topic.
In Franco’s & Salerno’s (2004) *Counting our way to the 100th day!: 100 poems*, one hundred poems are listed in the Table of Contents, one for each day leading up to the 100th day of school. The poems describe things that can be counted in groups of 100: crayons, leaves, dandelions, polka dots, pancakes, and other items which appeal to children. Franco and Salerno have interspersed fun facts into the poems and humorous illustrations. This book can be used for poetry and math.


In *Bugs*, Parker & Wright (1991) introduce couplets for a new bug on each page. The opposite page contains facts about the insect.

In Peters’ (2003) *Earthshake: Poems from the ground up* unusual poems about the earth include “Obituary for a Clam” and “Recipe for Granite” in this lively poetry book with information about each featured aspect of the earth in the endnotes of the book.

Poems about the moon each month of the year feature the names of the moon given by Native Americans and facts about the moon at the end of the book by Pollack (2001) in *When the moon is full: A lunar year*.

Scillian (2003) presents a rhyming text as an alphabet book in that each page reveals a word that is the focus for the global page *P is for passport:A world alphabet*. Side notes give lots of facts about that particular object around the world. For instance, the “B” page focuses on “bread” and give facts about bread around the world.

Quintessential African rhymes (much like Western Mother Goose rhymes) feature African animals and places Unobagha’s (2000) *Off to the sweet shores of Africa and other talking drum rhymes*. A very helpful illustrated glossary at the end of the book describes the words and concepts contained in the poems unique to West African culture.
Poems about various superstitions preclude the information about actual superstitions collected at the back of the book in Wong’s (2003) *Knock on wood: Poems about superstitions*.

**Travel Writing With Facts Books:**

Ted Lewin (2003) recounts many adventures he has had in this collection of travel writing with facts in his *Tooth and claw: Animal adventures in the wild*. Each chapter tells of his adventure, complete with photographs, maps, and author’s notes with facts.


**Other Books:**

As the Pledge of Allegiance is recited, many facts are given on each page about the meaning of the words, the history of the pledge, and the context of this famous pledge Martin’s & Sampson’s (2002) *I pledge allegiance*. Students might borrow this format as they write about the significance of other important national icons, such as “The National Anthem.”

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Appendix

Multigenre Writing About Corn

Acrostic Poem

C orn’s four main parts are the cob, husk, silk, and the kernels.
O riginally called Maize by Native Americans.
R ed, blue, and purple kernels are in decorative Indian corn.
N eeds hot summer, rich soil, and rain to grow.

Diamante

Corn
Chewy Golden
Sowing Sprouting Harvesting
Kernel Cob Pods Spheres
Planting Growing Gardening
Mushy Green
Peas

Limerick

There once was a baby ear of corn.
Whose kernels weren’t all battered and torn.
Cut down from the stalk.
Then fried in a wok.
Family members are still forlorn and mourn.

The Important Thing About Corn...

The important thing about corn is that it grows on a cob.
It is made up of kernels.
It is ground up and made into cornmeal.
It was introduced by Native Americans to Europeans.
It is grown throughout the Midwest.
But the important thing about corn is that it grows on a cob.
Alphabet Pyramid

C
Corn
Creamy corn
Creamy corn cultivates
Creamy corn cultivates circumspectly

Poem in Two Voices

A kernel
is planted
A kernel
then sprouts.

A stalk grows
then husks
emerge.
emerge.

Cobs grow
within husks
filled with
creamy kernels
of corn.
of corn.

Watered
and fed
by the sun’s magic touch
by the sun’s magic touch
it ripens
and matures
it grows
until it is
knee high
by the 4th of July.

Then the sun takes its toll
and it dries out and fades
from green
to yellow
to tan
to brown.

Harvested in the fall.
Harvested in the fall.
How To Be Corn:

*Contain starch and sugar.
*Give energy to all who eat you.
*Grind yourself into cornmeal.
*Be sweet or popcorn to be eaten by humans.
*Be dent or flint to be eaten by animals.
*Sprout 10 days after being planted.
*Grow into a stalk.
*Develop leafy husks.
*Swell on a cob under the husks.
*Have a building covered with cobs called Corn Palace in Mitchell, South Dakota.

Compliment/Question/Advice poem

Corn
You are so delectable and appealing!
What is your favorite tint of yellow?
Protect yourself from the sun’s unrelenting rays!

How to Make Corn on the Cob:

1. Purchase fresh corn on the cob at a summer roadside stand. (It is usually available from mid-July to the end of August.)

2. Take it home, keeping it cool. Don’t refrigerate it or it will dry out quickly.

3. Remove the husks, silk, and any other debris (smut or worms) at the trash can inside your garage or outside your house. This avoids corn silk and/or worms clinging to your kitchen counter or floor.

4. Bring a big pot of water to a rapid boil.

5. Wash off the ears of corn in the sink and add to boiling water.
6. Cover the pot and allow ears to boil for 5-7 minutes. If you prefer lighter colored kernels, boil for 5 minutes. If you prefer darker yellow kernels, boil for 7 minutes.

7. Remove the pot from the burner and carefully take the corn out with tongs. Wrap the ear of corn in a towel and squeeze to soak up any excess water from the ear of corn. This will keep your butter from becoming too runny or watery.

8. Put the corn on a large plate and then stick in the corn eaters on the ends of the ear.

9. Drench the corn in butter, salt, and pepper.

10. Eat the corn in a typewriter style manner. Be sure to have plenty of napkins on hand to soak up the butter that will inevitably drip down your chin.

11. Drink plenty of water to help with the digestion of the corn.

12. Enjoy and savor the carefree feeling of summer!
The Phonics Lesson

"Kuh ahh tuh, Kuh ahh tuh,"
The first graders chanted as one.
The teacher flashed a toothy smile—
Her phonics lesson had begun.

"Kuh ahh tuh, Kuh ahh tuh!"
The chant once more was heard.
The principal outside, passing by,
Asked herself, "What is that word?"

"Pray tell—what are they saying?"
"It can't be cut or cot or kit."
Pray tell—what are they bellowing?"

"Kuh ahh tuh, Kuh ahh tuh!"
In unison, once more the roar.
The puzzled principal turned around,
And peeked inside the door.

"Kuh ahh tuh, Kuh ahh tuh!"
Once more the students exclaimed;
And written on the board was cat—
The poor word a being maimed.

Now one can learn to read with phonics—
No doubt a useful tool.
But cat can never be kuh ahh tuh—
Even when learned in school.

C. Glennon Rowell
University of Tennessee
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