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## An Environmental A to Z Book: An Educational Resource for the 21st Century

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## An Environmental A to Z Book: An Educational Resource for the 21st Century

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### Abstract

The purpose of this research project was to create an environmental education book that would fill a gap that exists in the elementary environmental science niche as shown through research presented by Zynda (2007). Zynda found a scarcity of children's environmental books focused on the topic of recycling. Environmental awareness is part of the Iowa Core Curriculum (2010) in all grades, starting in Kindergarten. Additionally, the need for utilizing informational text more often in lower elementary has been established by numerous researchers including Duke (2004). The book, *What About You (WA. Y)? An Elementary Environmental Information Resource from A to Z*, has been designed to examine different environmental perspectives, focus on recycling, use a text structure of interest to lower elementary children, and use illustrations to show diversity and also environmental actions by children.

AN ENVIRONMENTAL A to Z BOOK: AN EDUCATIONAL RESOURCE FOR THE  
21<sup>ST</sup> CENTURY

This Graduate Research Paper

Submitted to the

Division of School Library Media Studies

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In Partial Fulfillment

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By

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Has been approved as meeting the research requirement for the degree of Master of Arts

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## ABSTRACT

The purpose of this research project was to create an environmental education book that would fill a gap that exists in the elementary environmental science niche as shown through research presented by Zynda (2007). Zynda found a scarcity of children's environmental books focused on the topic of recycling. Environmental awareness is part of the Iowa Core Curriculum (2010) in all grades, starting in Kindergarten. Additionally, the need for utilizing informational text more often in lower elementary has been established by numerous researchers including Duke (2004). The book, *What About You (W.A.Y.)? An Elementary Environmental Information Resource from A to Z*, has been designed to examine different environmental perspectives, focus on recycling, use a text structure of interest to lower elementary children, and use illustrations to show diversity and also environmental actions by children.

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## CHAPTER 1

### INTRODUCTION

A pressing question exists for all those who exist in the 21<sup>st</sup> century—can humankind work together to help a planet whose population continues to explode and put its mark on the earth’s soil, bodies of water, and the air around us? What small steps can be taken to play a part in contributing positively in educating current and future generations about environmental science? Students are encouraged to grow in their knowledge of the following benchmark: Humans change environments in ways that can be either beneficial or detrimental to themselves or other organisms (Iowa Core Curriculum, 2010). The Stockholm Conference on the Human Environment declared that humans have the ability to improve or destroy the environment, and that the health of the environment is a major factor in humans’ quality of life (Lerner & Lerner, 2009, p. 770). Teachers and parents are trying to prepare children for their roles in the real world and help them understand what effect humans have on the environment. Although environmental literature is available for all ages, there may be a gap for lower elementary picture books that focus on the subject of recycling (Zynda, 2007). The purpose of this research project is to create a picture book to address this need.

A picture book for lower elementary school aged children is designed to be used by teachers and parents in order to introduce the topic of recycling. This book is illustrated with multicultural characters, including students with disabilities, and helps to initiate the process of environmental science education that is required in most schools. It will be a useful tool to fuel reflection and action concerning real world issues as well as promoting literacy.



## Justification

### Environmental History

It is important to gain an understanding of environmental history in order to appreciate the importance of writing a book that will address some aspects of this subject.

Environmental issues have not simply appeared during the last few decades—they have been in existence since ancient times when the source of air pollution was from wood smoke, animal manure, and other items used for fires. Encyclopedia Britannica (Environment, 2010) points out that ancient polluters included civilized Romans who dug trenches outside the city to store garbage and all kinds of waste, including corpses. In the Middle Ages, pollution became even more noticeable as city populations continued to grow. By the time the Industrial Revolution came along in the 19<sup>th</sup> century, pollution increased in a dramatic fashion.

Lerner and Lerner (2009) give a description of sustainable development or the practice of managing growth and change in ways that meet the needs of the present without damaging future generations' ability to develop further. This practice has its roots in environmentalism that arose in the second half of the nineteenth century. This concept of environmentalism, or the idea of preserving and protecting the environment, occurred in Great Britain and the United States as a response to the pollution of the Industrial Revolution. During this time period it became clear that widespread coal use had serious consequences such as pollutants, huge amounts of soot, toxic gases, and heavy metals that were released into the air. Many of these industries simply dumped their poisonous waste into the rivers and oceans assuming that the water would simply wash it away.

To understand the way that pollution has increased and altered over the last century, it

is necessary to look at specific types of pollutions and some time frames that show a marked impact on the environment. It is worth noting that after World War II, the type of pollution changed significantly. Industries began manufacturing and using synthetic materials such as plastics, polychlorinated biphenyls (PCBs), and inorganic pesticides like dichlorodiphenyl trichloroethane (DDT). These materials are not only toxic, they also accumulate in the environment since they degrade slowly, if at all (DDT, 2009). People gradually noticed the signs of a more hazardous pollution, one that increased cancer rates and caused a greater percentage of birth defects and other types of health problems. In addition, scientists noticed that both plant and animal species were becoming extinct at an alarming rate. Many of these events caused people to confront the problem of pollution and become personally involved to try to change things for the better.

One such person was scientist Rachel Carson who wrote *Silent Spring* in 1962, a book that finally opened the eyes of the public to the long-lasting damage of pesticides, and in particular, the effects of DDT. Her material was carefully researched and presented in a masterful manner, helping to make it a catalyst behind the emerging environmental movement in the United States and beyond.

Numerous environmental laws have been passed in the United States since the 1960s—the Clean Air Act in 1963, the Clean Water Act in 1972, and the Comprehensive Environmental Response, Compensation and Liability Act in 1980 are but a few. There have even been world-wide initiatives such as the global climate change accord that was signed in Rio de Janeiro, Brazil, in 1992. It addressed the greenhouse gas issue that appears to trap heat in the earth's atmosphere and seems to be the source of a global

warming trend. Stapleton (2004) describes nations that were also involved in the 1997 Kyoto Protocol. This Protocol called for a reduction in greenhouse gas emissions by asking countries to commit to certain reduction percentages by specific deadlines, but the United States under George W. Bush, never signed the Kyoto Protocol.

An example of positive environmental action is given by Lerner and Lerner (2009), by describing Wangari Muta Maathai, who was elected to the Kenyan parliament in 2002, and a year later became Kenya's Assistant Minister for Environment and Natural Resources. Maathai was a key player in the Green Belt Movement which is a group that organizes disadvantaged women in Africa by responding to their basic needs such as the lack of firewood, clean drinking water, and more. One practical way this is done is by planting numerous trees. In 2009, over 30 million trees were planted, trees that provided fuel, food, shelter, and income. Maathai developed a citizen education program that empowered these women to identify their problems along with causes and possible solutions. That is how the women were able to make connections between their own personal actions and the problems they see in their environment and society. The Green Belt Movement is paraphrased with this thought:

We are called to assist the Earth to heal her wounds and in the process heal our own – indeed, to embrace the whole creation in all its diversity, beauty, and wonder. This will happen if we see the need to revive our sense of belonging to a larger family of life, with which we have shared our evolutionary process. (Lerner & Lerner, 2009, p. 775)

Environmental history upholds education as the key for creating a sustainable society that works together with the environment and not against it. Environmental Science has

become a curriculum requirement in most schools showing that educators understand its importance. In the state of Iowa, Essential Concepts and/or Skills for Science in grades K-2 include the following: “Understand and apply knowledge of ways to help take care of the environment” (Iowa Core Curriculum, 2010). Chapter 12 of the Iowa Administrative Code states that science instruction shall include conservation of natural resources and environmental awareness.

Since the environment has become a subject of concern for many people, it is hardly surprising to find numerous books dealing with environmental subjects from air pollution to water pollution, from deforestation to global warming, and from young children’s books to those that are exclusively for adults. Wells and Zeece (2007) suggest that there is a lack of environmental science knowledge among citizens of all ages (p. 285). Their studies recommend introducing young children to the places in which they live in order to create an impact on how they will view and respect the natural world as adults. Feelings that influence lifelong attitudes and behaviors are fostered by a young child’s emerging attitude toward science, and this includes both natural and environmental science.

Literature is one valuable way to introduce young children to environmental science topics. Wells and Zeece (2007) state it is also necessary for children to learn environmental science through text, and it is imperative that the facts are presented in a way that will relate to the child’s world and way of thinking. At the same time, it is inappropriate to use scare tactics as a way to teach children to both respect and preserve nature.

Linon (1999) states that teachers can use the many thought-provoking picture books that have been written to make readers aware of environmental issues and to influence

their attitudes. This may give children a new way of perceiving the world as well as their place in it. It will also assist the children in reflecting on their own and others' experiences and actions. This book project will ask the children to reflect on every page by repeating the question, "What about you?" in response to an environmental action that is both illustrated and described.

Additionally Linon (1999) has shown that there is more to assisting the development of children's attitudes to the environment than simply exposing them to appropriate literature. A critical factor that may be necessary for literature to effect change would be the role of the teacher or parent in planning preliminary and/or subsequent activities as well as book discussions about the themes of the books. Moreover, more and varied environmental literature should be made available to children of all ages. In accordance with this need, Iowa Core literacy standard 10 also desires a range of text types for students so that they develop reading skills in both fiction and nonfiction (Iowa Core Curriculum, 2010).

### **Deficiencies**

Zynda (2007) conducted a study on a content analysis of a selection of environmental awareness picture books that was used to determine the appropriateness of these picture books for teaching environmental education to elementary-school aged children. In her study she examined 32 books and divided them into subject areas that were based on the main focus of the book. The results showed 40% discussed issues dealing with habitat destruction, 16% dealt with pollution or had more than one main issue, 13% had ecological harmony as the main topic, 9% dealt with the depletion of resources, and at the lowest end of the scale, only 9% dealt with the topic of recycling.

Zynda found the one book, *Recycle Every Day!* to be very didactic in its nature—although it did enlighten readers about the purpose and process of recycling, it did not have a sense of fun that would help to make it more engaging to young readers. In contrast, *Round and Round Again*, recycled everyday objects that were not those that find their way into our recycling bins. A main character was used to portray the more unusual recycling as a fun activity.

The Zynda (2007) study showed a definite deficiency overall on the subject of recycling in the arena of children's environmental literature, even though it is a learned skill that allows for positive action on the part of the American public. It also provides more than lip service to the support of a sustainable environment.

### **Significance**

Although fiction books continue to dominate reading instruction in most classrooms, many teachers are beginning to design integrated curriculum themes which require both fiction and nonfiction texts to fully develop their goals. Educators are also discovering something that many children have known for quite awhile—reading for information can actually be fun. Additionally, teachers are beginning to recognize that we have a responsibility to motivate children to read all kinds of texts (Taberski, 2001).

By examining the need for more nonfiction picture books that focus on recycling and include multicultural children's characters who are empowered to take some positive actions that contribute to the health of the planet, both educators and parents will benefit from reading the study that will help to produce an environmental ABC book that will be both useful and enjoyable in either a school or home setting. Teachers will be able to use the book to support curriculum for environmental science or literacy needs. Reisberg,

Brander, and Gruenewald (2008) conducted studies which show the significance of place-based education and the benefit of curriculum development that draws on communities and environments outside the school and contend “learning from the local environment provides students with the opportunity to create long-term connections with and respect for the places where they live” (p. 120). This allows local and state connections to be made whenever possible.

Parents will be able to use the book as a current, authentic, nonfiction resource to encourage self-reflection on the part of their child. Lastly, children will discover a variety of ways that they can recycle as well as discover other means to help their own personal environment and grow in their knowledge of environmental problems and solutions.

### **Problem Statement**

There is a need for environmental education in today’s society, and children must be given a choice of quality nonfiction books that address environmental topics, particularly those that are underrepresented at this time. The topic of recycling which “is the reclaiming of materials from a product that has been worn out or rendered obsolete” (Environment, 2010) is one that younger children may not understand since the recycling bins go outside with the trash. In order to instruct environmentally conscious citizens of tomorrow, it is necessary to provide effective and informative literature today.

### **Purpose Statement**

An environmental ABC book will be created in order to meet the deficiencies and to have a positive impact on environmental education for lower elementary students. Several environmental topics will be addressed with particular attention given to recycling.

### Research Questions

1. Does the project examine different environmental perspectives (i.e. the pros and cons of recycling) concerning an environmental issue in order to provide an accurate account that students can examine and question?
2. Does the project adequately cover the topic of recycling?
3. Is the project text interesting for children and does it fulfill the need for lower elementary informational text?
4. Does each illustration enhance the text below it and represent environmental actions Iowa children may take?

### Definitions

**Environment:** the complex of physical, chemical, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival. (Encyclopedia Britannica, 2010)

**Environmental Education (EE):** to provide instruction to students about the biophysical environment or habitat in which they live in thereby producing citizens who are knowledgeable about their environment along with its problems and strategies that can be used to deal with the problems as well as active engagement in working toward solutions. (Fisman, 2005)

**Pollution:** The addition of any substance (solid, liquid, or gas) or any form of energy (such as heat, sound, or radioactivity) to the environment at a rate faster than it can be dispersed, diluted, decomposed, recycled, or stored in some harmless form. The major kinds of pollution are (classified by environment) air pollution, water pollution, and land pollution. Modern society is also concerned about specific types of pollutants, such as



noise pollution, light pollution, and even plastic pollution. (Encyclopedia Britannica, 2010)

**Recycling:** The process of collecting used materials, separating them into types, and using them to manufacture new products. (Environmental Science: In Context, 2009)

**Renewable resources:** Resources that can be renewed or replaced fairly rapidly by natural or managed processes. (Environmental Science: In Context, 2009)

**Sustainability:** Practices that preserve the balance between human needs and the environment, as well as between current and future human requirements. (Environmental Science: In Context, 2009)

## **CHAPTER 2**

### **REVIEW OF LITERATURE**

Many research studies have been conducted in order to determine the value of environmental literature for children, what criteria are of value in an environmental book for children, and what significance children's environmental text has for teachers and parents in the 21<sup>st</sup> century.

#### **Environmental Literature**

A qualitative study was undertaken for a year with two schools in a large urban school district in the Midwest, both having ethnically diverse populations. Christenson (2004) desired to discover what it would take to enhance the teaching of Environmental Education (EE) in the classroom. There were three core questions that were used for observing this process:

1. Is the use of children's literature in teaching about multiple perspectives on controversial environmental issues a realistic and feasible idea within real-world contexts, given current classroom curricular restrictions and government mandates?
2. How were the teachers' attitudes and approaches to teaching influenced by their participation in this yearlong inquiry group?
3. What benefits, if any, did the teachers notice in their students? (pp. 4-5)

A variety of data was collected during a single school year and included a questionnaire which was later analyzed with a Likert-like scale to determine teacher's attitudes about teaching multiple perspectives on environmental issues, nineteen weekly meetings that were audiotaped and transcribed and decoded to isolate themes and topics,

journal reflections that contained reflections on readings and discussions and/or classroom activities, questions asked by the author to clarify ideas, and field notes taken by the author. Finally, teachers reviewed the final analysis suggesting some corrections and changes.

At the beginning of the study (Christensen, 2004), teachers spent time reviewing children's books, finding those that taught multiple perspectives with environmental issues and then used lessons that they created and planned together in group meetings. Results showed that teacher attitudes changed during the course of the study when they observed that teaching benchmarks could support activities for EE projects and others that they considered to be important. Teachers also observed the benefits to students when multiple perspectives were taught, particularly the unexpected bonus of using children's literature to discuss environmental issues because there was an increase in the use of environmental vocabulary in both the children's writing and discussion. An example given was recycling—children did not initially understand the concept but following the sharing of a number of books, most children did understand the making of used things into something new for the word recycling.

Christensen (2004) reported teachers finding that the use of environmental literature helped to incorporate some of the reading benchmarks that were of concern. Through the process of investigation and reflection on classroom practice, instructors in the study remained engaged and enthusiastic, particularly since they shared ownership of the project from the beginning.

Christensen (2004) concluded that picture books increased the use of environmental language in the elementary grades and that multiple perspectives on environmental issues

fed book discussions and related activities. The books also helped to incorporate various strategies for teaching literacy and enhancing critical thinking skills. Lastly, collaborative teacher inquiry was beneficial and helped to increase and improve EE in the classroom.

Some literature might not be the best fit for showing multiple perspectives, but may still be useful tools in a school environmental science program. Meyer's (2002) study was done looking at the literature of a well-known environmental author named Lynne Cherry to discover if her work would benefit an environmental education program.

Meyer (2002) studied the New Ecological Paradigm, a way in which humans view their environment. This paradigm presents ecological laws that cannot be repealed no matter how much technology may delay the foreseeable future that will result from the effects of life forms on the earth. In other words humans, who are part of the "web of life" (p. 277), influence their surroundings with every action, either positively or negatively. Meyer found a problem with educational materials that seem to dwell on the dark side of this perspective, often portraying a very negative and biased point of view concerning environmental issues.

The importance of children's literature in exposing students to environmental subject matter was also noted by Meyer (2002) since children tend to respond well to books. Such books are helpful teaching aids only if they do not forfeit accuracy and if they remain scientifically truthful. Meyer's research questions focused on the study of five books written by well known environmental author, Lynn Cherry, to determine if her literature is "too green" or if the books use fear to shock students into environmental awareness through the means of dread and doom. Meyer examined the works for

accuracy and perspective, trying to determine if the books would be beneficial in an environmental education program.

Meyer (2002) carefully examined the work of Lynn Cherry and her belief that materialism, or the tendency of people to acquire as much as possible, is at the root of most environmental issues and that television is a vehicle for spreading this misguided value. Cherry also believes that children must be shown constructive ways to become involved with environmental problems and will not write a book on a topic unless students can act upon it and become participants. Cherry noted that children are not her only intended audience since even adults are more likely to read a 32 page children's book as opposed to a 350 page book such as Al Gore's book on global warming, *Earth in the Balance: Ecology and the Human Spirit*.

In his research Meyer (2002) discovered that Cherry's books show respect and concern for the environment and that her work entertains and educates with books like *A River Ran Wild*, *The Great Kapok Tree: A Tale of the Amazon Rain Forest*, and *Flute's Journey: The Life of a Wood Thrush*. Meyer found that her books give detailed illustrations and an extensive list of resources used for her research helping to make her books more scientifically accurate than most environmental stories.

Meyer (2002) concluded that Cherry's work would have the most benefit in an EE program when it is combined with both the economic and environmental elements of the problem. Cherry's books prove useful in helping to raise questions and also encouraging children to research and explore in order to develop their own critical perspective. Ideally, teachers would choose stories that are both accurate and well-informed by finding resources that convey a biocentric view of life. Although Cherry's literature

often fell short in this area, Meyer still believed that the many accurate examples of human actions on the ecosystem could still be utilized as a springboard for a lesson that should be supplemented with literature from various perspectives. The best literature will be that which creates a balanced perspective in one book.

Environmental literacy is an important area to tackle when teaching environmental education. The more often that students hear and see a word, the more familiar they become with the vocabulary, and the more likely they are to understand the concept. Barraza and Cuaron (2004) studied younger elementary school aged children in five mixed primary schools in Mexico and three in England. Reviewers studied both the educational system and the pedagogical approach in order to discover how environmental concepts are affected by each and to determine the level of environmental literacy.

Data were collected from a total of 246 students to discover their familiarity with environmental terms and how well they understood the meanings of the terms. The ten terms selected by Barraza and Cuaron (2004) were as follows: “habitat, pollution, recycling, global warming, deforestation, solar energy, endangered species, extinction, nuclear power station and ozone layer” (p. 19). The familiarity portion of the study simply asked where the children had heard the terms, whether it was school, parents, TV, and/or print. The understanding of word meanings was determined with a multiple choice exercise. Data were analyzed using Spearman rank correlation and the Mann-Whitney U-test was utilized to make comparisons between three or more schools. Additionally, Kruskal-Wallis tests were used to discover statistical differences and those were followed up with the Dunn test for non-parametric comparisons between unequal sample sizes.

The familiarity portion of the test found that children had heard an average of about seven (7.2) environmental terms out of the ten words in the total sample population (Barraza and Cuaron, 2004). The average differed between English and Mexican children populations—6.9 compared to 5.1 words in the Mexican schools. The sources of environmental information were most frequently school (teacher) and television – both in the 29% range. Publications such as books scored significantly lower as sources of environmental information, between 12 and 18%.

Not surprisingly, the level of understanding of the terms was considerably lower than the familiarity with the term and concepts, for example pollution was understood better than a related term like deforestation. Barraza and Cuaron (2004) also discovered that an understanding of abstract concepts did not necessarily enhance a child's environmental awareness. Instead it was necessary to affect children's thoughts and feelings in order to develop environmental interest. The authors concluded that the teacher's role and the school's ethos "together with good environmental information will determine the development of the four elements of environmental education: values, attitudes, knowledge, and actions" (p. 22).

When writing children's environmental literature, it is important to consider environmental topics that might be underrepresented in the overall subject category. Zynda (2007) analyzed a selection of 32 environmental awareness picture books to determine if the texts were appropriate for teaching environmental education to children in elementary school. Zynda looked at EE for young children and found that "Environmental education for this age group seems to be as much about teaching children critical thinking and decision making skills as about environmental issues" (p. 5).

Zynda (2007) utilized both child development criteria and environmental education criteria. Her child development criteria and the number of books for each area are as follows:

1. The book requires children to understand the concept of time. (20 books)
2. The book requires the reader to take on a foreign perspective, such as an animal or an adult. (19 books)
3. The book asks the reader to make a value judgment, as opposed to predetermining right and wrong. (3 books)
4. The book requires the reader to understand advanced ideas, such as ecology, or abstract concepts. (15 books) (p. 55)

She also listed eight environmental education criteria and the number of books identified for each:

1. The book encourages an appreciation of nature. (27 books)
2. The book is realistic. (16 books)
3. The book offers a solution. (28 books)
4. Children are encouraged to become actively involved or the children in the book are actively involved. (17 books)
5. The subject matter is something that most children would have experience with. (11 books)
6. The book ends on a positive note. (29 books)
7. The book does not assign blame. (2 books)
8. The book presents a balanced view of the issue by showing the reasoning of both sides. (10 books) (pp. 55-56)



Zynda (2007) concluded that the ideal picture book for environmental education was one that met most of her criteria. She cautioned that these fiction books often failed to meet most of the scientific criteria. Other ideal qualities included a picture book that engaged the reader with storyline, character development, and illustrations, a book that helped to promote nature appreciation, and finally, a book that was appropriate for both younger and older elementary school children.

Zynda (2007) concluded that there appeared to be a shortage of books that focused on recycling. “Depletion of resources and recycling were less popular categories, with 9% and 6% of the books respectively” (p. 23). Zynda postulated that the lack of books focusing on this subject matter may have something to do with a misconception of recycling since recycling containers are put out with garbage cans, causing many children to confuse recycling with the dumping of trash.

### **Local Learning**

In addition to increased understanding of informational text, Fisman (2005) studied changes in environmental awareness among elementary school aged children in New Haven, Connecticut to see if a program called *Open Spaces as Learning Places* helped to improve environmental knowledge and attentiveness. Data were taken from 49 students in the program.

Fisman explained that, “Awareness is a relevant variable to consider when assessing the impact of a place-based environmental education program on elementary school students” (p. 40). She focused on children’s ecological knowledge as well as specific forms and features in their local environment using three different forms of data gathering: knowledge questionnaires, student maps produced using drawing exercises,

and semi-structured interviews. The data used was taken from the students who completed both the pre- and post-program mapping exercise and a series of t tests were used to assess whether maps and test scores had changed significantly.

Five variables on the mapping included scope, natural features, tree, built features, and furniture and the first four showed significant change along with knowledge test scores that also increased appreciably after the program was completed. Fisman (2005) noted that children with a lower SES background did not change as significantly. This might have been due to the considerable challenges that they faced in their social realm (i.e. people getting shot in their neighborhoods). “It seems like a lack of safety can be a barrier to children’s ability to bond with a place” (p. 48).

An important result of the research was that an effective strategy for building local environmental awareness can be accomplished when students are encouraged to apply knowledge to their home environment thereby building a connection that is real and immediate.

Local learning can be enhanced even more by education that is place-based which actually engages students in real-world learning. An example might be to take a group of students to a local recycling plant where the process of recycling can actually be seen. It would also be beneficial to show some recycled material products.

Powers (2004) reported on a study that analyzed four place-based education programs and their effects on teachers, students, schools, and communities and looked at each program’s strengths and challenges along with trends in teacher practice across the programs. The data were gathered from 163 adult interviews from teachers, administrators, program staff, and community members. Additionally there were 85

student interviews and 41 field observations.

Place-based education is being promoted because several studies have shown that students who are engaged in real-world learning are more likely to succeed than those that learn from abstract textbooks. Additionally, another study found that student achievement and in-school behaviors improve when environment is used in an integrating context. Such studies helped the development of the Place-Based Education Collaborative (PEEC), a group that was formed in order for individual programs to be evaluated and also in order to build a foundation for broader research that looked into the effectiveness of the models. It was PEEC who contracted a program-evaluation team for this study reported on by Powers (2004).

The methods of evaluation included evaluating process strengths and challenges and also measuring teacher practice change by using a primarily qualitative process that utilized a mixed-method design with an interview guide and incorporating descriptive observation data. These were then encoded to discover key emergent issues. Data was triangulated using observations of trainings, classroom teaching, fieldwork, and document review and later the data was analyzed qualitatively using inductive methods.

In the four programs evaluated by Powers (2004) he wrote that there were four areas consistently showing process strengths:

1. Use of community partners provides teachers and students with diverse viewpoint, access to resources, facilities, and financial support as well as a broader base of skills and knowledge.
2. Staff demonstrated strong skills in process facilitation, teaching, child development, curriculum planning, meeting management, and numerous

tangible skills like naturalistic skills and computer use.

3. The sustained intervention provided by these programs' summer institutes increases the likelihood that program effects will be sustained beyond the initial involvement of the sponsoring organization.
4. Summer institutes were highly valued as important pieces in generating teacher confidence and buy-in to the program (pp. 22-23).

Additionally, analyses of interviews were given along with observation practice. The following showed impacts on teacher practice:

- Use of local places and resources
- Interdisciplinary teaching
- Collaboration with other teachers
- Teacher leadership and personal growth
- Stronger curriculum planning skills
- Greater use of service-learning in the curriculum (Powers, 2004, p. 24)

There are several children's environmental books that qualify in the area of place-based literature. Wells and Zeece (2007) recommended and reviewed a dozen children's environmental books. The authors also explored how place-based education and children's literature can be beneficial to environmental science knowledge. In the study, Wells and Zeece examined twelve books that were assembled for learning more about the Midwestern United States, some titles were: *A Home on the Prairie*, *The Missouri River*, and *Grasslands: Fields of Green and Gold*.

Specifically, the authors explored how place-based education and children's literature can be beneficial to environmental education. Place-based literature focuses on the

natural environments or places that children have around them. Lifelong attitudes and behaviors in young children toward both natural and environmental science can be influenced child so educators need to present environmental education that is accurate and timely. There is a need for effective teaching since other studies suggest that environmental science knowledge is lacking among all ages.

Wells and Zeece (2007) argued that literature is a valuable way to introduce young children to environmental science and place-based knowledge because it provides meaningful connections to the real world and helps children observe the relationship between their culture and ecosystem. Facts must be presented in a way that helps a child relate to the world and learn about the environment through text. Additionally, picture books must present accurate information with illustrations. Nonfiction books are also beneficial to the young reader because children must not be given a false sense of the real world.

Wells and Zeece (2007) concluded that there are six important questions to keep in mind when selecting environmental based literature for the young reader:

1. What are the learning goals and objectives to be met through use of the book, story, or related activity?
2. Is the storyline developmentally appropriate?
3. Does the book present factual and accurate information?
4. Do the illustrations show correct information and correspond with the text?
5. Is the tone positive?
6. Does the book or story present an environmental theme relating to the area being studied? (pp. 287-288)

### **Informational Text**

Gill (2009) reviewed 17 award-winning and honor books. The books that were studied had no more than 48 pages and in each book both the pictures and the text were of equal importance in order to help teachers understand and share the features of quality nonfiction picture books. Illustrations were studied in depth—in covers, endpapers, copyright pages, and title pages. Location of information was examined on sidebars, in margins, in the captions under photos, and any other sites. Additionally, Gills examined different kinds of typefaces and how it was used to emphasize text.

Furthermore, Gill (2009) utilized three criteria for selecting nonfiction picture books by using three broad questions to determine if the book might engage the learners of today who tend to be predominantly visually oriented. The questions were:

- Is the book visually appealing?
- Is the book accurate and authoritative?
- Is the writing style engaging? (p. 262)

Gill (2009) found that outstanding books put an emphasis on the visual such as the illustrations and design layouts. These books also put an emphasis on accuracy and engaging writing styles, particularly those that invited interaction. Gill concluded that teachers should start by looking at book awards as a source of good nonfiction picture books and also by asking the three questions above when choosing a book since “good nonfiction books should be well organized, should grab readers’ attention, take readers’ likely background knowledge into consideration, and clearly explain new terms ... present information in creative ways, and that encourage reader interaction with the text” (p. 266).

Despite a good supply of award winning informational text, many lower elementary teachers do not utilize this resource, preferring to use fiction. Webster (2009) explored why informational texts are not often utilized in primary classrooms despite the obvious benefits to student learning and despite the use of such texts in upper elementary grades. Webster relates that “informational texts expose students to different types of textual structures such as description, sequence, comparison and contrast, and cause and effect” (p. 663).

Along with a veteran 37-year primary-grade teacher from a primary school in Jamaica, Webster (2009) set out to discover the influence of teacher read-alouds on 110 first grade students’ science knowledge using informational texts. Learning was determined by examining children’s drawings and written retellings. Findings were documented with the students’ work samples, transcripts of their responses, and field notes documenting how the literacy instruction was used. The informational texts were about bananas and hurricanes. Students were encouraged to make connections and predictions. This stimulated their content knowledge and also their vocabulary about the two topics.

The data were collected as field notes taken by Webster (2009). Twelve descriptive accounts about literacy engagements with informational texts were observed and recorded in the first grade. Also, interviews included informal conversations with teachers and students. Additionally, student artifacts such as drawings and writings were collected. Data was analyzed using guidelines of naturalistic inquiry. Four themes were generated:

1. First graders used their own realities to make connections with an informational text about bananas

2. Directed look-backs enabled students to gather important facts about bananas
3. Teacher read-alouds increased content knowledge and expanded vocabulary about hurricanes
4. Instructional strategies supported the students' efforts to navigate informational texts (p. 664)

The results of the Webster (2009) study suggest that before, during, and postreading activities increased comprehension skills in students learning from informational texts. Additionally, the author concluded that informational texts have “the potential to positively influence young students’ motivation to read and write, increase their content learning, expand their vocabulary, and conceptual understanding of specific subject matter such as science” (p. 670).

Another study makes a case for the need to build literacy skills with informational text in younger students. Duke (2004) looked at future success in schooling, the workplace, and society as a whole to determine if there was a link with the understanding of this kind of material.

Advice based on studies by Duke (2004) concerning the utilization of informational text falls into four strategy areas: giving increased access, giving increased time, teaching comprehension strategies, and using informational text for authentic purposes. A strategy for increasing access would include teachers filling classrooms with informational text that will fascinate young children and help them to obtain important information.

Duke (2000) showed that first grade students, on an average, spent less than 5 minutes a day interacting with informational text. One method to increase this amount of time



would be to read aloud to young students, allowing them to build up knowledge as well as becoming familiar with informational text characteristics such as word identification. The teaching of comprehension strategies is imperative so that students are taught *how* to read informational text. Methods for teaching comprehension include monitoring understanding, activating and applying prior knowledge, generating questions, and numerous other reading strategies.

A means for using informational text authentically might include an activity such as reading-for-writing. For instance, Duke (2004) suggested that students “can read about trash and recycling before embarking on a letter-writing campaign to decrease trash output in their community” (p. 43). Many students become more enthusiastic about projects with a purpose. Further, comprehension of informational text increases since students tend to pay more attention to components of text when the reading has an application outside of the classroom. In conclusion Duke (2004) stated, “Incorporating informational text in the curriculum in the early years of school has the potential to increase student motivation, build important comprehension skills, and lay the groundwork for students to grow into confident, purposeful readers” (p. 43).

A teacher has many important aspects to consider when choosing environmental education literature for children in order to ensure that the books meet criteria that will make them effective for teaching environmental terminology as well as offer multiple perspectives when dealing with environmental issues. Effective literature for children helps them to make connections with their local environment and teachers are able to support literature with numerous activities that help students to retain environmental knowledge.

When considering the writing of a children's nonfiction picture book, it is imperative to utilize the findings of research studies that show what is effective in children's environmental literature and what does not work. The author has many factors to keep in mind in addition to authenticity – the use of multiple perspectives when dealing with environmental topics, the environmental subjects that will be focused on, and for books that have educational value, core curriculum standards and benchmarks must be considered. Effective illustrations must accompany the text, serving to increase the child's interest and bolster comprehension of text.

## **CHAPTER 3**

### **PROCEDURES**

#### **Project Design**

This project is an environmental ABC book geared toward lower elementary aged children. It is also a valuable resource for teachers, parents, and older children desiring more environmental education support. Zynda (2007) showed that there is a lack of environmental literature focusing on recycling. Therefore, recycling is an important topic in the book; it is not the only environmental issue included.

Environmental education is a requirement for science (Iowa Core Curriculum, 2010) in elementary grades, and children's environmental literature can be beneficial in the classroom and at home to help teach environmental concepts and vocabulary. Christenson (2004) concluded children's literature increased the use of environmental language in the elementary grades, and book discussions were fed by multiple perspectives presented in both literature and lessons. By providing different viewpoints on environmental issues, social knowledge can be developed along with critical thinking skills in children.

Norton (2007) reveals that alphabet books can do more than simply teach letters and relationships to younger students; they can also be designed to provide information to older students. Another children's book expert, Sutherland (1997) writes, "Alphabet books serve to combine entertainment with instruction. The simplicity and clarity basic to a concept book still allow an amazing range of artistic styles that satisfy aesthetic as well as informational requirements" (p. 76).

Yopp and Yopp state that the environmental ABC book is informational, helping to fill a need for quality informational text that will interest students and will spark their curiosity about an aspect of science (2006). The need for exposition, an essential ingredient in informational text that seeks to explain, is a real one if students are to navigate successfully through the Information Age. Moss (2004) explains that today's information books can expose "even the youngest children to common expository text structures such as description, sequence, comparison and contrast, cause and effect, and problem and solution" (p. 710).

### **Parameters**

The main intended audience is lower elementary aged children but the book is useful to all ages. The first half of the book contains the ABC, or A to Z, portion with short text. Englefried (2006) who regularly reviews alphabet books states, "Building informational text around the A to Z progression is another useful approach" (p. 65).

Twenty six different children names will be used because Bradley and Jones (2007) discussed a strategy for teaching children about the alphabet, a strategy encouraging them to recognize their name and those of their classmates because the first letter is uppercase, making it a prominent feature.

The second half of the book includes multiple perspectives about environmental subject matter like pollution, recycling, and sustainable energy. Informational text is utilized and falls into the category of "non-fiction literature" a term used by both the Dewey Decimal and Library and Congress systems for identifying a category of books that includes biographies, autobiographies, and informational narratives (Saul & Dieckman, 2005).

## Storyboard

This environmental ABC book is formatted in landscape and has 66 pages, not including the title page, acknowledgements, “For Whom the Book is Written”, “Parts of the Book”, and the Table of Contents. Each letter is given two pages laid out in landscape format. The first page for each letter has the featured letter in the top right hand corner and is part of an illustration that includes a child. There are 13 boy and 13 girl characters that will represent numerous races and abilities (children with disabilities are also represented). These children are placed in a scene that supports the text located on the page to the right of the illustration.

The text portion contains the particular letter emphasized in a sentence that utilizes the featured letter at the beginning of at least three words in the sentence, starting with a child’s name (i.e. A will have Addison). A sentence containing at least two more words that begin with the featured letter makes up the text portion. An environmental concept is given for each letter.

The second half of the book gives more detail about specific environmental concepts in the glossary and also provides numerous online resources if more information is desired or needed for a class project. Pat Higby from the University of Northern Iowa Center for Energy and Environmental Education felt that this type of book would be a good resource for students. This second section of the book also gives more than one viewpoint in order to offer multiple perspectives. The illustrations and text are laid out in this fashion:

Acknowledgments	page i
For Whom is This Book Written?	page ii

Parts of This Book	page iii
Table of Contents	page iv
Title Page	
Letter A (illustration and text)	page 1, 2
Letter B (illustration and text)	pages 3, 4
Letter C (illustration and text)	pages 5, 6
Letter D (illustration and text)	pages 7, 8
Letter E (illustration and text)	pages 9, 10
Letter F (illustration and text)	pages 11, 12
Letter G (illustration and text)	pages 13, 14
Letter H (illustration and text)	pages 15, 16
Letter I (illustration and text)	pages 17, 18
Letter J (illustration and text)	pages 19, 20
Letter K (illustration and text)	pages 21, 22
Letter L (illustration and text)	pages 23, 24
Letter M (illustration and text)	pages 25, 26
Letter N (illustration and text)	pages 27, 28
Letter O (illustration and text)	pages 29, 30
Letter P (illustration and text)	pages 31, 32
Letter Q (illustration and text)	pages 33, 34
Letter R (illustration and text)	pages 35, 36
Letter S (illustration and text)	pages 37, 38
Letter T (illustration and text)	pages 39, 40

Letter U (illustration and text)	pages 41, 42
Letter V (illustration and text)	pages 43, 44
Letter W (illustration and text)	pages 45, 46
Letter X (illustration and text)	pages 47, 48
Letter Y (illustration and text)	pages 49, 50
Letter Z (illustration and text)	pages 51, 52
Glossary of terms	page 53 - 59
Online Resources	page 60, 61
Index	page 62, 63
About the Illustrators	page 64

### **Development Process**

The text portion was developed first, taking the following into account:

- The featured letter of the alphabet
- Environmental concepts, particularly recycling
- An equal number of girl and boy names
- The length of the text for each letter
- A glossary defines terms and gives another perspective for each environmental topic (i.e. recycling)
- Fun facts about landmarks are included whenever appropriate
- A question is asked below the initial sentence along with page numbers for the reader to discover more information
- The index assists in finding subject matter
- Helpful online resource URLs are included.

The illustrations take the following into account:

- An equal number of boys and girls (gender equality) representing of a variety of races (multicultural), and also some children with disabilities
- Color that attracts the eye
- The inclusion of Iowa landmarks whenever possible

The creation of this environmental ABC book is as follows:

- The title of the book will be *What About You (W.A.Y.)? An Elementary Environmental Information Resource from A to Z*.
- The first part of the book is the actual ABC portion describing a child who is thinking about his/her environment or is actively doing something (i.e. *Bryan believes that it is important to recycle bottles and cans ... W.A.Y.?*)
- Research was conducted for each environmental concept, utilizing as many current sources as possible: books, internet, U.N.I. CEEE educator, Pat Higby, and elementary school teacher input from Christine Burchfield and Juli Weidemann, both from the Iowa Falls School District.
- Illustrations were produced and revised throughout with Caleb conceptualizing the initial drawing using graphite pencil. The illustrations were then moved on to Trevor who outlined the drawings with a fine tip black Sharpie pen and then used colored pencil.
- The second part of the book gives more detailed information about environmental subject matter like recycling in context of a glossary, and also presents multiple perspectives (i.e. the process of recycling reduces the amount of trash in a landfill, the process of recycling also uses a lot of energy). The definition of terms in this



section required extensive research to ensure accuracy.

- A title page includes another illustration done by Caleb and Trevor.
- An index is included.
- Website URLs for environmental education are included.
- All pages are numbered.
- Questions are included for each letter along with page numbers for readers to find more information on the subject.
- Fun facts are given for many illustration landmarks.
- A table of contents is included.
- An Acknowledgments page is included.
- A “For Whom is This Book Written?” page is included.
- A “Parts of This Book” page is included.
- The author, family members, teachers, professors, friends, and others helped to edit the book.

## CHAPTER 4

### PROJECT

See the attached copy of *What About You (W.A.Y.)? An Elementary Environmental Information Resource from A to Z*. This environmental resource book is designed for elementary school children for pleasure reading and is also designed to be an environmental science resource for elementary school teachers. It is also suggested as a resource for art teachers in order to encourage illustrative work from their students.

## **CHAPTER 5**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **Summary**

Although the United States has become a more environmentally friendly nation and the teaching of environmental science is a requirement in schools, there still appears to be a gap concerning the availability of a children's book with an emphasis on the topic of recycling. Zynda (2007) studied 32 children's environmental education picture books and discovered that only two focused on recycling. Additionally, familiarizing young children with informational text is recommended along with including local information that students can identify with, giving more meaning to the content of the text. This picture book was designed to examine different environmental perspectives, focus on recycling, use a text structure of interest to lower elementary children, and use illustrations to show diversity and environmental actions by children.

#### **Conclusions**

The first research question asked if the project examined different environmental perspectives. The value of giving multiple perspectives when teaching has been shown in a study by Christensen (2004) that described the results of five elementary school teachers who incorporated a multiple perspectives approach to teaching environmental issues. Christensen claims, "There is the potential for children to learn about environmental science, environmental issues, and about the democratic process for resolving those issues while they are making up their own minds about some environmental topic" (p. 15). The primary emphasis of this book remains on recycling and yet other "green" information was presented. Christensen discovered that a benefit in

teaching students multiple perspectives was that it encouraged critical thinking and also helped the students to engage in issue discussion. The book will help students understand environmental concepts as well as the multiple perspectives that exist for many topics. The project attempts to offer more than one perspective in the glossary portion of the book, giving a different viewpoint under Other Thoughts. For example, this book presents alternative thoughts about the topic of solar panels including the benefits and the acknowledgment about the cost and inability to store electricity. This has been done to support the research studies and to also support further investigation on the part of the students.

The second question focused on the project covering the topic of recycling. Although the United States has become a more environmentally friendly nation and the teaching of environmental science is a requirement in schools, there still appeared to be a gap concerning the availability of young children's book with an emphasis on the topic of recycling. Zynda (2007) studied 32 children's environmental education picture books and discovered that only two focused on recycling. Zynda's research also showed that students had difficulty focusing on issues that were far away instead of being able to connect with subject matter closer to home.

The book supports the concept of recycling, along with the related topics of reducing and reusing, and other environmental topics such as water and sustainability. Writing about recycling was more difficult than anticipated due to many factors: the different types of recycling, all the different materials that can be recycled, the many factors that play into the overall effectiveness of recycling, the fuzzy line between reusing and recycling in every day language, and even more topics that fit in with recycling. It was

important to keep the main audience of lower elementary school aged children in mind and not to overdo the explanations of concepts in the second half of the book.

It proved interesting to discover that recycling is a topic that not all people agree upon – is it actually as beneficial as most people think? What are the facts on both sides of the issue? How complicated should an explanation become and still be beneficial to a lower elementary school aged child? Had time allowed, the researcher could have continued the research process indefinitely.

The third question addressed the need to make the text interesting to lower elementary students. The book strived to achieve this by making the locations close to home or place-based, by including a wide variety of children, and by using student illustrators. An important aspect of the project was the condition that the book should be place-based since there tends to be more meaning for and empathy from the students when learning links them with their immediate environment. Reisberg, Brander, and Gruenewald (2006) state “learning from the local provides students with the opportunity to create long-term connections with and respect for the places where they live” (p. 120). Many illustrations in the book have attempted to show Iowa scenery, from the capital building to sites on university campuses. Additionally, the researcher felt that it was important to bring in a landmark from Cedar Rapids in order to show respect to an Iowa town that was hard-hit during the floods of 2008.

Christine Burchfield, a second grade teacher in the Iowa Falls School District suggested that the words to be looked up (i.e. aluminum under the letter A) should be underlined for the student readers, making the researching easier for them. Burchfield also recommended that the words “supposed to be” be removed from the Fun Facts. This

terminology was used in the original phrasing when referring to artistic renderings of a particular site. Additionally, Burchfield commented that the student drawn illustrations would attract her own students even more than illustrations drawn by an adult.

Another teacher in the Iowa Falls School District also provided input. Juli Weideman teaches fourth grade at Rock Run Elementary School in Iowa Falls. After looking through the text, she was convinced that it would be a good resource for her students due to the environmental education aspect. She also appreciated the directions for finding information in a nonfiction book. In particular, she liked the glossary and index that were tied into the environmental A to Z section with page numbers. Lastly, she recommended that the original title be changed from *What About You (W.A.Y.)? An Environmental ABC Book* to something that would not limit its audience to the lowest elementary grades.

The third question also addressed the need for lower elementary informational text. The use of informational text for young children is indeed neglected despite the fact that text books dominate education programs as the children move into upper elementary and onward. Taberski (2001) claims that students are given a boost in content-area reading when teachers read aloud from both nonfiction and fiction text sets. Such practices will help to prepare them for content-area studies in later grades as well as helping them to navigate informational passages on standardized tests. Such learning should begin at an early age and must not be neglected in order to avoid the fourth grade slump. Granosky (2004) states, "Using informational books in a guided reading program for the primary grades may help students overcome the "fourth grade slump" later on. This slump may reflect the shift in instructional focus from storybooks to textbooks." (p. 56)

Reading research continues to show the need for informational texts throughout the

students' primary grades, helping to mitigate the fourth grade reading slump which seems to coincide with a shift toward text books. Yopp and Yopp (2000) state, "Informational books expose children to concepts and specialized vocabulary, building background knowledge and language that students can draw upon when reading more complex books later ... Also, informational texts capitalize on children's interest, whet their appetites for more information, and motivate them to read" (p. 2).

Yopp and Yopp (2000) also say that reading activities that are implemented before, during, and after reading the book can support a reader's interaction with the text by helping to build relevant background knowledge, by arousing their curiosity, by motivating them to read, and more. Other reading activities might include the K-W-L chart which could help students to develop an interest in the topic and the text and may even increase their desire to read. Yopp and Yopp discovered "informational alphabet books provide opportunities for young readers to interact with informational texts, exposing them to text features and structures (other than narrative) as well as to specialized knowledge and vocabulary. In addition, they provide information on topics that may arouse curiosity, spark questions, and serve as catalysts to language and literacy" (p. 417).

By utilizing nonfictional, authoritative resources, the author made it a goal to create an informational text that would fulfill the needs of a student reading for pleasure as well as the needs of a teacher utilizing the book in an environmental science unit. Additionally, by listing the parts of the book, and encouraging the students to look up information, the text could become a useful stepping stone for a student that had never used a glossary or an index before.

It is important to realize that a teacher or parent can improve the usefulness of the book by applying reading strategies. Juel, Hebard, Haubner, and Moran (2010) believe that deep engagement with the text can come from having a disciplinary focus of thinking. For instance, one should approach a text like a scientist or historian, and then can change the focus to think like a writer, using the more commonly taught strategies like prediction, visualization, or summarization. Or the focus can be more scientific with the goal being student observation and thoughts about pictures and words in a book, just as they also should be studying the natural world through careful observation. For instance, Juel et al. state, "If a student knows that scientific claims involve careful collection of evidence, he or she is more likely to ask for evidence from those who make scientific claims rather than accept those claims at face value" (p. 13).

The fourth research question asked if the illustrations enhanced the text that went along with it. The student artists used the text as a guideline for the drawings and kept many concepts in mind when designing the artwork, including a variety of ethnicities in their creations. Hughes, Barkley and Koehler (2009) found that it was important for children of color to be exposed to multicultural literature that gave engaging text and characters that they could recognize and relate to, in order to make reading a more worthwhile activity for them. In the truest sense of the word the project book would not fall under multicultural literature since none of the characters was developed and the context was not developed for the pictured individuals. However, thought was put into the representation of different races, different sexes, and different physical abilities in order to foster a connection with a multitude of readers who may relate to one or more of the children in the book. Additionally, the different names of the characters could help



some young children learn a letter name more quickly. Bradley and Jones (2007) stated that the first letter of a child's own name or the name of important people in their lives often helps a child to learn a letter name more quickly.

There are many different styles of alphabet books for teachers to utilize. This project book falls into the category of an alphabet book that focuses primarily on a theme by presenting specific concepts of words in alphabetical order (Bradley & Jones, 2007, p. 459). It also remains important to utilize the same sound for a particular letter. For instance, the researcher rewrote the "O" sentence upon discovering that the first draft combined both long and short "o" sounds within the same sentence.

The researcher also discovered that keeping two young teens on task for the production of over two dozen illustrations was not an easy feat, given the boys' academic activities, athletic activities, and church activities. Initially, the researcher attempted to find studies about children illustrating for children, but the researcher proved unsuccessful in locating such information. Despite that fact, the researcher never lost the belief that students drawing for students would be a huge boost to the book, and could possibly inspire other children to illustrate their own books or at least identify more readily with the characters in the book.

The focus of this alphabet book could also be for older students. As Norton (2007) writes, "Several alphabet books are designed to provide information to older students rather than to teach letter/ sound relationships to younger ones" (p. 170). It would then be beneficial to add additional facts to the second half of the book, making it of even more value as an informational text resource.

To summarize, the text takes the following into account:

- Environmental issues with an emphasis on recycling
- Informational text for young readers
- Place-based sites in the book
- Multiple perspectives on a subject
- Multicultural characters
- Language that works for lower elementary

The researcher attempted to take all of the study results into account and to bind them together cohesively within the confines of a children's environmental ABC book that could be utilized in the classroom, in the home, or in the library.

### **Recommendations**

The researcher suggests that this environmental resource book, *What About You (W.A.Y.)? An Elementary Environmental Information Resource Book*, be used in a library or in a classroom in order to stimulate both inquiry and environmental action. The book could encourage students to find environmental research interests and would also allow them to familiarize themselves with the parts of a book that are often found with informational text. Students would also become knowledgeable about environmental terms and concepts. More books of this nature, covering a wide variety of core curriculum subjects, could prove to be very beneficial to the lower elementary nonfiction book section.

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