THE ACCURACY OF AGRICULTURAL

IMAGES IN CHILDREN'S LITERATURE: AN

ANALYSIS OF SELECTED CHILDREN'S BOOKS ON

FARM ANIMALS FROM 1950 TO 2005

By

JENNIFER L. BISER

Bachelor of Science in Agricultural Journalism

Bachelor of Science in Animal Science

Texas A&M University

College Station, Texas

2005

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
July, 2007

THE ACCURACY OF AGRICULTURAL

IMAGES IN CHILDREN'S LITERATURE: AN

ANALYSIS OF SELECTED CHILDREN'S BOOKS ON

FARM ANIMALS FROM 1950 TO 2005

Thesis Approved:

Shelly Sitton
_____
Thesis Adviser

Dwayne Cartmell
_____

James Leising
_____

A. Gordon Emslie
_____
Dean of the Graduate College

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Need for the Study

Remember a farm.

Remember the smells, the sights and the animals. Whether it was Mom and Dad's or Nanna and Granddad's, many adults can remember such an experience from their formative years.

According to the National Agricultural Statistics Service (NASS) figures from 2005, farms are increasing in size but decreasing in numbers (see Table 1). Therefore, with fewer working farms in production, a limited availability for on-farm experience befalls many American families and their youth.

Table 1

Average Size of Farms from 1995 to 2005

Year	Number of Farms	Average Size
1995	2,196,400	438
1996	2,190,500	438
1997	2,190,510	436
1998	2,192,330	434

Year	Number of Farms	Average Size
1999	2,187,280	434
2000	2,166,780	436
2001	2,148,630	438
2002	2,135,360	440
2003	2,126,860	441
2004	2,113,470	443

"As our cities and towns grow and decentralize, farmland and other rural lands are converted to urban uses" (Plaut, 1980, p. 537). Plaut's observation was quantified by the 2002 NASS Census statistics, which illustrate the decline in farmland from 1997 to 2002, surpassing 15 million acres (see Table 2). This decline, in addition to land lost since 1950, has resulted in an approximate loss of 51 million acres of grassland for pasture and 28 million acres of cropland used for crops, according to the 2005 USDA-NASS report.

Table 2

USDA-NASS 2002 Census of Agriculture

	1997	2002
Farms	2,215,876	2,128,982
Land in farms (acres)	954,752,502	938,279,056

"[It] is important to consider if the continued loss of farmland to urbanization could exacerbate a possible shortage of productive agricultural land in the future" (Plaut, 1980, p. 537). Plaut's concern, although more than 20 years old, has been an area of

concern to those in positions of power, such as former Representative and chairman of the subcommittee on forestry, resource conservation, and research committee on agriculture Larry Combest of Texas, who stated, "Agricultural research has led to a six-fold increase in agricultural labor productivity since 1948. Almost fifty years ago, the number of people fed by one farmer was fifteen. Today, one farmer is able to feed ninety-six others" (1997, p. 1).

Globally, Combest's observations are witnessed by the United States' agricultural exports annually, with more than $5 billion from animal products alone (see Figure 1 as cited in Brooks, 2006, p. 1). This multi-billion dollar industry increases in value from year-to-year simultaneously with the value of U.S. agricultural imports, as reported by the Foreign Agricultural Trade of the United States: Monthly Summary (USDA-FATUS, 2006). The import/export market alone totaled more than $100 billion in value (USDA-FATUS, 2006).

Billion dollars
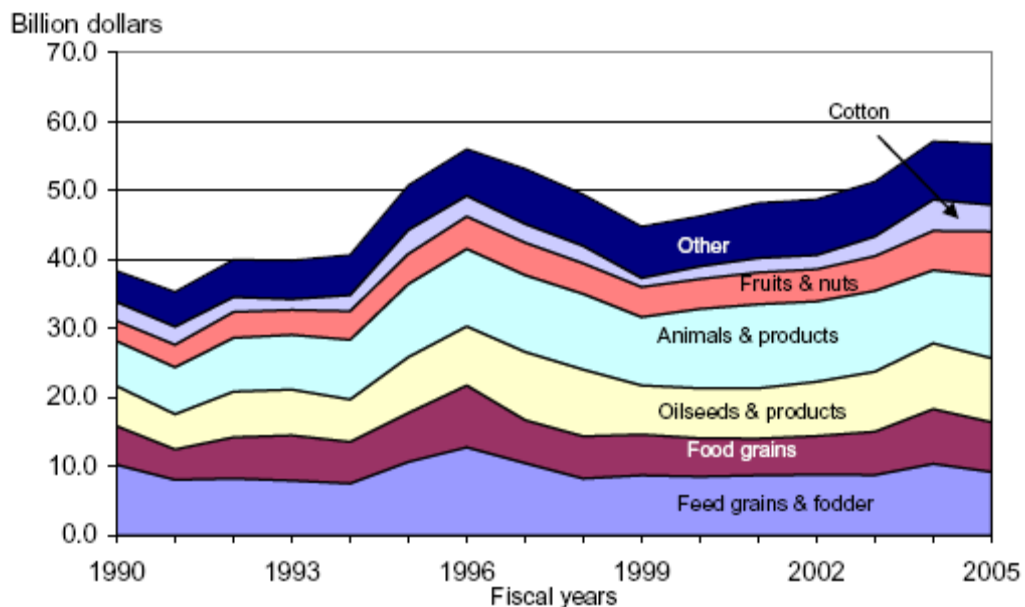
Sources: National Agricultural Statistics Service and Bureau of Census, U.S. Department of Commerce.

Figure 1. U.S. Agricultural Exports by Commodity Group (Brooks, 2006).

The costs associated with producing sufficient products to meet the demand ultimately fall upon the shoulders of the producers with the value of agricultural production falling 1.5 percent in 2005 and total production expenses rising 3.7 percent (USDA-ERS, 2006). This inverse relationship presents a unique financial condition for U.S. commodity producers (USDA-ERS, 2002).

The ability to modify production to suit the demand of a growing population, while concurrently experiencing a decrease in resources and an increase in production costs, reveals not only the potential difficulties associated with farming and agriculture, but also directs awareness to its most obvious significance — its continuation as an important subject in youth education. (Plaut, 1980; National Academy of Science National Research Council, 1988).

> America's food and fiber systems determine the nation's general welfare and standard of living. Today nearly ninety percent of the population is two or three generations removed from direct contact with food and fiber production. As a result, youth know little about agricultural production, processing, marketing, distribution, regulation or research. (Pense, Leising, & Portillo, 2003, p. 120).

As society changes, it looks at youth to sustain agriculture for the next generation of agriculturalists in the United States. As Russell (1993) stated, "Youth development has been declared an 'imperative' for our nation to remain economically viable . . . With fewer youth going into agriculture, the long-term future of the agricultural industry is in question" (p. 1).

If this is true, then Jean Piaget's theory of cognitive learning applied to the issue of agricultural literacy in American youth could present some reason for concern.

Wadsworth (1978) presents one of Piaget's major contentions that a child has the ability to construct his or her own reality of the world based on his or her interactions upon it.

Sulzby (1985) and Ferreiro and Teberosky (1982) apply Piagetian traditions to explore the value of young children having interaction with children's literature prior to formal reading instruction and identify the benefits to cognition. Sulzby (1985) concluded that "children develop tremendously when interacting with storybooks" (p. 478).

Although Irwin and Andreasen (2003) found their instrument could "provide guidelines for educators and media specialists to keep in mind as children's books are considered for selection" (p. 7), research on the topic of agricultural accuracy in non-fictional children's literature was not identified in book, dissertation or journal articles. Therefore, this study is intended to provide a resource for professors, teachers, librarians and families on the topic of agricultural accuracy, adding to the body of knowledge on media designed for children and children's literature in general.

Statement of the Problem

Most children are removed from farming experience and have to learn vicariously through texts and literature about agriculture; therefore, this study focused on accurate representation and appropriateness of farm animal images presented in selected non-fiction children's books.

Purpose of the Study

The purpose of this study was to determine the perceived accuracy and acceptability of common domesticated farm animal images in selected children's non-fiction books published from 1950 to 2005 for 2- to 7-year-olds.

Objectives

The following objectives were established to accomplish the purpose of this study:

1. Determine the perceived accuracy of animal images in selected children's non-fiction books, based on the date of publication, the animal images, the animal setting, and the animal interactions;

2. Compare by decade (1950 to 2005) the perceived accuracy of animal images in selected children's non-fiction books relative to the date of publication, the animal images, the animal setting, and the animal interactions;

3. Determine the perceived acceptability of selected children's non-fiction books for providing children with realistic images of farm animals; and

4. Determine the number of animal species and the types of graphics represented in selected children's non-fiction books from 1950 to 2005.

Assumptions

The following assumptions were made to accomplish the purpose of this study:

1. The panel of experts is representative of their respective areas of expertise.

2. The United States Library of Congress offers all of the available books through its Web site card catalog search.

3. All relevant children's books are made available through the U.S. Library of Congress.

4. All selected books to this study are available to the public.

5. For a book to be acceptable, it also must be realistic. Therefore, evaluating the images based on their realism measures the acceptability of the images as well.

6. For children to develop an accurate understanding of animal agriculture in the United States, books must contain accurate images.

Limitation

The author recognized the following limitation: The books used in the study remain in circulation and are available to the public.

Significance of the Study

The significance of this study began with contributing information to the body of knowledge in the area of children's literature and the accuracy of the messages presented. Within the examination of the message's accuracy was the appropriateness of the subjects (farm animal images) presented. By focusing on a younger, more impressionable age of pupil, it was the goal of the researcher to assess the accuracy of farm animal images in children's literature focused toward 2- to 7-year-olds.

Definition of Terms

As a clarification of terms used in this study, the researcher offers the following definitions:

Accuracy — "freedom from mistake or error . . . conformity to truth" (Merriam-Webster, 1998, p. 12).

Children's Books/Literature — "Children's literature is defined as literature written for, or largely read by, children between the ages of one and sixteen, in format and style ranging from the picture book to the young adult novel" (University of New Mexico, 2007).

Cognitive Learning — The continuous process of four periods of learning a skill through adaptation from birth and development: (1) sensorimotor, (2) preoperational, (3) concrete operational, and (4) formal operations (Wadsworth, 1978).

Content Validity — The measure of the degree to which the instrument represents the content to be represented (Key, 2005).

Cow — "The mature female of cattle or domestic bovine" (Merriam-Webster, 1998, p. 419).

Descriptive Statistics — "Numbers which are used to describe information or data or those techniques to calculate those numbers" (Key, 2005 p. 129).

Face Validity — "Logical or conceptual validity; so called because it is a form of validity determined by whether, on the face of it, a measure seems to make sense" (Vogt, 1999, p. 107)

Goat —"Any of various hollow-horned ruminant mammals (especially of the genus *Capra*) related to the sheep but of lighter build and with backwardly arching horns, a short tail, and usually straight hair; *especially***:** one (*Capra hircus*) long domesticated for its milk, wool, and flesh" (Merriam-Webster, 1998, p. 787).

Horse — "A large solid-hoofed herbivorous ungulate mammal (*Equus caballus,* family Equidae, the horse family) domesticated since prehistoric times and used as a beast of burden, a draft animal, or for riding" (Merriam-Webster, 1998, p. 882).

Land Grant University — "Morrill Act of 1862 established the Land Grant university system, which donated public lands to the several states and territories, which may provide colleges for the benefit of agriculture and mechanic arts" (Higher Education Resource Hub, 2007).

Learning — "the process of building accurate internal models or representations that mirror or reflect external structures that exist in the 'real' world" (Doolittle & Camp, 1999, p. 5).

Likert Scale — Named after Rensis Likert, "a summated scale for the assessment of survey respondent's attitudes" (Clason & Dormody, 1994, p. 31).

Picture Books — "The picture book for children is distinguishable by its wedded pictures and text, the text explaining the picture and the pictures or illustrations enhancing and illuminating the printed words. That is, the illustrations must appear opposite the text related to it, so that when the pages are open, the child sees both at once" (Arango, 1994, p. 11).

Pig — "A young domesticated swine not yet sexually mature; *broadly* **:** a wild or domestic swine" (Merriam-Webster, 1998, p. 1383).

Realism — "concern for fact or reality and rejection of the impractical and visionary" (Merriam-Webster, 1998, p. 1527).

Rethink — "to think about again; to engage in reconsideration" (Merriam-Webster, 1998, p. 1569).

Semiotic Theory — a general philosophical theory of signs and symbols that is distinctive of human learning and is the process of making meaning (Halliday, 1993).

Sheep — "Any of various hollow-horned typically gregarious ruminant mammals (genus *Ovis*) related to the goats but stockier and lacking a beard in the male; *specifically*: one (*O. aries*) long domesticated especially for its flesh and wool" (Merriam-Webster, 1998, p. 1690).

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this review of literature was to determine the need for identifying the perceived accuracy of agricultural images in children's literature. This was accomplished through the presentation of research in the theoretical and conceptual framework used, children's literature, cognitive learning, use of children's books for learning, and agricultural literacy.

Paradoxically, the United States has one of the world's most plentiful food supplies and possibly the least agriculturally-informed [*sic*] public. For most Americans, agrarian life and farming have been transformed from a harsh reality to dream-like images on Christmas cards. (Desmond, Leising, King, Rilla, & Cappock, 1990, p. 151).

According to the National Academy of Science Research Council (1988), an agriculturally literate population will make intelligent and informed decisions regarding agricultural issues and policies to benefit all of society.

"The many changes occurring in agriculture during the past decade have made the need for agricultural literacy increasingly evident" (Haygood, Hagins, Akers, & Keith, 2002, p. 2). This necessity pertains to all constituents, consumers and policy makers

alike; the need to be "agriculturally literate" is necessary to respond appropriately when issues such as those pertaining to food safety, the environment, and even national security and biosecurity arise (Frick, Birkenholz, & Machtmes, 1995).

"Most Americans know very little about agriculture, its social and economic significance in the United Sates, and particularly, its links to human health and environmental quality" (National Academy of Science National Research Council, 1988, p. 9). The issues surrounding bioterrorism and national security perhaps present the greatest pull for public attention to agricultural literacy (Ashlock, 2006). "A basic knowledge of agriculture is especially important when it is the major industry in a state, and the lack of agricultural knowledge and experience impedes economic development" (Haygood, et al, 2002, p. 2).

Due to increased urbanization with less direct contact with farms and farming, the resulting inaccurate perceptions contribute to one of the greatest obstacles facing American agriculture: the residual stereotype of yesteryear (Sorenson, 1987; Terry & Lawver, 1995).

Conceptual and Theoretical Framework

Conceptual Framework

A conceptual framework is supported by the foundation of related literature presented in book, journal or other research publications, to form a valid base for this study.

"If we are to change the image of agriculture, we must begin with the children"
(Coon & Cantrell, 1985, p. 22). Coon and Cantrell's (1985) idea of "changing the image
of agriculture" stems from their observation:

The American public's image of agriculture is a kaleidoscope of leftover attitudes
and images of what agriculture was during the 40's, 50's and early 60's [*sic*].
Agriculture [was] viewed as farming with no understanding of the impact of
agriculture on other sectors of the economy. (p. 22)

To add to Coon and Cantrell's approach and offer a dimension for a need of
children's literature on farming, Ediger (1998) noted "literature written for children on
farming should have accurate content . . . Linking the past with the present assists pupils
to perceive relationships among periods of time in history" (p. 277). Hoffman and
Daniels (1995) agreed with Coon and Cantrell and to Ediger's observed needs that
"literature is a mirror held up to society. It needs to reflect an accurate portrayal of
today's diverse population including the American farmer" (p. 5).

Coon and Cantrell (1985) noted there is value in educating the public about
agriculture, so they understand the United States leads in production and innovativeness;
yet, many children and adults still believe milk and eggs originate from a grocery store.
Ediger (1998) agreed, stating: "Too many pupils are removed from the rural side of life,
[sic] which is farming. They have meager ideas in terms of where food comes from" (p.
277). Coon and Cantrell (1985) found worth in educating children at an early age:
"Exposure to agriculture in elementary and secondary school will make [children] better
consumers of agricultural products and better supporters of the agricultural industry" (p.
22).

Hoffman and Daniels in their 1995 study on the stereotypes of farmers in children's literature recognized:

It is crucial to avoid stereotypical portrayals during a young reader's developmental stage, when clear concepts of self and others are being formed, the subject of biases and stereotypes in children's literature has received considerable attention. . . . Even animals have been noted to be stereotyped in children's literature. (p. 1).

Czarney and Terry (1998) in their research support Hoffman and Daniels (1995): "Publishers and authors need to consider [stereotyping] when writing or publishing books with an agricultural base. What children read today influences the society of tomorrow" (p. 44). Czarney and Terry (1998) further described in their findings:

The discussion of farm often brings to mind animals. This is also true in children's literature. Books about farm animals include fantasy fiction, poetry, reference, and realistic fiction genres. . . . These types of books do not give an accurate portrayal of farm animals or how farm animals are used on a farm. In these types of books the animals talk and have human qualities. . . . Many children's books about farm animals lack the factual information that is needed for children to develop an accurate schema of what a farm really is like. (p. 45).

It is complicated, at best, to represent today's agriculture with complete accuracy in a child's book, as Nancy Chu in her 1994 study of children's literature and farming and rural life concluded: "The complex and varied nature of American agriculture prevents a single book from providing a complete picture of American farm life for child readers" (p. 14). However, Irwin and Andreasen (2003) have realized the effects the

books that children read have on their understanding of the world they live in and the "single industry that unifies the entire world — agriculture" (p. 7).

Piaget's Theory of Cognitive Development

According to Jean Piaget, during a child's preoperational cognitive learning stage (2 to 7 years of age) the defining characteristics of learning evolve from reflexive sensorimotor to an intuitive stage of "judgments based on perception rather than logic" (Wadsworth, 1978, p. 17).

Jean Piaget (1896-1980) was one of many adolescent cognitive researchers who worked to gain an understanding of how children learn: "Verbal or cognitive intelligence is based on practical or sensorimotor intelligence which in turn depends on acquired and recombined habits and associations" (Piaget, 1952, p. 1). Piaget's observations led him to identify four steps to a child's learning process, each specific to the child's age, physical abilities and available environmental interactions. Those stages are defined by Wadsworth (1978) as:

1.) <u>Sensorimotor</u> – Up to 2 years of age – development progresses through reflex activity to sensorimotor solutions to problems

2.) <u>Preoperational</u> – 2 to 7 years – development of sensorimotor representation, language and thought, judgments based on perception

3.) <u>Concrete Operational</u> – 7 to 11 years – development from prelogical to logical solutions to concrete problems

4.)   <u>Formal Operations</u> – 11 to 15 years – logical thought used to solve all types of problems; cognitive structures mature (p. 15).

Much of what infants and toddlers learn in their early years is facilitated through the images they observe. Cognitive learning during early childhood allows the child to accept what they observe as "real" or factual. These pictures or mental images will be carried throughout a child's life until real-life experiences either confirm or reject the individual's early basic assumptions about the world (Wadsworth, 1978). To that end, "cognitive development is the reorganization of mental structures, which occurs when a person spontaneously acts on the environment (transforms it), experiences disequilibrium, and assimilates and accommodates events" (Wadsworth, 1978, p. 29).

"To educate is to adapt the child to an adult social environment" (Piaget, 1969, p. 137). This assumes the adult social environment will present truthful facts to the child to educate him or her: "As children's concepts of objects begin to develop early in life, they are rarely correct by adult criteria. . . . But the child's conception changes and improves with time and experience" (Wadsworth, 1978, p. 39). Thus, "intelligence is an adaptation. … Life is a continuous creation of increasingly complex forms and a progressive balancing of these forms with the environment" (Piaget, 1952, p. 3).

Specifically, Piaget's definition of a child's preoperational learning stage is the point where "the young child begins internally to represent objects and events experienced in his environment . . . the child begins to manipulate objects and events mentally through representation" (Wadsworth, 1978, p. 14). At this point, young children begin to not only react to stimuli as in the sensorimotor stage but also manipulate and identify symbols to represent objects (Wadsworth, 1978).

16

Between the age of about 1 1/2 years and the age of 7 or 8 years when the

concrete operations appear, the practical logic of sensorimotor intelligence goes

through a period of being internalized, of taking shape in thought at the level of

representation rather than taking place only in the actual carrying out of actions.

(Piaget, 1970, p. 45).

This part of the child's learning process is where a higher level of thought is

practiced and adopted through experience with the environment (Wadsworth, 1978).

"The development of internal representation permits the young child to begin to use

symbols to represent objects" (Wadsworth, 1978, p. 16), known as semantics (Miller,

2002).

Picture book reading plays an important role in young children's daily lives

through the use of symbolic language for communication, presenting both meaning and

content based on visual symbols (Simcock & DeLoache, 2006; Lukens, 1999). "Early on,

infants' and toddlers' ability to relate pictures to their referents is relatively tenuous and

affected by iconicity, that is, by the degree of similarity between depiction and real

object" (Simcock & DeLoache, 2006, p. 1352). "The iconicity effects reported here

reveal that the nature of the pictures in children's books can play a crucial role in learning

from them" (Simcock & DeLoache, 2006, p. 1356).

Wadsworth (1978) indicated the "preoperational child rarely questions his

thinking and has difficulty assuming the viewpoints of others. He literally does not

believe there are viewpoints other than his own" (p. 19).

Palincsar (1998) agreed with Piaget's (1985) sociocognitive conflict theory that a

"contradiction between the learner's existing understanding and what the learner

experiences gives rise to disequilibration, which in turn, leads the learner to question his or her beliefs and to try out new ideas" (p. 10).

The issue of realism in children's books has not been ignored by researchers. Lukens (1999) defined animal realism as that which remains true to animal nature, without the intervention of the magical or supernatural. Furthermore, Lukens (1999) stated, "Nonfiction that evokes a thoroughly efferent response should deal accurately with animals, telling the details of their appearances, their habitats and their life cycles" (p. 16). Lukens (1999) further defined "Animal realism is at its best when animals act only like animals . . . when the writer permits the animals to talk with one another in human speech, realism is destroyed" (p. 96).

Piaget identified a child's judgments are based on perception rather than logic during the preoperational period where the child learns to assimilate objects and their meaning and use them to create a reality (Wadsworth, 1978). "Children in similar environments are likely to end up with similar conceptions of most objects because the objects themselves provide common physical properties to be discovered" (Wadsworth, 1978, p. 38).

If a child constructs the world from his or her actions on it and the only "reality" offered is through a picture book to create an understanding of animal accuracy, then "one can attribute intellectual progress to the pressure of the external environment whose characteristics would impress themselves little by little on the child's mind" (Piaget, 1952, p. 357). According to Wadsworth (1978), "a child cannot learn and adapt unless they observe the lesson first, followed by the activity of practice" (p. 44).

History of Children's Literature

"The history of children's literature began by accident as early European authors' works unintentionally attracted a youth audience, which created a demanding voice for entertainment, creating and enlarging a childhood tradition" (Meigs, 1953, p. vii).

American authors made their contributions by focusing on the needs of the child, thus producing a continuous record of childhood and a record of society based on the "ideas and standards that society wishes to inculcate into each new generation" (Meigs, 1953, p. xiii).

Meigs (1953) identified that the changes children's literature experienced as society changed, not only recorded society, but also as Czarney and Terry (1998) proposed: "Children's literature is the gateway to our communities. When the gate is opened for children, they can choose many different roads to discover the answers they are seeking" (p. 48).

Kortenhaus and Demarest (1993) related a child's ability to learn as a method of adopting "certain roles and behaviors as part of the socialization process" (p. 219). This socialization includes creating an accurate image of today's farmer, as Irwin and Andreasen (2003) identified the importance of agricultural literacy to children.

The National Academy of Science National Research Council (1988) recognized "few systematic efforts are made to teach or otherwise develop agricultural literacy in students of any age" (p. 9). Irwin and Andreasen (2003) focused on assisting in careful selection of agricultural children's books and the need to "accurately depict the food, fiber, and natural resource area. Students who are generations removed from the family

farm or from agriculture of any sort will be given factual, accurate, and bias-free information" (p. 7).

Kortenhaus and Demarest (1993) identified the practice of transmitting value and attitudes in a literate society includes children's books, which "continue to have a major influence on the socialization process despite the dominant role of television in the day to day [*sic*] activities of most American children" (p. 220).

Children's Literature and Early Child Learning

Huck (1977) stated: "Stories are one of the best ways into literacy at the earliest stages of a child's development." This claim is backed by the power literature has to influence and teach from different points of view, a broad scope of lessons regarding many subjects of childhood study (Huck, 1977). Bus, van IJzendoorn, and Pellegrini (1995) were able to identify the importance of parent-preschooler reading as a means of literacy and language development. Neuman (1999) and Strasser and Seplocha (2007) agreed children's books help children to acquire general knowledge and practice cognitive thinking. This pre-formal education was found to enhance interest and the ability to "provide [children] factual information about the world" (Bus, van IJzendoorn, & Pellegrini, 1995, p. 2).

Agricultural Literacy

The National Research Council Committee on Agriculture defined in a 1988 study on "Understanding Agriculture" that agricultural literacy is simply education *about* agriculture (p. 1). Agricultural literacy can be defined further "as possessing knowledge and understanding of our food and fiber system" (Frick, Kahler & Miller, 1991, p. 52) but also would include "its history and its current economic, social and environmental significance to all Americans" (National Academy of Science National Research Council, 1988, p. 8). This knowledge would allow one to synthesize, analyze and communicate basic information on agriculture, as Frick, Kahler and Miller (1991) further defined as knowledge about:

> The production of plant and animal products, the economic impact of agriculture, its societal significance, agriculture's important relationship with natural resources and the environment, the marketing of agricultural products, the processing of agricultural products, the global significance of agriculture, and the distribution of agricultural products. (p. 52).

Agricultural literacy is a term coined by the Committee of Agricultural Education in Secondary Schools, a division of the National Academy of Science, as the committee said "agriculture is too important a topic to be taught only to a relatively small percentage of students considering careers in agriculture and pursuing vocational agriculture studies" (National Academy of Science National Research Council, 1988, p. 1); thus the idea of agricultural literacy was developed – the goal of education about agriculture (Frick, Kahler & Miller, 1991).

Mayer and Mayer (1974) stated:

> The failure of our secondary schools and liberal arts colleges to teach even
> rudimentary courses on agriculture means that an enormous majority, even among
> well-educated Americans, are totally ignorant of an area of knowledge basic to
> their daily style of life, to their family economics, and indeed to their survival.
> (p. 84).

Frick, Birkenholz, and Machtmes (1995) offered that "Consumers as well as
policy makers need to be 'agriculturally literate' in order to respond appropriately as
issues arise" (p. 44). This statement opens a new dimension to agricultural literacy as
Mawby (1984) stated that by "educating Americans in the wise management of food
supplies and related renewable resources, we can anticipate more knowledgeable
decision-making about agriculture in the future" (p. 72).

Tisdale (1991) quantified those who are set apart from first-hand agricultural
experience, stating that "Less than two [*sic*] percent of the population is involved in
production agriculture. . . . In other words, the average John Q. Public is ag-illiterate" (p.
11). In 2004, that number was less than one [*sic*] percent (Economic Research Council,
2004; Iowa State University, 2004). Tisdale (1991) echoed the sentiment by Mawby
(1984) that well-informed individuals are more likely to make responsible choices,
whether in agriculture or politics. "As fewer people are directly involved in production
agriculture, public support of the industry becomes even more important" (Tisdale, 1991,
p. 11).

Tisdale (1991) made a connection from agricultural literacy to issues regarding
food safety, genetic engineering and other social concerns, stating that "Fear of the

22

unknown often leads to needless public alarm. . . . Those without this basic understanding

react without reason, frightened for themselves and their families. The resulting damage

to the industry is not easily repaired" (p. 11).

Law (1990) identified with Tisdale's (1991) understanding:

As special interest groups revolving around issues such as animal rights, pesticide

usage, soil and water conservation, and other environmental concerns gain more

media and public attention, it becomes even more important that the general

public have some background and understanding of not only what agriculture is

all about, but of how it affects each person's life on a daily basis. (p. 5).

The Committee on Agriculture and the National Research Council (1988)

indicated: "Achieving the goal of agricultural literacy will produce informed citizens able

to participate in establishing the policies that will support a competitive agricultural

industry in this country and abroad" (p. 2).

Summary

Terry and Lawver (1995) summarized the importance of agriculture in the United

States by identifying its impact on American society, economics, personal health and the

environment. Desmond et al., (1990) verbalized this thought: "If most Americans have

little or no global context in which to view agriculture, then they are ill-prepared to make

intelligent decisions about food systems, or even their own diets" (p. 152).

Education about agriculture "provides a cognitive context that permits more

rational public decisions about agriculture and the food supply" (Desmond et al., 1990, p.

153). Piaget has defined such cognitive contexts as "intelligence based on sensorimotor

intelligence which in turn depends on acquired and recombined habits and associations"

(Piaget, 1952, p. 1). Piaget alluded to the use of images, such as those of farm animals, as

a cognitive context in his works, but as Lukens (1999) described, it has its challenges that

"when an animal in a children's story is a believable human being, the anthropomorphism

creates fantasy" (p. 52), thus clouding the reality.

Tisdale (1991) quantified the importance of agricultural literacy by providing the

fact that less than 2 percent of the American work force was farmers; this number,

according to the Economic Research Service (2004), has fallen to about only 1 percent

today. In 1988, the National Research Council projected that "Achieving the goal of

agricultural literacy will produce informed citizens able to participate in establishing the

policies that will support a competitive agricultural industry in this country and abroad"

(p. 2).

CHAPTER III

METHODOLOGY

The purpose of this chapter was to describe the methods and procedures used to conduct this research study, including the measures of data collection and analysis. The specified population, survey instrument, data collection, and analysis procedures were developed to address and explain the purpose and objectives of this study.

Statement of the Problem

Most children are removed from farming experience and have to learn vicariously through texts and literature about agriculture; therefore, this study focused on accurate representation and appropriateness of farm animal images presented in selected non-fiction children's books.

Purpose of the Study

The purpose of this study was to determine the perceived accuracy and acceptability of common domesticated farm animal images in selected children's non-fiction books published from 1950 to 2005 for 2- to 7-year-olds.

Objectives

The following objectives were established to accomplish the purpose of this study:

1. Determine the perceived accuracy of animal images in selected children's non-fiction books, based on the date of publication, the animal images, the animal setting, and the animal interactions;

2. Compare by decade (1950 to 2005) the perceived accuracy of animal images in selected children's non-fiction books relative to the date of publication, the animal images, the animal setting, and the animal interactions;

3. Determine the perceived acceptability of selected children's non-fiction books for providing children with realistic images of farm animals; and

4. Determine the number of animal species and the types of graphics represented in selected children's non-fiction books from 1950 to 2005.

Research Design

The research method employed for this study was descriptive, using a summated scaled instrument. The study focused on children's non-fiction picture books to determine the accuracy of agricultural images regarding the realism of the most common domesticated farm animals in children's literature. The instrument designed for this study identified varying aspects of realism or accuracy in the children's books. Specifically, these were the accuracy of the images relative to the book's date of publication; the phenotypic accuracy of the animal images; the realism of the setting in which the animal was placed; and the realism of the animal interactions with other animals and humans.

Population and Sampling

Research began with generating a book list of children's books using the U.S. Library of Congress online card catalog (2006). The basic search included the keywords "farm animals" finding more than 10,000 matches. The resulting book list was sorted with the additional limitation of being published from 1950 to 2005, inclusively, revealing 387 books. The search was stopped at 2005, as it was the last complete year at the beginning of this study in 2006.

The list was further refined by the researcher, eliminating fiction and genres not representative across the years of publication; thus bilingual, poetry, song and rhyming, and counting books were removed from the sample. For books listed with duplicate entries due to rewrites or republications, the earliest printing was selected and the

remaining entries were eliminated. A small number of books were unable to be obtained for this study as they were unattainable from the bookseller. The remaining 134 books formed the population of the study and were entered in an Excel database by title, author, date of publication and ISBN. The list was then sorted according to publication date. Each book's original date of U.S. publication was used for this study.

Due to varied results in number of subjects (books) for each decade, a purposive sample (Wiersma, 1995) was used to obtain a sample from each decade included in the study. Therefore, for the 1950s, 1960s and 1970s, the complete list of books were considered as part of the sample, as subjects to represent these three decades were limited to fewer than 10 books each. For the 1980s, 1990s and 2000s, a random sample of 50% of the books in each decade was selected, using a table of random numbers (Shavelson, 1996) to ensure randomness in the sample.

With sample selection complete at n=72 books, the researcher began a book search using an online bookseller. The final sample totaled n=68 books (see Appendix B), 50.74% of the original population of 134: three from 1950 to 1959; three from 1960 to 1969; seven from 1970 to 1979; 15 from 1980 to 1989; 15 from 1990 to 1999; and 25 from 2000 to 2005.

Instrument Development

The idea for the instrument used in this study stemmed from the model designed by Irwin & Andreasen (2003) for assessing agricultural accuracy in children's books. Instrument development began with presenting a modified version of Irwin and

Andreasen's original format to a panel of experts. The panel of experts (see Appendix D) suggested a change in the instrument's format to a Likert-type scale to allow for more variability in response.

The revised instrument was then pilot-tested with an expert panel of three raters, who proposed the format be changed to make the questions more concise, thus shortening the length of the instrument. Again, revisions were made and presented to the panel of experts who agreed upon reformatting to fewer questions. A second-pilot test was conducted with the panel of three raters and approved for implementation.

The final instrument (see Appendix A) was a five-point, Likert-type scale with the following values: 1=inaccurate; 2=somewhat inaccurate; 3=undecided; 4=somewhat accurate; and 5=accurate. These values were used to analyze four general accuracy questions of animal images. In addition, three descriptive questions identified the types of graphics used and the number of species represented per book. The final item on the instrument was a dichotomous (realistic or unrealistic) question of individual rater-perceived acceptability of each selected children's book. This item was followed by an open-ended "please explain" section to provide the rater an opportunity to justify his or her decision.

Validity Evidence

The instrument developed for this study was reviewed by a panel of experts (see Appendix D) to establish content and face validity. The panel of experts consisted of three agricultural communications professors, one human and environmental sciences

professor, and a children's media librarian. The panel of experts suggested the instrument include a Likert-type format of rated questions. The instrument was revised and presented to a panel of three raters, who were trained for the purposes of this study, and a pilot test was conducted on books related to the study, but not included, again, for face and content validity. Suggestions made by raters on tightening the question format were returned to the panel of experts. The instrument was modified from 10 questions to four, according to the experts' suggestions; a second pilot test followed with the three raters reviewing books related to the study, but not included in the sample. With instrument approval, the panel of three rated the selected books.

Reliability Evidence

A panel of three raters, consisting of an animal science doctoral candidate, a child reading and early childhood development specialist, and a Master of Science candidate in agricultural communications, were used on the study panel; however, the common criteria among the three reviewers was having earned a Bachelor of Science degree in animal science.

The three raters were brought together for a training session to discuss the objectives of the study and to provide the raters with an understanding of the instrument to be used for the study.

Reliability was assessed through a two pilot studies, one after each modification of the instrument. Even with scaled Likert-type items, not enough raters were used to establish a sizeable data source to allow for a Cronbach's alpha test to be run after the

pilot tests: "Chance is likely to inflate agreement percentages in all cases, but especially with two coders, and low degrees of freedom on each coding choice" (Grayson & Rust, 2001, p. 71), thus the resulting data from the pilot tests was observed by the researcher to be similar, and the instrument was approved by the panel of experts.

Data Collection

The books were sorted into three groups before data collection, which began the second week of January 2007. The groups contained books from all represented decades to allow each year equal representation to each reviewer within each set of books. Given their background in animal adaptations during past decades, the raters were asked to judge each book relative to the date of publication. The three groups of books were rotated among the triad panel of reviewers, and data from the instrument were collected with each rotation to eliminate opportunity for rethink.

By the second week of February 2007, all of the data had been collected, and the books were returned to the researcher. By the fourth week, the data had been entered into an Excel file, and the descriptive statistical analyses completed by March 30, 2007.

Data Analysis

Descriptive statistics were used for analyzing data because of the nature of the study. Such descriptive statistical tests included primarily a comparison of mean scores of the instrument questions and each book's overall mean score, while also calculating a

grand mean score of all of the books for the entire study. The real limits of the scale used on the instrument were 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate (Boone, Gartin, Boone & Hughes, 2006). These descriptive statistics are presented in Chapter IV in figure and table form, followed by a description of the results.

Summary

The methods and procedures for the collection of data outlined in this chapter directly related to the objectives used in this study. This chapter focused on the purpose of the study, the research design, the instrumentation, the population and sample, the validity and reliability, the collection of data, and the data analysis.

CHAPTER IV

FINDINGS

This chapter presents the findings generated from this study. The results address the specific objectives related to the analysis of realism/accuracy of domestic farm animal images in a select group of children's non-fiction books. The data were grouped according to the specific objectives for analysis and interpretation of the information.

Statement of the Problem

Most children are removed from farming experience and have to learn vicariously through texts and literature about agriculture; therefore, this study focused on accurate representation and appropriateness of farm animal images presented in selected non-fiction children's books.

Purpose of the Study

The purpose of this study was to determine the perceived accuracy and acceptability of common domesticated farm animal images in selected children's non-fiction books published from 1950 to 2005 for 2- to 7-year-olds.

Objectives

The following objectives were established to accomplish the purpose of this study:

1. Determine the perceived accuracy of animal images in selected children's non-fiction books, based on the date of publication, the animal images, the animal setting, and the animal interactions;

2. Compare by decade (1950 to 2005) the perceived accuracy of animal images in selected children's non-fiction books relative to the date of publication, the animal images, the animal setting, and the animal interactions;

3. Determine the perceived acceptability of selected children's non-fiction books for providing children with realistic images of farm animals; and

4. Determine the number of animal species and the types of graphics represented in selected children's non-fiction books from 1950 to 2005.

Findings Related to Objective 1: Determining Perceived Accuracy

Objective one was to determine the perceived accuracy of the selected non-fiction children's books (see Appendix B) using the five-point Likert-type instrument (see Appendix A) and the overall mean scores from the four instrument questions (see Table 3).

Table 3

Overall Mean Scores for Perceived Accuracy

	Date of Publication	Animal Appearance	Animal Setting	Animal Interactions	Overall Mean Score
Book 1	4.33	4.00	4.00	4.00	4.08
Book 2	3.33	2.67	3.00	1.33	2.58
Book 3	4.33	4.00	4.00	3.67	4.00
Book 4	4.67	4.67	4.67	4.67	4.67
Book 5	5.00	4.00	4.67	5.00	4.67
Book 6	3.00	2.67	3.33	2.33	2.83
Book 7	4.67	4.33	4.67	5.00	4.67
Book 8	4.67	4.33	4.33	4.67	4.50
Book 9	4.67	4.67	4.00	4.67	4.50
Book 10	4.67	4.00	4.00	4.00	4.17
Book 11	3.33	3.33	3.67	4.33	3.67
Book 12	3.67	3.00	3.33	3.00	3.25
Book 13	5.00	4.33	4.67	5.00	4.75

	Date of Publication	Animal Appearance	Animal Setting	Animal Interactions	Overall Mean Score
Book 14	3.33	2.33	3.00	2.67	2.83
Book 15	4.00	3.33	4.00	3.67	3.75
Book 16	4.00	3.00	4.00	4.00	3.75
Book 17	5.00	4.67	5.00	4.67	4.83
Book 18	3.33	2.33	2.67	2.67	2.75
Book 19	4.67	5.00	4.67	4.67	4.75
Book 20	4.33	3.33	3.67	4.33	3.92
Book 21	3.33	3.33	2.67	2.00	2.83
Book 22	4.67	4.00	4.33	4.00	4.25
Book 23	3.33	3.33	2.67	3.67	3.25
Book 24	4.33	4.33	4.33	4.67	4.42
Book 25	4.00	4.00	3.67	4.00	3.92
Book 26	4.67	4.00	4.67	5.00	4.58
Book 28	4.00	4.33	5.00	4.33	4.42
Book 29	5.00	4.00	5.00	5.00	4.75
Book 30	4.00	4.00	3.67	3.00	3.67
Book 31	3.33	3.00	3.33	1.67	2.84
Book 32	3.67	3.33	3.67	4.00	3.67
Book 33	2.33	1.33	1.67	2.00	1.83
Book 34	2.67	1.67	1.33	1.00	1.67

	Date of Publication	Animal Appearance	Animal Setting	Animal Interactions	Overall Mean Score
Book 35	5.00	4.00	2.00	5.00	4.00
Book 36	3.67	4.00	4.33	4.67	4.08
Book 37	4.67	4.33	4.67	4.33	4.50
Book 38	4.33	4.33	5.00	5.00	4.67
Book 39	3.33	3.00	3.67	4.33	3.58
Book 40	4.00	4.00	4.67	4.67	4.33
Book 41	4.33	3.67	3.67	4.33	4.00
Book 42	4.67	4.33	4.67	4.33	4.50
Book 44	4.00	3.67	4.00	4.00	3.92
Book 45	2.33	2.67	3.00	3.00	2.75
Book 46	4.67	4.33	4.33	4.00	4.33
Book 47	4.33	4.00	4.00	4.67	4.25
Book 48	4.67	3.33	2.33	3.00	3.36
Book 49	4.33	4.33	4.67	4.67	4.47
Book 50	3.33	3.67	2.00	3.67	3.47
Book 51	4.00	4.33	4.67	5.00	4.50
Book 52	5.00	5.00	5.00	4.67	4.92
Book 53	5.00	4.67	4.67	5.00	4.92
Book 54	5.00	5.00	5.00	5.00	5.00
Book 55	5.00	5.00	5.00	5.00	5.00

	Date of Publication	Animal Appearance	Animal Setting	Animal Interactions	Overall Mean Score
Book 58	5.00	5.00	5.00	5.00	5.00
Book 59	5.00	5.00	5.00	5.00	5.00
Book 60	5.00	5.00	5.00	5.00	5.00
Book 61	4.67	4.67	4.67	5.00	4.75
Book 62	4.67	4.33	5.00	5.00	4.75
Book 63	4.00	3.00	4.33	4.50	3.95
Book 64	3.33	2.00	3.33	3.33	3.00
Book 65	3.00	2.67	3.33	4.00	3.25
Book 66	4.33	4.67	4.33	4.67	4.50
Book 67	4.33	4.33	4.67	4.67	4.50
Book 68	5.00	4.67	5.00	5.00	4.92
Book 69	4.00	3.00	2.67	3.33	3.25
Book 70	4.33	4.33	4.67	4.33	4.42
Book 71	4.67	4.00	4.00	5.00	4.42
Book 72	2.67	2.33	3.00	3.00	2.75
				Grand Mean	4.01

Note. Mean accuracy scores were evaluated on a Likert-type scale: 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

When determining whether the sample of non-fiction children's books published from 1950 to 2005 was accurate, a grand mean score (see Appendix C) was calculated. The grand mean was 4.01 on a 1.0 to 5.0 scale, corresponding to a "somewhat accurate" mean rating for the 68 books evaluated in this study.

Findings Related to Objective 2: Comparing Perceived Accuracy from 1950 to 2005

Objective two compared the perceived agricultural realism/accuracy of animal images in the selected sample of children's literature. Raters were asked to use the instrument (see Appendix A) to evaluate the accuracy/realism of each book within this study. Each of the four questions posed by the instrument was evaluated by the mean score of the three reviewers. The following results are reported by decade.

1950-1959

From the publication dates of 1950 to 1959, three books were available; therefore, all available books were obtained for the publication decade. The resulting line graph offers a visual comparison of how the perceived accuracy for each question was scored per book (see Figure 2).
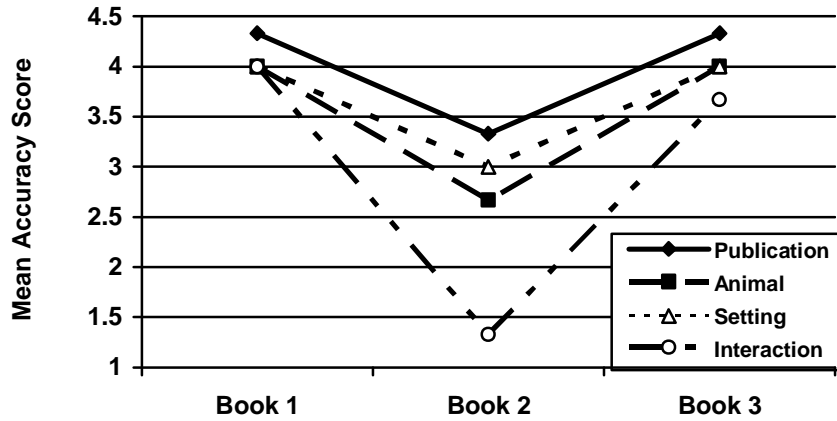
Figure 2. A comparison of the mean accuracy scores of books published from 1950 to 1959

The instrument question regarding the accuracy of animal interactions was rated with perceived accuracy below 1.50, or "inaccurate," for Book 2, while the accuracy relative to the date of publication and the animal setting were found to remain above the 3.50, or "somewhat accurate," mean rating for the three books included in this decade. Books 1 and 3 calculated to a "somewhat accurate" mean accuracy rater score of 4.08 and 4.00, respectively. Book 2 received an "undecided" rating with a mean accuracy rater score of 2.58 (see Table 4 & Appendix C).

Table 4

Overall Mean Scores for Books Published from 1950 to 1959

Book Number	Overall Mean Score
1	4.08
2	2.58
3	4.00

Note. Mean accuracy scores were evaluated on a Likert-type scale with 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

1960-1969

Books published from 1960 to 1969 within this study included three available books that were obtained for a decade population. The resulting line graph offers a visual comparison of each book's perceived accuracy (see Figure 3).
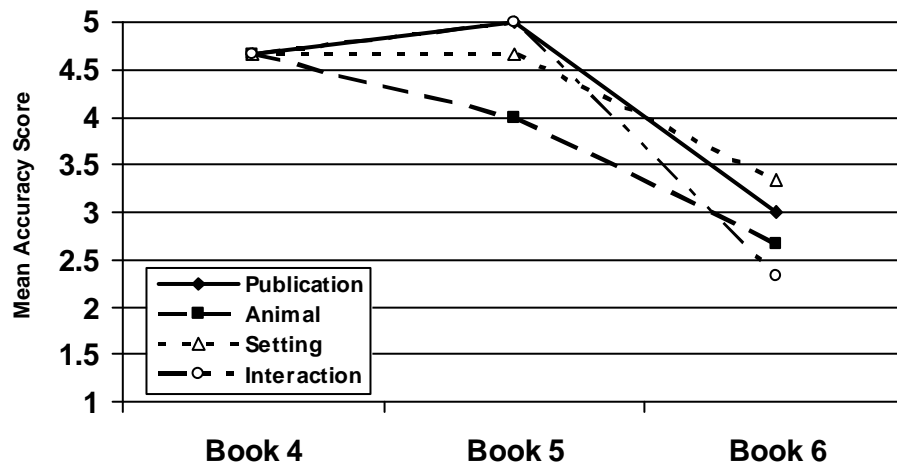
Note. Mean accuracy scores were evaluated on a Likert-type scale: 1=inaccurate, 2=somewhat inaccurate, 3=undecided, 4=somewhat accurate and 5=accurate

Figure 3. A comparison of the mean accuracy scores of books published from 1960 to 1969

Book 5 rated with a mean score of 5.00, or "accurate," for instrument questions

regarding accuracy relative to date of publication and accuracy of animal interactions,

while book 6 rated below 3.50, the "undecided" rating, for the four instrument questions.

Book 4 rated above 4.50, or "accurate," for the four instrument questions. Book 6 had a

mean accuracy score of 2.83 (see Table 5), an "undecided" rating, while books 4 and 5

rated to mean accuracy scores of 4.67 (see Table 5 & Appendix C), or "accurate" ratings.

Table 5

Overall Mean Scores for Books Published from 1960 to 1969

Book Number	Overall Mean Score
4	4.67
5	4.67
6	2.83

Note. Mean accuracy scores were evaluated on a Likert-type scale with 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

1970-1979

Books published from 1970 to 1979 within this study included seven books

available and obtained for a decade population. The resulting line graph offers a visual

comparison of how accurate each question was scored per book (see Figure 4).
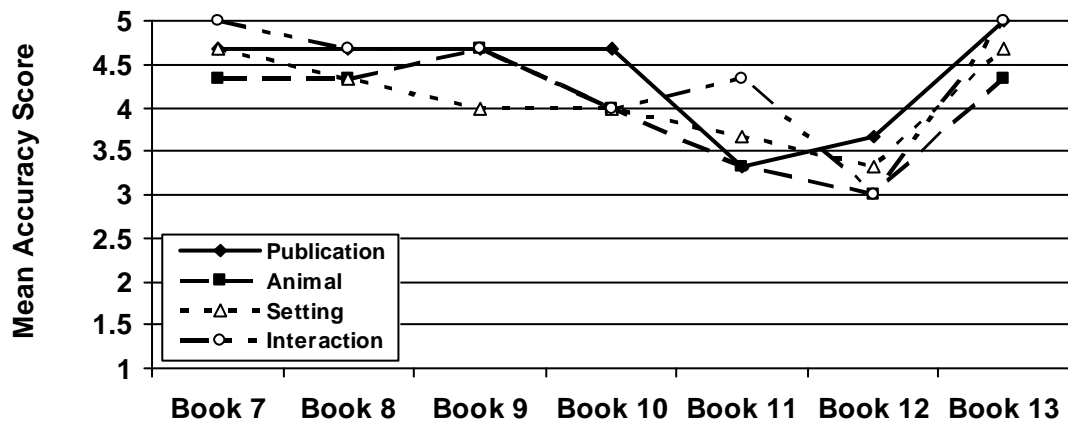
Figure 4. A comparison of the mean accuracy scores of books published from 1970 to 1979

Book 12 rated between 3.00 and 3.50, or "undecided," for instrument questions regarding accuracy of the animal's appearance, the animal's setting, and the animal's interactions, while rating with an overall mean accuracy score of 3.25 (see Table 6 & Appendix C). Book 7 and book 13 rated with overall mean accuracy scores of 4.67 and 4.75, or "accurate," respectively (see Table 6 & Appendix C).

Table 6

Overall Mean Scores for Books Published from 1970 to 1979

Book Number	Overall Mean Score
7	4.67
8	4.50
9	4.50
10	4.17

Book Number	Overall Mean Score
11	3.67
12	3.25
13	4.75

Note. Mean accuracy scores were evaluated on a Likert-type scale with 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

1980-1989

Thirty-five books from the population were published from 1980 to 1989. Due to this number, a random sample was taken using a random table of numbers to offer a representative sample of the decade population (Shavelson, 1996). The resulting sample size included 19 books, but only 16 were available or relevant to the study. The following line graph offers a visual comparison of how accurate each question was scored per book (see Figure 5).
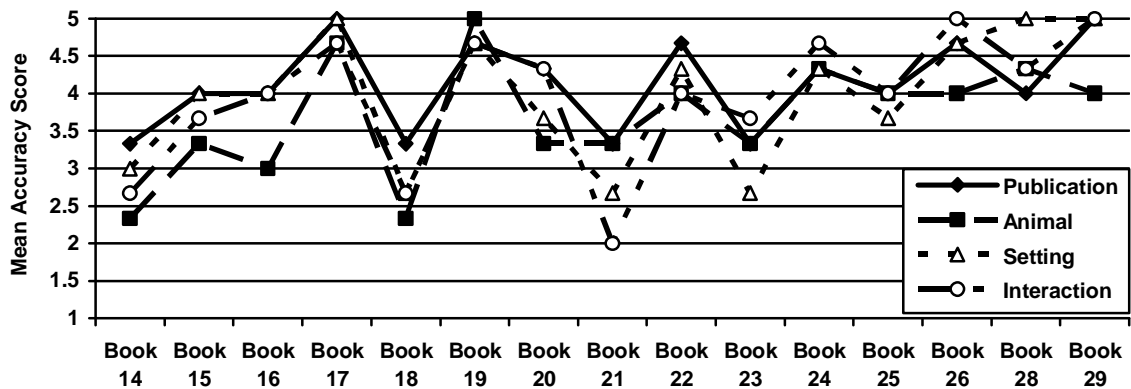
Note. Mean accuracy scores were evaluated on a Likert-type scale: 1=inaccurate, 2=somewhat inaccurate, 3=undecided, 4=somewhat accurate and 5=accurate

Figure 5. A comparison of the mean accuracy scores of books published from 1980 to 1989

Book 29 merited "accurate" scores of 5.00 on the perceived realism of the animal images relative to the date of publication, the animal's setting, and the animal interactions; however, it was only "somewhat accurate" at 4.00 on the accuracy of the animal's appearance, the perceived accuracy of the animals themselves. Books 17 and 19 scored overall "accurate" overall mean scores of 4.83 and 4.75, respectively (see Table 7 & Appendix C). Three books, 14, 18 and 21, consistently scored below 3.50 for all four instrument perceived accuracy questions and corresponded to "undecided" rater accuracy averages of 2.83, 2.75, and 2.75, respectively (see Table 7 & Appendix C).

Table 7

Overall Mean Scores for Books Published from 1980 to 1989

Book Number	Overall Mean Score
14	2.83
15	3.75
16	3.75
17	4.83
18	2.75
19	4.75
20	3.92
21	2.83

Book Number	Overall Mean Score
22	4.25
23	3.25
24	4.42
25	3.92
26	4.58
28	4.42
29	4.75

Note. Mean accuracy scores were evaluated on a Likert-type scale with 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

1990-1999

From 1990 to 1999, the population included 45 published books. Using a table of random numbers (Shavelson, 1996), a sample of 24 was taken to represent the decade population. Of the 24 randomly selected, eight were found to be unavailable, off-topic or irrelevant, leaving 16 to represent the decade population. The following line graph offers a visual comparison of how each book was rated (see Figure 6).
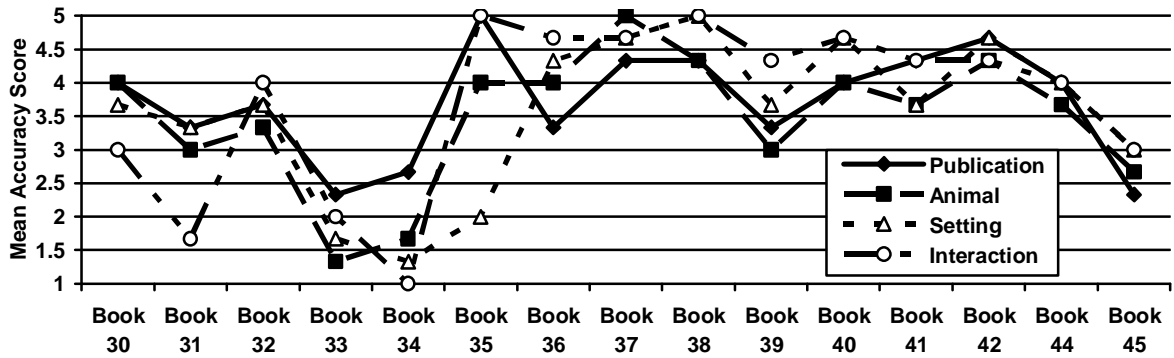
Figure 6. A comparison of the mean accuracy scores of books published from 1990 to 1999

From 1990 to 1999, book averages for each accuracy question ranged from a score of 1 to 5. Books 37, 38, and 42 were rated as "accurate" based on rater mean accuracy scores of 4.50, 4.67, and 4.50, respectively (see Table 8 & Appendix C), for accuracies of 4.00 or better for the accuracy scores of the four instrument questions. Books 33 and 34 earned accuracy scores 2.00 and below for ratings for the accuracy of the animal's appearance, the animal's setting, and the animal's interactions with mean rater accuracy scores of 1.83 and 1.67, respectively, a "somewhat inaccurate" rating (see Table 8 & Appendix C).

For this decade, there were non-responses on the instrument for books 33 and 35. To account for this error, the researcher took the average of the scores reported and replaced the non-response with the average value to calculate for an overall mean (Miller, 1995).

Table 8

Overall Mean Scores for Books Published from 1990 to 1999

Book Number	Overall Mean Score
30	3.67
31	2.84
32	3.67
33	1.83
34	1.67
35	4.00
36	4.08
37	4.50
38	4.67
39	3.58
40	4.33
41	4.00
42	4.50
44	3.92
45	2.75

Note. Mean accuracy scores were evaluated on a Likert-type scale with 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

2000-2005

From 2000 to 2005, the original time-period population was 61 books. Using a

table of random numbers (Shavelson, 1996), 32 books were selected to obtain a

representative sample. Of this sample, five books were found to be off-topic and irrelevant to this study, while two were unobtainable, leaving 25 to represent the time period. The following line graph offers a visual comparison of how accurate each book was scored using the instrument (see Figure 7).
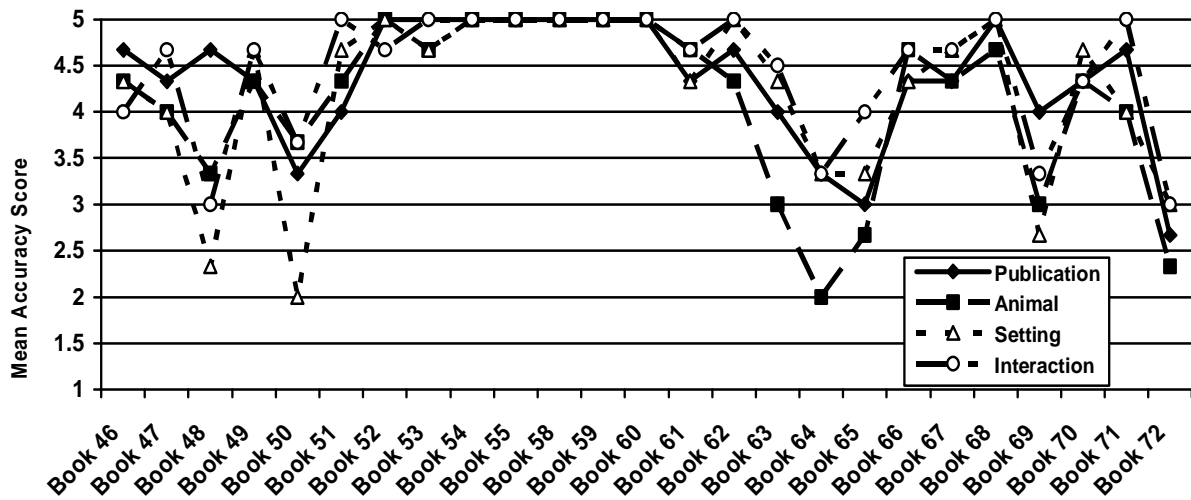
Note. Mean accuracy scores were evaluated on a Likert-type scale: 1=inaccurate, 2=somewhat inaccurate, 3=undecided, 4=somewhat accurate and 5=accurate

Figure 7. A comparison of the mean accuracy scores of books published from 2000 to 2005

For the five years representing this decade, five books, 54, 55, 58, 59, and 60, received average accuracy scores of 5.00 from the instrument, correlating to an overall "accurate" rating. Books 52, 53, 61, 62, 66, 67, and 68 were rated as "accurate" with mean accuracy scores above 4.50 (see Table 9 & Appendix C). Although books 50 and 64 received ratings of 2.00 for the perceived accuracy of the animal's appearance and the accuracy of the animal setting, they had mean accuracy scores of 3.47 and 3.00, respectively. Book 72 was rated with a mean accuracy score of 2.75, or "undecided."

For this time-period, there were non-responses on the instrument for books 48 and 63. To account for this error, the researcher took the average of the scores reported and replaced the non-response with the average value to calculate for an overall mean (Miller, 1995).

Table 9

Overall Mean Scores for Books Published from 2000 to 2005

Book Number	Overall Mean Score
46	4.33
47	4.25
48	3.36
49	4.47
50	3.47
51	4.50
52	4.92
53	4.92
54	5.00
55	5.00
58	5.00
59	5.00
60	5.00
61	4.75

Book Number	Overall Mean Score
62	4.75
63	3.95
64	3.00
65	3.25
66	4.50
67	4.50
68	4.92
69	3.25
70	4.42
71	4.42
72	2.75

Note. Mean accuracy scores were evaluated on a Likert-type scale with 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

Findings Related to Objective 3: Perceived Acceptability

Objective three was to determine the perceived realism of each book for providing children with realistic images of farm animals. The acceptability was scored as a realistic or unrealistic score from the instrument. The scores were calculated as a 1 or 0 relative to their realistic or unrealistic score, respectively (see Appendix C). The scores for the books were averaged from the three reviewers and entered in the following bar graph (see Figure 9) to allow for a visual comparison of each decade from 1950 to 2005.
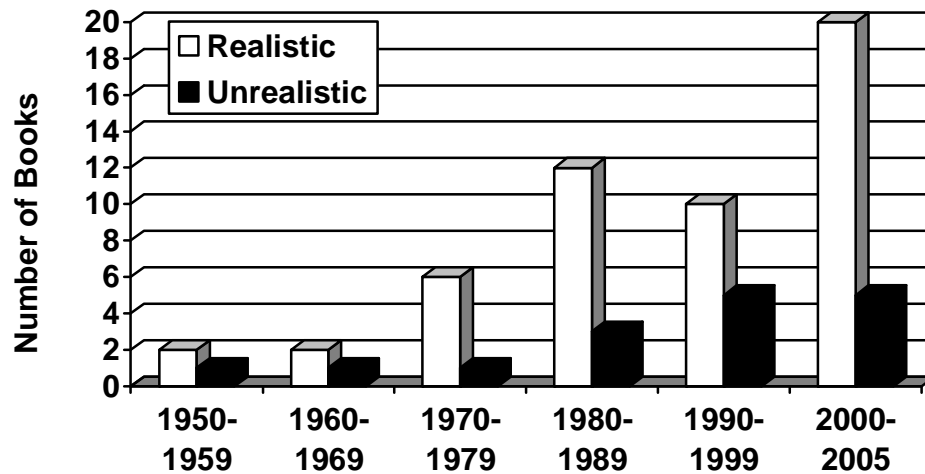
Figure 8. The total realistic and unrealistic books per decade studied (n=68)

Of the 68 books reviewed, 52 (76.47%) were rated as "realistic," while 16

(23.53%) were scored as "unrealistic" in their depiction of animal realism. Each decade

included a book rated unrealistic. From 1950 to 1959, two books (66.67%) were

perceived to be "realistic" and one (33.33%) was perceived to be "unrealistic." From

1960 to 1969, two books (66.67%) were perceived to be "realistic" and one (33.33%) was

perceived to be "unrealistic." From 1970 to 1979, six books (85.71%) were perceived to

be "realistic" and one (14.29%) to be "unrealistic." From 1980 to 1989, 12 books

(80.00%) were perceived to be "realistic" and three (20.00%) to be "unrealistic." From

1990 to 1999, 10 books (66.67%) were perceived to be "realistic" and five (33.33%) to be

"unrealistic." From 2000 to 2005, 20 books (80.00%) were perceived to be "realistic" and

five (20.00%) were perceived to be "unrealistic."

Sixteen books found to be "unrealistic" (see Table 10). Thirteen of the 16 books

were rated as "undecided" and two as "somewhat inaccurate." A summary of the mean

scores for each "unrealistic" book by criteria is presented in Table 11.

Table 10

Accuracy Ratings of "Unrealistic" Children's Books

	Inaccurate	Somewhat Inaccurate	Undecided	Somewhat Accurate	Accurate
Number of Books	0	2	13	1	0

Table 11

Mean Accuracy Scores for "Unrealistic" Children's Books

Book Number	Date of Publication	Animal Appearance	Animal Setting	Animal Interactions	Overall Mean Score
2	3.33	2.67	3.00	1.33	2.58
6	3.00	2.67	3.33	2.33	2.83
12	3.67	3.00	3.33	3.00	3.25
14	3.33	2.33	3.00	2.67	2.83
18	3.33	2.33	2.67	2.67	2.75
21	3.33	5.00	2.67	2.00	3.25
31	3.33	3.00	3.33	1.67	2.83
33	2.33	1.33	1.67	2.00	1.83
34	2.67	1.67	1.33	1.00	1.67
39	3.33	3.00	3.67	4.33	3.58
45	2.33	2.67	3.00	3.00	2.75

Book Number	Date of Publication	Animal Appearance	Animal Setting	Animal Interactions	Overall Mean Score
50	3.33	3.67	2.00	3.67	3.17
64	3.33	2.00	3.33	3.33	2.99
65	3.00	2.67	3.33	4.00	3.25
69	4.00	3.00	2.67	3.33	3.25
72	2.67	2.33	3.00	3.00	2.75
Grand Means	3.14	2.71	2.83	2.71	2.85

Note. Mean accuracy scores were evaluated on a Likert-type scale with 1.00-1.49=inaccurate, 1.50-2.49=somewhat inaccurate, 2.50-3.49=undecided, 3.50-4.49=somewhat accurate and 4.50-5.00=accurate

Of the 16 "unrealistic" books, 13 (81.25%) were found to be "undecided" in their accuracy rating, meaning the mean accuracy scores fell between 2.50 and 3.49 per the four questions from the instrument. Two of the 16 books (12.5%) rated as "unrealistic" were found as "somewhat inaccurate," thus two of the 68 books (2.94%) included in this study were found to rate as "somewhat inaccurate." None of the books were found to be "inaccurate" or "accurate"; however, one book (6.25%) evaluated as "unrealistic" had a mean accuracy score of "somewhat accurate" (3.50 to 4.49). The total mean for the books found to be "unrealistic" was 2.85, an "undecided" rating.

For this test there were non-responses on the instrument for books 12, 25 and 46. To account for this error, the researcher took the average of the scores reported and

replaced the non-response with the average value to calculate for an overall mean (Miller, 1995).

Findings Related to Objective 4: Media Types and Number of Species Represented

Objective four was to determine the media types used and number of species represented in selected children's literature from 1950 to 2005.

The following data describes the types of media incorporated within the books to represent the animal images (see Table 12).

Table 12

Image Quality/Media Type and Overall Image Realism

	Pencil Sketch	Painting/ Water Color	Photographs	Combination
Realistic	0	11	36	5
Unrealistic	0	12	1	3

No books included pencil sketches as the sole media type. Painting and water color images accounted for the media type of 23 (33.82%) books, of which 11 were perceived "realistic" and 12 were perceived "unrealistic." Photography, the most used media type, was used in 37 (54.41%) books with 36 perceived by the raters as "realistic" and one was "unrealistic." A combination of media types was used in eight (11.76%) books, five perceived as "realistic" and three perceived as "unrealistic" (see Table 9).

The number of animal species presented was collected for each book (see Table 13. The total number of species was determined for each book within the study.

Table 13

Specie Representation and Overall Image Realism in Selected Children's Books from 1950 to 2005

	1 Specie	2-3 Species	4-5 Species	6-7 Species	8-9 Species	10+ Species
Realistic	18	1	4	5	8	16
Unrealistic	0	0	2	1	9	4

Eighteen books (26.47%) included one species, and all 18 were perceived as "realistic." One book (1.47%) presented two to three species and was perceived as "realistic." Six books (8.82%) included four to five species; four were perceived as "realistic" and two were perceived as "unrealistic." Six books (8.82%) displayed six to seven species; five were perceived as "realistic" and one was perceived as "unrealistic." For the 17 books (25.00%) with eight to nine species, eight were perceived as "realistic" and nine were "unrealistic." Of the 20 books (29.41%) with 10 or more species presented, 16 were perceived as "realistic" and four were "unrealistic."

CHAPTER V

CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

The purpose of this chapter was to present a summary of the findings as well as conclusions, recommendations and implications of the study. All information was presented to address the problem, purpose and objectives of this study.

Statement of the Problem

Most children are removed from farming experience and have to learn vicariously through texts and literature about agriculture; therefore, this study focused on accurate representation and appropriateness of farm animal images presented in selected non-fiction children's books.

Purpose of the Study

The purpose of this study was to determine the perceived accuracy and acceptability of common domesticated farm animal images in selected children's non-fiction books published from 1950 to 2005 for 2- to 7-year-olds.

Objectives

The following objectives were established to accomplish the purpose of this study:

1. Determine the perceived accuracy of animal images in selected children's non-fiction books, based on the date of publication, the animal images, the animal setting, and the animal interactions;

2. Compare by decade (1950 to 2005) the perceived accuracy of animal images in selected children's non-fiction books relative to the date of publication, the animal images, the animal setting, and the animal interactions;

3. Determine the perceived acceptability of selected children's non-fiction books for providing children with realistic images of farm animals; and

4. Determine the number of animal species and the types of graphics represented in selected children's non-fiction books from 1950 to 2005.

Summary of Findings

Analyzed by decade, books published from 1950 to 1959 and from 1960 to 1969 were found to have an overall mean score of "undecided." Books published from 1970 to 1979 received no less than a 3.25 overall mean score for the decade, or "undecided." From 1980 to 1989, 14 books were found to be "somewhat accurate," and two books were rated as "undecided." From 1990 to 1999, the 16 books were rated as "somewhat

58

inaccurate" to "accurate." The 25 books published from 2000 to 2005 had a mean score of 2.75 ("undecided") to a 5.00 ("accurate").

The grand mean for the books selected for this study was 4.01 or "somewhat accurate." In addition, the most common media type used to represent one specie of farm animals more realistically was photography.

Conclusions

Conclusions Related to Objective 1: Determine Perceived Accuracy

Researchers agree children's literature focused on presenting agriculture and farming should be done accurately, avoiding the anthropomorphism, which can be commonly used in depicting farm animals (Coon and Cantrell, 1985; Czarney and Terry, 1998; Hoffman and Daniels, 1995; and Ediger, 1998.) The first objective was to determine the perceived accuracy of animal images in selected children's non-fiction books, based on the date of publication, the animal images, the animal setting, and the animal interactions.

Based on the findings of this study, the books reviewed were overall rated as "somewhat accurate," generally meaning the information from these children's books provides children with both accurate and inaccurate information.

Twenty-five percent of the books reviewed were neither "accurate" nor "inaccurate," based on their rating; therefore, the accuracy of the agricultural images is questionable.

Conclusions Related to Objective 2: Compare the Perceived Accuracy from 1950 to 2005

Coon and Cantrell (1985) stated "The American public's image of agriculture is a kaleidoscope of left over attitudes and images of what agriculture was during the 40's, 50's and 60's [*sic*]." Therefore, the second objective was to compare by decade (1950 to 2005) the perceived accuracy of animal images in selected children's non-fiction books relative to the date of publication, the animal images, the animal setting, and the animal interactions.

Books published from 1990 to 1999 were less accurate in their portrayal of animal agriculture than in other decades. This decade contained the only books rated as "somewhat inaccurate," the lowest rated books in the study.

Conclusions Related to Objective 3: Perceived Acceptability

Objective three was to determine the perceived acceptability of selected children's non-fiction books for providing children with realistic images of farm animals. The results from this analysis were not necessarily parallel to the results of the overall mean scores, as more books were rated as "unrealistic" than the number of books that were "somewhat inaccurate." The agricultural message a book provides may be perceived as accurate when analyzed by individual components; however, when evaluated as a whole book, the agricultural message is not always perceived as realistic.

Conclusions Related to Objective 4: Media Types Used and

Number of Species Represented

Objective four was to determine the number of animal species and the types of graphics represented in selected children's non-fiction books from 1950 to 2005. Based on the findings, the accuracy of information increased with the use of photographic images and the representation of only one animal specie per book. Books with photos and with only one animal specie were more accurate than other children's farm animal books.

Recommendations

The following recommendations were made based upon the conclusions of this study.

Recommendations Related to Practice

The illustration types predominantly found in this study were photographic images, which represented the most realistic animal images relative to this study. Parents, teachers, and others responsible for selecting educational materials about agriculture for children ages 2 to 7 should seek books that use photographs rather than other types of illustrations to improve the opportunity for children to acquire realistic information and develop realistic visual images about agriculture and specifically farm animals.

In addition, the number of farm animal species represented had a marked effect on the overall perceived realism of the selected books. Therefore, books selected for children ages 2 to 7 should be focused on as few species as possible, preferably one specie, to provide the most accurate agricultural information and visual images.

Overall, accuracy appeared to improve over time. As a result, writers and publishers of children's books for 2- to 7-year-olds should continue this trend by designing books that include photographs and provide information about one specie per book when possible.

Recommendations for Future Research

The perceived acceptability of the books included within this study was calculated with a dichotomous scale of "realistic" versus "unrealistic." Future research should include qualitative observations from raters to provide their rationale for rating the realism in selected books.

Few studies can be found that have evaluated the accuracy of children's literature; therefore, a continued need exists to evaluate children's books for accuracy of agricultural information and visual images.

The books in this study resulted from a search of the U. S. Library of Congress (LOC) online card catalog with "farm" + "animals" as broad keyword search items. The study should be replicated using a more in-depth book search accomplished by using single isolated keywords such as "cows" or "horses." This type of search would allow for specific farm animal species to be evaluated using the study's instrument.

"Most of the research done on pictures and words has shown that pictures are usually better recalled, and that their addition to prose reading enhances its comprehension" (Solomon, 1979, p. 63). Therefore, text in the selected books in this study should be evaluated for accuracy, as "young children can learn to perform novel actions on novel objects from exposure to a series of pictures and accompanying narration" (Simcock & Deloache, 2006, p. 1352). Sipe (1998) stated that the text-picture relationship represents "verbal and nonverbal information in separate cognitive structures … [to] construct an integrated meaning" (p. 101). Evaluation of the text with the illustrations would allow for additional information about the general acceptability of agricultural children's books.

This study should be replicated using a larger number of raters to enhance the overall reliability of the instrument and findings.

Implications

As the need for safe and viable food products increases with the combined need for alternative fuel sources stemming from agricultural commodities, agriculture is quickly becoming a major concern for many Americans, who do not recognize the implications of agriculture in the world marketplace, and, therefore, do not understand its importance to the United States or the world economy as a whole.

Although food prices have gradually increased, U.S. citizens have available to them the cheapest food in the world (American Farm Bureau, 2007). Therefore,

Americans need to be aware of and literate about the agricultural industry, and this can be accomplished by educating children.

The need to educate children about agriculture becomes a challenge when the availability for on-farm experiences continues to decline with urban expansion; therefore, the images children see often are limited to those observed in children's books, enhancing the agricultural illiteracy observed among American youth.

Since 1981, agricultural literacy programs such as Ag in the Classroom have educated children about agriculture (C. Cox, personal communication, July 19, 2007). However, this type of program often reaches children who already are involved in agriculture; if this study's results were communicated to a more general audience, the information could be used by parents and teachers whose children do not participate in such programs. In addition, agricultural education youth programs such as 4-H and FFA should offer educational programs to youth who do not have the opportunity to experience agricultural settings.

If greater efforts were taken to select children's books that generate a more accurate understanding of agriculture, then children would have the opportunity to learn about the importance of agriculture and would develop into a more agriculturally literate public, a public able to make decisions based on accurate experiences and knowledge about agriculture.

REFERENCES

American Farm Bureau. "Retail Food Prices Up 4 Percent In Second Quarter." July 12,
2007, press release. Accessed July 19, 2007 from:
http://www.fb.org/index.php?fuseaction=newsroom.newsfocus&year=2007&file=
nr0712.html

Arango, G.A. (1994). A content analysis of the portrayal of homeless persons in
children's books, 1980-1993. *Dissertation Abstracts International, 56*(04), 1274.
(UMI No. 9527446).

Ashlock, M.A. 2006. The uncertainty of agroterrorism: A study of Oklahoma beef
producer's risk perceptions, information sources and source trust in the pre-crisis
stage. *Dissertation Abstracts International, 67*(03), 127. (UMI No. 3211351).

Boone, H. N., Jr., Gartin, S. A., Boone, D. A. & Hughes, J. E. (2006). Modernizing the
agricultural education curriculum: An analysis of agricultural teachers' attitudes,
knowledge, and understanding of biotechnology. *Journal of Agricultural
Education 47*(1), 78-89.

Brooks, N. U.S. Agricultural Trade Update — State Exports. USDA Economic Research
Service. (2006, June 30). Retrieved October 17, 2006, from
http://www.ers.usda.gov/publications/fau/june06/fau11401/fau11401.pdf.

Bus, A. G., van Ijzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research 65*(1), 1-21.

Chu. N. 1994. A Review of Children's Literature about Farming and Rural Life. *Rural Educator 19*(3), 43-48.

Clason, D.L. & Dormody, T.J. 1994. Analyzing data measured by individual Likert-type items. *Journal of Agricultural Education 35*(4), 31-35.

Combest, Hon. Larry. 1997, June 17. Agricultural Research, Education, and Extension Programs. House of Representatives Hearing from the Subcommittee on Forestry, Resource Conservation and Research, Committee on Agriculture. Retrieved November 8, 2006, from http://commdocs.house.gov/committees/.

Coon, T. K., & Cantrell, M. J. (1985). Agriculture in black and white. *The Agricultural Education Magazine*, *58*(4), 22-23.

Czarney, S. & Terry, L. 1998. What Do Real Farmers Look Like? Rural Life in Children's Literature. *Journal of Children's Literature 21*(0), 1-4.

Desmond, D. J., Leising, J. G., King, N. J., Rilla, E. L., & Coppock, R. 1990. *New Approaches for a Better Understanding of Agriculture.* Agriculture in California: On the Brink of a New Millennium 1990-2010: A Series of Issues Papers.

Doolittle, P.E. & Camp, W.G. 1999. Constructivism: The career and technical education perspective. *Journal of Vocational and Technical Education 16*(1), 1-17.

Ediger, M. 1998. Needed: Children's Literature on Farming. *Journal of Instructional Psychology 25*(4), 277-p5.

Frick, M. J., Birkenholz, R. J., & Machtmes, K. (1995). Rural and urban adult knowledge

and perceptions of agriculture. *Journal of Agricultural Education, 36*(2), 44-53.

Frick, M. J., Kahler, A. A., & Miller, W. W. 1991. A Definition and the Concepts of Agricultural Literacy. *Journal of Agricultural Education 32*(2), 49-57.

Grayson, K. & Rust, R. 2001. Interrater Reliability. *Journal of Consumer Psychology 10*(1/2), 71-73.

Halliday, M.A.K. 1993. Towards a language-based theory of learning. *Linguistics and Education 5*, 93-116.

Haygood, J., Hagins, S., Akers, C., & Keith, L. (2002). Associated press wire service coverage of agricultural issues. Retrieved May 2, 2006, from, http://aaaeonline.ifas.ufl.edu/NAREC/2002/naercfiles/NAREC/Associated%20Press%20Haygood-Hagins-Akers-Keith.pdf.

Higher Education Resource Hub, (online). Retrieved January 15, 2007, from www.higher-ed.org.

Hoffman, A .R. & Daniels, S. J. 1995. A Study of Stereotypes of Farmers in Children's Literature. *Journal of Children's Literature 21*(0), 1-4.

Huck, C. S. (1977). Literature as the content of reading. *Journal of Theory into Practice 15*(5), 363-371.

Iowa State University. 2004. *Rural America.* Retrieved May 10, 2007, from http://www.soc.iastate.edu/sapp/ruralamericaoverview.pdf/

Irwin, B. & Andreasen, R. J. (2003). Assessment of children's literature for agricultural accuracy. Retrieved February 17, 2006, from, www.agclassroom.org/consortium/pdf/ag_literacy/2003/childrens_literature.pdf.

Key, J. (2005). *AGED 5983: Research design.* Stillwater, OK: OSU Department of

    Agricultural Education, Communications and 4-H Youth Development.

Kortenhaus, C.M. & Demarest, J. 1993. Gender role stereotyping in children's literature:

    An update. *Sex Roles 28*(3/4), 219-232.

Law, D. A. 1990. Implementing agricultural literacy programs. *The Agricultural*

    Education Magazine, 62(9), 5-6, 22.

Lukens, R.J. (1999). A critical handbook of children's literature, 6th edition. Reading,

    MA: Addison-Wesley Longman Inc.

Mawby, R. G. 1984. Agriculture Colleges Must Take the Lead in Ending Ignorance

    About Farming. *The Chronicle of Higher Education 28*(11), 72.

Mayer, A. & Mayer, J. 1974. Agriculture, the island empire. *DAEDELUS 103*(3), 83-95.

Meigs, C. (1953). A critical history of children's literature — A survey of children's

    books in English from earliest times to the present. New York: The Macmillian

    Company.

Merriam-Webster's New Collegiate Dictionary (10th edition). (1998). Springfield, MA:

    G&C Merriam Company

Miller, K. (2002). Communication theories: Perspectives, Processes and Contexts. New

    York: McGraw-Hill Company, Inc.

Miller, L. E. 2005. Conducting and consuming survey research. *Journal of International*

    Agricultural Extension Education 24(1), 11.

National Academy of Science, National Research Council Committee on Agricultural

Education in Secondary Schools, Board of Agriculture. (1988). *Understanding agriculture – new directions for education,* (report) Washington, D.C. National Academy Press.

Neuman, S. B. (1999). Books make a difference: A study of access to literacy. *Reading Research Quarterly 34*(3), 286-311.

Palincsar, A. S., (1998). Social constructivist perspectives on teaching and learning. *Annual Review Psychology 49*:345-75.

Pense, S. L., Leising, J. G., & Portillo, M. T. 2003. The Impact of Selected Agriculture in the Classroom Trained Teachers on Student Agricultural Literacy. Proceedings from Southern Agricultural Education Research Conference, Mobile, AL. February 2-4, p 119-130.

Piaget, J. (1952). The origins of intelligence in children. (Margaret Cook, trans.) New York: International Universities Press, Inc.

Piaget, J. (1969). Science of education and the psychology of the child. New York: Viking Publishers.

Piaget, J. (1970). Genetic epistemology. New York: Columbia University Press.

Plaut, T. R. 1980. Urban Expansion and the Loss of Farmland in the United States: Implications for the Future. *American Journal of Agricultural Economics 62*(3), 537-542.

Publication Manual of the American Psychological Association, (5th edition). (2001). Washington, D.C.: American Psychological Association.

Russell, E. B. 1993. Attracting Youth to Agriculture. *Journal of Extension 31*(4). Retrieved October 17, 2006, from http:www.joe.org/.

Shavelson, R.J. (1996). Statistical Reasoning for the Behavioral Sciences. Boston, MA:
    Pearson Custom Printing.

Simcock, G. & DeLoache, J. 2006. Get the picture? The effects of iconicity on toddlers'
    reenactment from picture books. *Developmental Psychology 42*(6), 1352-1357.

Sipe, L.R. 1998. How picture books work: A semiotically framed theory of text-picture
    relationships. *Children's Literature in Education 29*(2), 97-107.

Solomon, G. (1979). Interaction of media, cognition and learning — An exploration of
    how symbolic forms cultivate mental skills and affect knowledge acquisition. San
    Francisco, Jossey-Bass Publishers.

Sorenson, D.D. 1987. How to keep'em up on the farm and farming. *American School
    Board Journal* (174), 28.

Strasser, J., & Seplocha, H. (2007). Using picture books to support young children's
    literacy. *Childhood Education 83*(4), 219-224.

Sulzby, E. (1985). Children's emergent reading of favorite storybooks: A developmental
    study. *Reading Research Quarterly 20*(4), 458-481.

Terry, Jr., R. & Lawver, D.E. 1995. University students' perceptions of issues related to
    agriculture. *Journal of Agriculture Education 36*(4), 64-71.

Tisdale, J. F. 1991. Needed: Agricultural Literacy. *The Agricultural Education Magazine
    63*(8), 11.

United States Department of Agriculture — Economic Research Service (ERS). Farm
    Income and Costs: 2006 Farm Sector Income Forecast. (2006. February 15).
    Retrieved July 6, 2006, from http://www.ers.usda.gov/.

United States Department of Agriculture — Economic Research Service (ERS). (July 26,

2004). Report of the AAEA Economic Statistics and Information Resources

Committee (online) Accessed: May 10, 2007 from

http://www4.ncsu.edu/~bkgoodwi/esirc/ERS.pdf.

United States Department of Agriculture — Economic Research Service. Foreign

Agricultural Trade of the United States (FATUS): Monthly Summary. (2006,

November 9). Retrieved November 30, 2006, from http://www.ers.usda.gov/.

United States Department of Agriculture — National Agricultural Statistics Service. 2002

Census of Agriculture — United States Data. P16, Table 9. Retrieved July 10,

2006, from http://www.usda.gov/Census_of _Agriculture/index.asp.

United States Department of Agriculture — National Agricultural Statistics Service.

2005.Chapters IX & XV. Retrieved on July 7, 2006, from

http://www.usda.gov/nass/.

United States Library of Congress. (2006, July) Library of Congress Online Catalog.

Access: http://catalog.loc.gov/

University of New Mexico, Text files (online). Retrieved February 20, 2007, from

http://www.unm.edu/~lhendr/txtfiles/intro.txt.

Vogt, W.P. (1999). *Dictionary of statistics and methodology: A nontechnical guide for
the social sciences.* Thousand Oaks, CA: Sage Publications.

Wadsworth, B. J. (1978). Piaget for the classroom teacher. New York: Longman Inc.

Weirsma, W. (1995). *Research methods in education: An introduction* (6th edition).

Needham Heights, MA: Allen and Bacon.

APPENDICES

APPENDIX A

Likert-type Instrument

Children's Literature and Agricultural Accuracy   **Book Research Number**_____

Ratings: 1=Inaccurate   2=Somewhat Inaccurate   3=Undecided   4=Somewhat Accurate   5=Accurate   N/A=Not Applicable

				Rating Scale		
Score	Standards	Inaccurate	Somewhat Inaccurate	Undecided	Somewhat Accurate	Accurate
	1. Accuracy for time of publication.	Information is inaccurate from an agriculturalist's point of view and/or severely out dated in reference to the time of publication.	Exhibits some characteristics of '1' and some characteristics of '3'	Some information is accurate and/or topics and symbols are outdated.	Exhibits some characteristics of '3' and some characteristics '5'	Provides agricultural accuracy; agricultural topics are correctly represented within the time period of book publication.
	2. Accuracy of the representation of the animal images	The animals are misrepresented and/or stereotyped based on their phenotypic, anatomic, or other defining characteristics.	Exhibits some characteristics of '1' and some characteristics of '3'	Some of the images are accurate and some are not. No decision can be made on the overall realism of the images of the animals.	Exhibits some characteristics of '3' and some characteristics '5'	Demonstrates an accurate and realistic portrayal of the animal images. This includes an elimination of stereotypes of gender, phenotype, etc.
	3. Accuracy of the representation of the animals' setting.	Story lacks realism in the setting. This should include, but not be limited to, the facilities, fencing, feeding practices, fields, equipment, etc.	Exhibits some characteristics of '1' and some characteristics of '3'	Some of the pieces of the setting are accurate and some are not. No decision on the overall realism of the setting can be determined.	Exhibits some characteristics of '3' and some characteristics '5'	Depicts a realistic animal setting with barns, pastures/fields, fencing, feeding troughs, animal separation, halters, saddles, etc., as appropriate.
	4. Accuracy of the representation animal interaction.	Illustrations depict unrealistic interaction with animals and their environment, other animals and with humans.	Exhibits some characteristics of '1' and some characteristics of '3'	Some of the images are accurate in the portrayal of interaction, but not enough to determine an overall level of accuracy.	Exhibits some characteristics of '3' and some characteristics '5'	The images are realistic in their portrayal of animal interaction with other animals, their environment, and with humans.

Reader's Signature_____**Date**_____

Comments on the above ratings:

Images:

1.   **What was the quality of the images in the book? Pencil Sketches   Painting/Water Color   Photographs Combination**

     If there was a combination, what types of images were presented? _____

2.   **What animal images were presented in the book? (Circle all that apply.)**

     Cattle   Horses   Sheep   Goats   Pigs   Ducks

     Dogs   Cats   Chickens   Rabbits   Others: _____

Circle One: Based on the above criteria and your knowledge/experience, the overall animal images are:

          Realistic   Unrealistic

Please explain your decision:

APPENDIX B

Book List

Books Published from 1950 to 1959

Title	Author	Publication	Publisher	ISBN
The true book of farm animals	Lewellen, John Bryan	1954	Children's Press	LC 54008736
Farm animals	Ratzesberger, Anna	1952	Rand McNally	LC 57007130
Baby farm animals	Williams, Garth	1953	Simon & Schuster	LC 53003515

Books Published from 1960 to 1969

Title	Author	Publication	Publisher	ISBN
Farm Animals	Mannheim, Grete	1964	Random House Encyclopedia	LC 63021816
Animals on a farm	Seibert, Jerry	1964	Britannica	LC 64044434
Animals on the farm	Verite, Marcelle	1967	Scroll Press	LC 73112629

Books Published from 1970 to 1979

Title	Author	Publication	Publisher	ISBN
Look at the farm animals	Behrens, Janet	1971	Elk Grove Press	LC 70167768
Curly, the piglet	Bix, Cynthia Overbeck	1976	Carolrhoda Books	087614069X
Born in a barn: farm animals and their young	Gemming, Elizabeth	1974	Coward, McCann & Geoghegan	*0698202937
Farm Animals	Helweg, Hans	1978	Random House	*0394837333
Animals on the farm and pets	Line, Jacques	1974	Castle Books	LC 75311566
How farms help us	Meuer, William	1970	Benefic Press	LC 72091976
Your world: let's visit a farm	Pope, W & Emmons, R	1971	Taylor Pub. Co.	*0878330127

Books Published from 1980 to 1989

Title	Author	Publication	Publisher	ISBN
Snoopy's facts & fun book about farms	Charles Schulz	1980	Random House	*0394943007
Baby Animals	Bonforte, Lisa	1980	Gingerbread House	*0525694080
Who lives on the farm?	Bonforte, Lisa	1980	Golden Press	*0307119858
Dizzie the pony	Burton, Jane	1989	G. Stevens Children's Books	*0836802071
My first picture book of farm animals	Cloke, Rene	1981	Derrydale Books	*0517310929
The world of chickens	Coldrey, Jennifer	1987	G. Stevens Children's Books	1555320716
All about farm animals	Cook, Brenda	1988	Doubleday	*0385248229
Hello, farm animals	Curran, Eileen	1985	Troll Associates	*0816703450
Who sees you? On the farm	Dijs, Carla	1987	Grosse & Dunlap	*0448343525
The animals of Buttercup Farm	Dunn, Judy	1981	Random House	*0394947983
Farm animals	Greely, Valerie	1981	Harper & Row	*091174522X
Baby animals on the farm	Isenbart, Hans-Heinrich	1981	Putnam	*0399209603
Farm Animals	Hart, Angela	1982	F. Watts	*0531044475
Farm alphabet book	Miller, Jane	1981	Prentice-Hall Books	*0133047679
Pets and animal friends!	Mitchell, Vanessa	1985	G. Stevens Children's Books	*0918831652
Farm animals	Patent, Dorothy Henshaw	1984	Holiday House	*0823405117
A visit to the dairy farm	Ziegler, Sandra	1987	Children's Press	*051601496X

Books Published from 1990 to 1999

Title	Author	Publication	Publisher	ISBN
Farm Animals	Jeunesse, G & Peitrols, S	1998	Scholastic	*0590116185
Why do rooster's crow?	Time-Life for Children	1995	Time-Life for Children	*0783508999
Farm babies	Campbell, Janet	1994	Western Pub. Co.	*0307105598
Farm Animals	Cousins, Lucy	1990	Walker Books	*0744518229
Big and little on the farm	Donohue, Dorothy	1999	Golden Books Pub. Co.	*0307102254
Farm Animals	Dudek, Isabella	1996	Gareth Stevens Pub.	*0836813561
Cattle	Hansen, Ann Larkin	1998	Abdo & Daughters Pub.	156239603X
Pigs	Hansen, Ann Larkin	1998	Abdo & Daughters Pub.	1562396056
Sheep	Hansen, Ann Larkin	1998	Abdo & Daughters Pub.	1562396064
The farm	Kallen, Stuart	1997	Abdo & Daughters Pub.	1562397133
High-tech Harvest	Marshall, Elizabeth	1999	Franklin Watts	*0531114341
Animals on the farm	Morgan, Sally	1999	Franklin Watts	*0531145654
A day at Greenhill Farm	Nicholson, Sue	1998	DK Publishing	*0789429578
Our vanishing farm animals	Paladino, Catherine	1991	Joy Street Books	*0316688916
Farm	Pienkowski, Jan	1998	Piggy Toes Press	1581170211
Farm babies	Rice, Ann	1994	Grosset & Dunlap	*0448402122
My first visit to a farm	Parramon, Jose Maria	1990	Barron's	*081204357

Books Published from 2000 to 2005

Title	Author	Publication	Publisher	ISBN
Farm Animals	DK Publishing	2004	DK Publishing	*0756605369
Farm Animals	Sterling Publications	2000	Sterling Publications	*0806929154
My First Farm Board Book	Dorling Kindersley	2001	DK Publishing	*0789474123
My First Farm Book	Dorling Kindersley	2000	DK Publishing	*0789452146
Picture My World	Hyperion Books for Children	2003	Hyperion Books for Children	*0786819944
Who lives on the farm?	Priddy Bicknell	2003	Priddy Bicknell	*0312491387
Cock-a-doodle-doo!	Andrae, Giles	2002	Tiger Tales	1589250206
Cows	Bell, Rachel	2000	Heinemann Library	1575725290
Horses	Bell, Rachel	2000	Heinemann Library	1575725312
Pigs	Bell, Rachel	2000	Heinemann Library	1575725320
Sheep	Bell, Rachel	2000	Heinemann Library	1575725339
Turkeys	Bell, Rachel	2000	Heinemann Library	1575725347
On a farm	Canizares, Susan	2000	Scholastic	*0439153719
Cattle	Dalgleish, Sharon	2005	Chelsea Club House	*0791082709
Chickens	Dalgleish, Sharon	2005	Chelsea Club House	*0791082741
Working dogs	Dalgleish, Sharon	2005	Chelsea Club House	*079108275X
Working horses	Dalgleish, Sharon	2005	Chelsea Club House	*0791082733
Living on farms	Fowler, Allan	2000	Children's Press	*0516215647
The farm	Hoena, B. A.	2004	Capstone Press	*0736823905
Who grows up on the farm?	Longenecker, Theresa	2003	Picture Window Books	1404800298
Farm Animals	Macken, JoAnn Early	2002	Weekly Reader Early Learning	*0836830393
Horses	Macken, JoAnn Early	2005	Weekly Reader Early Learning	*083684274X
Pigs	Macken, JoAnn Early	2005	Weekly Reader Early Learning	*0836842758
Sheep	Macken, JoAnn Early	2005	Weekly Reader Early Learning	*0836842766
Noisy farm book	Priddy, Roger	2001	St. Martin's Press	LC 2002280411
Our animal friends at Maple Hill Farm	Provensen, Alice & Martin	2001	Aladdin Paperbacks	*0689844999
Farm Animals	Schlepp, Tammy J.	2000	Coper Beach Books	*076131220X
Animal babies on a farm	Weber, Vicki	2005	Kingfisher	*0753458381
Farm animals	Wildsmith, Brian	2000	Star Bright Books	1887734503

APPENDIX C

Rater Score Tables

Table 1: Rater scores of books published from 1950 to 1959

Rater	Question 1 Book 1	Question 2 Book 1	Question 3 Book 1	Question 4 Book 1	**Average**	Question 5 Book 1
1	5	5	5	5	**5.00**	1
2	5	4	5	5	**4.75**	1
3	3	3	2	2	**2.50**	1
Average	**4.33**	**4.00**	**4.00**	**4.00**	**4.08**	**1**

Rater	Question 1 Book 2	Question 2 Book 2	Question 3 Book 2	Question 4 Book 2	**Average**	Question 5 Book 2
1	4	3	3	1	**2.75**	0
2	4	3	5	1	**3.25**	0
3	2	2	1	2	**1.75**	0
Average	**3.33**	**2.67**	**3.00**	**1.33**	**2.58**	**0**

Rater	Question 1 Book 3	Question 2 Book 3	Question 3 Book 3	Question 4 Book 3	**Average**	Question 5 Book 3
1	5	5	5	5	**5.00**	1
2	5	4	5	4	**4.50**	1
3	3	3	2	2	**2.50**	1
Average	**4.33**	**4.00**	**4.00**	**3.67**	**4.00**	**1**

Scores: 1=inaccurate; 2=somewhat inaccurate; 3=undecided; 4=somewhat accurate; 5=accurate

Table 2: Rater scores of books published from 1960 to 1969

Rater	Question 1 Book 4	Question 2 Book 4	Question 3 Book 4	Question 4 Book 4	**Average**	Question 5 Book 4
1	5	5	5	5	**5.00**	1
2	5	5	4	5	**4.75**	1
3	4	4	5	4	**4.25**	1
Average	**4.67**	**4.67**	**4.67**	**4.67**	**4.67**	**1**

Rater	Question 1 Book 5	Question 2 Book 5	Question 3 Book 5	Question 4 Book 5	**Average**	Question 5 Book 5
1	5	4	5	5	**4.75**	1
2	5	4	5	5	**4.75**	1
3	5	4	4	5	**4.50**	1
Average	**5.00**	**4.00**	**4.67**	**5.00**	**4.67**	**1**

Rater	Question 1 Book 6	Question 2 Book 6	Question 3 Book 6	Question 4 Book 6	**Average**	Question 5 Book 6
1	3	3	4	2	**3.00**	0
2	5	4	5	4	**4.50**	1
3	1	1	1	1	**1.00**	0
Average	**3.00**	**2.67**	**3.33**	**2.33**	**2.83**	**0.33**

Scores: 1=inaccurate; 2=somewhat inaccurate; 3=undecided; 4=somewhat accurate; 5=accurate

Table 3: Rater scores of books published from 1970 to 1979

Rater	Question 1 Book 7	Question 2 Book 7	Question 3 Book 7	Question 4 Book 7	Average	Question 5 Book 7
1	5	5	5	5	**5.00**	1
2	5	4	5	5	**4.75**	1
3	4	4	4	5	**4.25**	1
Average	**4.67**	**4.33**	**4.67**	**5.00**	**4.67**	**1**

Rater	Question 1 Book 8	Question 2 Book 8	Question 3 Book 8	Question 4 Book 8	Average	Question 5 Book 8
1	5	5	4	5	**4.75**	1
2	5	4	5	5	**4.75**	1
3	4	4	4	4	**4.00**	1
Average	**4.67**	**4.33**	**4.33**	**4.67**	**4.50**	**1**

Rater	Question 1 Book 9	Question 2 Book	Question 3 Book 9	Question 4 Book 9	Average	Question 5 Book 9
1	5	5	4	5	**4.75**	1
2	5	5	4	5	**4.75**	1
3	4	4	4	4	**4.00**	1
Average	**4.67**	**4.67**	**4.00**	**4.67**	**4.50**	**1**

Rater	Question 1 Book 10	Question 2 Book 10	Question 3 Book 10	Question 4 Book 10	Average	Question 5 Book 10
1	5	4	4	4	**4.25**	1
2	5	5	5	4	**4.75**	1
3	4	3	3	4	**3.50**	1
Average	**4.67**	**4.00**	**4.00**	**4.00**	**4.167**	**1**

Rater	Question 1 Book 11	Question 2 Book 11	Question 3 Book 11	Question 4 Book 11	Average	Question 5 Book 11
1	4	3	4	4	**3.75**	0
2	4	4	5	5	**4.50**	1
3	2	3	2	4	**2.75**	1
Average	**3.33**	**3.33**	**3.67**	**4.33**	**3.67**	**0.67**

Rater	Question 1 Book 12	Question 2 Book 12	Question 3 Book 12	Question 4 Book 12	Average	Question 5 Book 12
1	4	3	4	4	**3.75**	0
2	5	4	4	3	**4.00**	0
3	2	2	2	2	**2.00**	X
Average	**3.67**	**3.00**	**3.33**	**3.00**	**3.25**	**0**

Rater	Question 1 Book 13	Question 2 Book 13	Question 3 Book 13	Question 4 Book 13	Average	Question 5 Book 13
1	5	5	5	5	**5.00**	1
2	5	4	5	5	**4.75**	1
3	5	4	4	5	**4.50**	1

	Average	5.00	4.33	4.67	5.00	4.75	1

Scores: 1=inaccurate; 2=somewhat inaccurate; 3=undecided; 4=somewhat accurate; 5=accurate

Table 4: Rater scores of books published from 1980 to 1989

Rater	Question 1 Book 14	Question 2 Book 14	Question 3 Book 14	Question 4 Book 14	**Average**	Question 5 Book 14
1	4	3	4	4	**3.75**	1
2	5	3	4	3	**3.75**	0
3	1	1	1	1	**1.00**	0
Average	**3.33**	**2.33**	**3.00**	**2.67**	**2.83**	**0.33**

Rater	Question 1 Book 15	Question 2 Book 15	Question 3 Book 15	Question 4 Book 15	**Average**	Question 5 Book 15
1	4	3	4	3	**3.50**	0
2	5	4	5	5	**4.75**	1
3	3	3	3	3	**3.00**	1
Average	**4.00**	**3.33**	**4.00**	**3.67**	**3.75**	**0.67**

Rater	Question 1 Book 16	Question 2 Book 16	Question 3 Book 16	Question 4 Book 16	**Average**	Question 5 Book 16
1	5	3	5	5	**4.50**	1
2	5	4	5	5	**4.75**	1
3	2	2	2	2	**2.00**	1
Average	**4.00**	**3.00**	**4.00**	**4.00**	**3.75**	**1**

Rater	Question 1 Book 17	Question 2 Book 17	Question 3 Book 17	Question 4 Book 17	**Average**	Question 5 Book 17
1	5	5	5	5	**5.00**	1
2	5	4	5	4	**4.50**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**4.67**	**5.00**	**4.67**	**4.83**	**1**

Rater	Question 1 Book 18	Question 2 Book 18	Question 3 Book 18	Question 4 Book 18	**Average**	Question 5 Book 18
1	2	2	3	2	**2.25**	0
2	5	3	3	3	**3.50**	0
3	3	2	2	3	**2.50**	1
Average	**3.33**	**2.33**	**2.67**	**2.67**	**2.75**	**0.33**

Rater	Question 1 Book 19	Question 2 Book 19	Question 3 Book 19	Question 4 Book 19	**Average**	Question 5 Book 19
1	5	5	5	5	**5.00**	1
2	5	5	5	4	**4.75**	1
3	4	5	4	5	**4.50**	1
Average	**4.67**	**5.00**	**4.67**	**4.67**	**4.75**	**1**

Rater	Question 1 Book 20	Question 2 Book 20	Question 3 Book 20	Question 4 Book 20	**Average**	Question 5 Book 20
1	4	2	3	4	**3.25**	0
2	5	4	5	5	**4.75**	1
3	4	4	3	4	**3.75**	1
Average	**4.33**	**3.33**	**3.67**	**4.33**	**3.915**	**0.67**

Rater	Question 1 Book 21	Question 2 Book 21	Question 3 Book 21	Question 4 Book 21	**Average**	Question 5 Book 21
1	4	4	3	4	**3.75**	1
2	5	4	3	1	**3.25**	0
3	1	2	2	1	**1.50**	0
Average	**3.33**	**3.33**	**2.67**	**2.00**	**2.83**	**0.33**

Rater	Question 1 Book 22	Question 2 Book 22	Question 3 Book 22	Question 4 Book 22	**Average**	Question 5 Book 22
1	5	4	5	5	**4.75**	1
2	5	4	4	4	**4.25**	1
3	4	4	4	3	**3.75**	0
Average	**4.67**	**4.00**	**4.33**	**4.00**	**4.25**	**0.67**

Rater	Question 1 Book 23	Question 2 Book 23	Question 3 Book 23	Question 4 Book 23	**Average**	Question 5 Book 23
1	3	3	1	3	**2.5**	0
2	5	4	5	5	**4.75**	1
3	2	3	2	3	**2.50**	1
Average	**3.33**	**3.33**	**2.67**	**3.67**	**3.25**	**0.67**

Rater	Question 1 Book 24	Question 2 Book 24	Question 3 Book 24	Question 4 Book 24	**Average**	Question 5 Book 24
1	5	5	5	5	**5.00**	1
2	5	4	5	5	**4.75**	1
3	3	4	3	4	**3.50**	1
Average	**4.33**	**4.33**	**4.33**	**4.67**	**4.417**	**1**

Rater	Question 1 Book 25	Question 2 Book 25	Question 3 Book 25	Question 4 Book 25	**Average**	Question 5 Book 25
1	5	5	5	5	**5.00**	1
2	5	4	4	4	**4.25**	1
3	2	3	2	3	**2.50**	X
Average	**4.00**	**4.00**	**3.67**	**4.00**	**3.917**	**0.67**

Rater	Question 1 Book 26	Question 2 Book 26	Question 3 Book 26	Question 4 Book 26	**Average**	Question 5 Book 26
1	5	4	5	5	**4.75**	1
2	5	4	5	5	**4.75**	1
3	4	4	4	5	**4.25**	1

Average	4.67	4.00	4.67	5.00	4.58	1

Rater	Question 1 Book 28	Question 2 Book 28	Question 3 Book 28	Question 4 Book 28	**Average**	Question 5 Book 28
1	3	4	5	4	**4.00**	0
2	5	5	5	4	**4.75**	1
3	4	4	5	5	**4.50**	1
Average	**4.00**	**4.33**	**5.00**	**4.33**	**4.417**	**0.67**

Rater	Question 1 Book 29	Question 2 Book 29	Question 3 Book 29	Question 4 Book 29	**Average**	Question 5 Book 29
1	5	4	5	5	**4.75**	1
2	5	4	5	5	**4.75**	1
3	5	4	5	5	**4.75**	1
Average	**5.00**	**4.00**	**5.00**	**5.00**	**4.75**	**1**

Scores: 1=inaccurate; 2=somewhat inaccurate; 3=undecided; 4=somewhat accurate; 5=accurate

Table 5: Rater scores of books published from 1990 to 1999

Rater	Question 1 Book 30	Question 2 Book 30	Question 3 Book 30	Question 4 Book 30	**Average**	Question 5 Book 30
1	4	4	4	3	**3.75**	0
2	5	4	4	4	**4.25**	1
3	3	4	3	2	**3.00**	1
Average	**4.00**	**4.00**	**3.67**	**3.00**	**3.67**	**0.67**

Rater	Question 1 Book 31	Question 2 Book 31	Question 3 Book 31	Question 4 Book 31	**Average**	Question 5 Book 31
1	4	3	4	1	**3.00**	0
2	4	4	4	3	**3.75**	0
3	2	2	2	1	**1.75**	0
Average	**3.33**	**3.00**	**3.33**	**1.67**	**2.837**	**0**

Rater	Question 1 Book 32	Question 2 Book 32	Question 3 Book 32	Question 4 Book 32	**Average**	Question 5 Book 32
1	4	4	4	5	**4.25**	1
2	5	4	5	5	**4.75**	1
3	2	2	2	2	**2.00**	1
Average	**3.67**	**3.33**	**3.67**	**4.00**	**3.67**	**1**

Rater	Question 1 Book 33	Question 2 Book 33	Question 3 Book 33	Question 4 Book 33	**Average**	Question 5 Book 33
1	3	1	3	3	**2.5**	0
2	3	2	1	X	**2.00**	0
3	1	1	1	1	**1.00**	0
Average	**2.33**	**1.33**	**1.67**	**2.00**	**1.83**	**0**

Rater	Question 1 Book 34	Question 2 Book 34	Question 3 Book 34	Question 4 Book 34	**Average**	Question 5 Book 34
1	3	1	2	1	**1.75**	0
2	4	3	1	1	**2.25**	0
3	1	1	1	1	**1.00**	0
Average	**2.67**	**1.67**	**1.33**	**1.00**	**1.67**	**0**

Rater	Question 1 Book 35	Question 2 Book 35	Question 3 Book 35	Question 4 Book 35	**Average**	Question 5 Book 35
1	5	4	3	5	**4.25**	1
2	5	4	1	5	**3.75**	1
3	X	X	X	X	**X**	1
Average	**5.00**	**4.00**	**2.00**	**5.00**	**4.00**	**1**

Rater	Question 1 Book 36	Question 2 Book 36	Question 3 Book 36	Question 4 Book 36	**Average**	Question 5 Book 36
1	3	3	4	4	**3.50**	0
2	3	5	5	5	**4.50**	1
3	4	4	4	5	**4.25**	1
Average	**3.67**	**4.00**	**4.33**	**4.67**	**4.08**	**0.67**

Rater	Question 1 Book 37	Question 2 Book 37	Question 3 Book 37	Question 4 Book 37	**Average**	Question 5 Book 37
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	4	3	4	3	**3.50**	1
Average	**4.67**	**4.33**	**4.67**	**4.33**	**4.50**	**1**

Rater	Question 1 Book 38	Question 2 Book 38	Question 3 Book 38	Question 4 Book 38	**Average**	Question 5 Book 38
1	4	5	5	5	**4.75**	1
2	5	4	5	5	**4.75**	1
3	4	4	5	5	**4.50**	1
Average	**4.33**	**4.33**	**5.00**	**5.00**	**4.67**	**1**

Rater	Question 1 Book 39	Question 2 Book 39	Question 3 Book 39	Question 4 Book 39	**Average**	Question 5 Book 39
1	3	3	4	4	**3.50**	0
2	4	4	5	5	**4.50**	0
3	3	2	2	4	**2.75**	1
Average	**3.33**	**3.00**	**3.67**	**4.33**	**3.58**	**0.33**

Rater	Question 1 Book 40	Question 2 Book 40	Question 3 Book 40	Question 4 Book 40	**Average**	Question 5 Book 40
1	5	5	5	5	**5.00**	1
2	5	4	5	5	**4.75**	1
3	2	3	4	4	**3.25**	1

| Average | 4.00 | 4.00 | 4.67 | 4.67 | 4.33 | 1 |

Rater	Question 1 Book 41	Question 2 Book 41	Question 3 Book 41	Question 4 Book 41	**Average**	Question 5 Book 41
1	5	4	5	5	**4.75**	1
2	5	4	4	5	**4.50**	1
3	3	3	2	3	**2.75**	1
Average	**4.33**	**3.67**	**3.67**	**4.33**	**4.00**	**1**

Rater	Question 1 Book 42	Question 2 Book 42	Question 3 Book 42	Question 4 Book 42	**Average**	Question 5 Book 42
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	4	3	4	3	**3.50**	1
Average	**4.67**	**4.33**	**4.67**	**4.33**	**4.50**	**1**

Rater	Question 1 Book 44	Question 2 Book 44	Question 3 Book 44	Question 4 Book 44	**Average**	Question 5 Book 44
1	4	4	5	5	**4.50**	1
2	5	4	5	5	**4.75**	1
3	3	3	2	2	**2.50**	1
Average	**4.00**	**3.67**	**4.00**	**4.00**	**3.917**	**1**

Rater	Question 1 Book 45	Question 2 Book 45	Question 3 Book 45	Question 4 Book 45	**Average**	Question 5 Book 45
1	2	3	4	4	**3.25**	0
2	4	4	4	4	**4.00**	1
3	1	1	1	1	**1.00**	0
Average	**2.33**	**2.67**	**3.00**	**3.00**	**2.75**	**0.33**

Scores: 1=inaccurate; 2=somewhat inaccurate; 3=undecided; 4=somewhat accurate; 5=accurate

Table 6: Rater scores of books published from 2000 to 2005

Rater	Question 1 Book 46	Question 2 Book 46	Question 3 Book 46	Question 4 Book 46	**Average**	Question 5 Book 46
1	5	5	5	4	**4.75**	1
2	5	4	4	4	**4.25**	1
3	4	4	4	4	**4.00**	X
Average	**4.67**	**4.33**	**4.33**	**4.00**	**4.33**	**0.67**

Rater	Question 1 Book 47	Question 2 Book 47	Question 3 Book 47	Question 4 Book 47	**Average**	Question 5 Book 47
1	5	4	4	4	**4.25**	0
2	4	4	4	5	**4.25**	1
3	4	4	4	5	**4.25**	1
Average	**4.33**	**4.00**	**4.00**	**4.67**	**4.25**	**0.67**

Rater	Question 1 Book 48	Question 2 Book 48	Question 3 Book 48	Question 4 Book 48	**Average**	Question 5 Book 48
1	4	3	3	X	**3.33**	0
2	5	4	1	3	**3.25**	1
3	5	3	3	3	**3.50**	1
Average	**4.67**	**3.33**	**2.33**	**3.00**	**3.36**	**0.67**

Rater	Question 1 Book 49	Question 2 Book 49	Question 3 Book 49	Question 4 Book 49	**Average**	Question 5 Book 49
1	5	5	5	5	**5.00**	1
2	5	4	5	5	**4.67**	1
3	3	4	4	4	**3.75**	1
Average	**4.33**	**4.33**	**4.67**	**4.67**	**4.47**	**1**

Rater	Question 1 Book 50	Question 2 Book 50	Question 3 Book 50	Question 4 Book 50	**Average**	Question 5 Book 50
1	3	4	1	3	**3.67**	0
2	5	4	4	5	**4.50**	1
3	2	3	1	3	**2.25**	0
Average	**3.33**	**3.67**	**2.00**	**3.67**	**3.47**	**0.33**

Rater	Question 1 Book 51	Question 2 Book 51	Question 3 Book 51	Question 4 Book 51	**Average**	Question 5 Book 51
1	3	5	4	5	**4.25**	0
2	5	4	5	5	**4.75**	1
3	4	4	5	5	**4.50**	1
Average	**4.00**	**4.33**	**4.67**	**5.00**	**4.50**	**0.67**

Rater	Question 1 Book 52	Question 2 Book 52	Question 3 Book 52	Question 4 Book 52	**Average**	Question 5 Book 52
1	5	5	5	5	**5.00**	1
2	5	5	5	4	**4.75**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**5.00**	**5.00**	**4.67**	**4.917**	**1**

Rater	Question 1 Book 53	Question 2 Book 53	Question 3 Book 53	Question 4 Book 53	**Average**	Question 5 Book 53
1	5	5	5	5	**5.00**	1
2	5	4	4	5	**4.50**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**4.67**	**4.67**	**5.00**	**4.917**	**1**

Rater	Question 1 Book 54	Question 2 Book 54	Question 3 Book 54	Question 4 Book 54	**Average**	Question 5 Book 54
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	5	5	5	5	**5.00**	1

| Average | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 1 |

Rater	Question 1 Book 55	Question 2 Book 55	Question 3 Book 55	Question 4 Book 55	**Average**	Question 5 Book 55
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**5.00**	**5.00**	**5.00**	**5.00**	**1**

Rater	Question 1 Book 58	Question 2 Book 58	Question 3 Book 58	Question 4 Book 58	**Average**	Question 5 Book 58
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**5.00**	**5.00**	**5.00**	**5.00**	**1**

Rater	Question 1 Book 59	Question 2 Book 59	Question 3 Book 59	Question 4 Book 59	**Average**	Question 5 Book 59
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**5.00**	**5.00**	**5.00**	**5.00**	**1**

Rater	Question 1 Book 60	Question 2 Book 60	Question 3 Book 60	Question 4 Book 60	**Average**	Question 5 Book 60
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**5.00**	**5.00**	**5.00**	**5.00**	**1**

Rater	Question 1 Book 61	Question 2 Book 61	Question 3 Book 61	Question 4 Book 61	**Average**	Question 5 Book 61
1	4	4	4	5	**4.25**	1
2	5	5	5	5	**5.00**	1
3	5	5	5	5	**5.00**	1
Average	**4.67**	**4.67**	**4.67**	**5.00**	4.75	**1**

Rater	Question 1 Book 62	Question 2 Book 62	Question 3 Book 62	Question 4 Book 62	**Average**	Question 5 Book 62
1	4	5	5	5	**4.75**	1
2	5	4	5	5	**4.75**	1
3	5	4	5	5	**4.75**	1
Average	**4.67**	**4.33**	**5.00**	**5.00**	4.75	**1**

Rater	Question 1 Book 63	Question 2 Book 63	Question 3 Book 63	Question 4 Book 63	**Average**	Question 5 Book 63
1	5	3	5	X	**4.33**	1
2	4	3	5	5	**4.25**	1

3	3	3	3	4	**3.25**	1
Average	**4.00**	**3.00**	**4.33**	**4.50**	3.95	**1**

Rater	Question 1 Book 64	Question 2 Book 64	Question 3 Book 64	Question 4 Book 64	**Average**	Question 5 Book 64
1	4	2	4	4	**3.50**	0
2	5	3	5	5	**4.50**	1
3	1	1	1	1	**1.00**	0
Average	**3.33**	**2.00**	**3.33**	**3.33**	3.00	0.33

Rater	Question 1 Book 65	Question 2 Book 65	Question 3 Book 65	Question 4 Book 65	**Average**	Question 5 Book 65
1	3	2	3	4	**3.00**	0
2	5	4	5	5	**4.75**	1
3	1	2	2	3	**2.00**	0
Average	**3.00**	**2.67**	**3.33**	**4.00**	3.25	0.33

Rater	Question 1 Book 66	Question 2 Book 66	Question 3 Book 66	Question 4 Book 66	**Average**	Question 5 Book 66
1	5	5	5	5	**5.00**	1
2	5	5	5	5	**5.00**	1
3	3	4	3	4	**3.50**	1
Average	**4.33**	**4.67**	**4.33**	**4.67**	4.50	**1**

Rater	Question 1 Book 67	Question 2 Book 67	Question 3 Book 67	Question 4 Book 67	**Average**	Question 5 Book 67
1	5	4	5	5	**4.75**	1
2	4	5	5	5	**4.75**	1
3	4	4	4	4	**4.00**	1
Average	**4.33**	**4.33**	**4.67**	**4.67**	4.50	**1**

Rater	Question 1 Book 68	Question 2 Book 68	Question 3 Book 68	Question 4 Book 68	**Average**	Question 5 Book 68
1	5	4	5	5	**4.75**	1
2	5	5	5	5	**5.00**	1
3	5	5	5	5	**5.00**	1
Average	**5.00**	**4.67**	**5.00**	**5.00**	4.917	**1**

Rater	Question 1 Book 69	Question 2 Book 69	Question 3 Book 69	Question 4 Book 69	**Average**	Question 5 Book 69
1	5	4	5	5	**4.75**	1
2	5	3	1	3	**3.00**	0
3	2	2	2	2	**2.00**	0
Average	**4.00**	**3.00**	**2.67**	**3.33**	3.25	0.33

Rater	Question 1 Book 70	Question 2 Book 70	Question 3 Book 70	Question 4 Book 70	**Average**	Question 5 Book 70
1	5	5	5	5	**5.00**	1

Rater					**Average**	
2	5	4	5	4	**4.50**	1
3	3	4	4	4	**3.75**	1
Average	**4.33**	**4.33**	**4.67**	**4.33**	**4.417**	**1**

Rater	Question 1 Book 71	Question 2 Book 71	Question 3 Book 71	Question 4 Book 71	**Average**	Question 5 Book 71
1	5	5	4	5	**4.75**	1
2	5	4	4	5	**4.50**	1
3	4	3	4	5	**4.00**	1
Average	**4.67**	**4.00**	**4.00**	**5.00**	**4.417**	**1**

Rater	Question 1 Book 72	Question 2 Book 72	Question 3 Book 72	Question 4 Book 72	**Average**	Question 5 Book 72
1	2	3	3	3	**2.75**	0
2	5	3	4	4	**4.00**	0
3	1	1	2	2	**1.50**	0
Average	**2.67**	**2.33**	**3.00**	**3.00**	**2.75**	**0**

Scores: 1=inaccurate; 2=somewhat inaccurate; 3=undecided; 4=somewhat accurate; 5=accurate

APPENDIX D

Panel of Experts

Panel of Experts

Dr. D. Dwayne Cartmell
Associate Professor of Agricultural Communications
Oklahoma State University

Dr. James Leising
Professor of Agricultural Education
Department Head, Agricultural Education, Communications and Leadership
Oklahoma State University

Donna Schwarz
Librarian in the College of Education Curriculum Materials Library
Oklahoma State University

Dr. Linda Sheeran
Clinical Assistant Professor of Human Development and Family Science
Oklahoma State University

Dr. Shelly Sitton
Associate Professor of Agricultural Communications
Oklahoma State University

VITA

Jennifer Lorraine Biser

Candidate for the Degree of

Master of Science

Thesis: THE ACCURACY OF AGRICULTURALIMAGES IN CHILDREN'S LITERATURE: AN ANALYSIS OF SELECTED CHILDREN'S BOOKS ON FARM ANIMALS FROM 1950 TO 2005

Major Field: Agricultural Communications

Biographical:

Personal Data: Born in Frederick, Maryland, February 17, 1982, the daughter of Joe and Ruth Biser, Jr.

Education: Graduated from Walkersville High School, Walkersville, Maryland, May 2000; received Associate of Science degree in Animal Science from Butler County Community College, El Dorado, Kansas, May 2002; received Bachelor of Science degree in Animal Science and a Bachelor of Science degree in Agricultural Journalism from Texas A&M University, College Station, Texas, May 2005.

Experience: Raised on a cattle farm near Frederick, Maryland; lifeguard, Century Pool Management (summers), 2000 to 2003; office assistant, Beef Development Center of Texas, 2002 to 2003; interim employee for Ranch House Designs, summer 2003; student employee for the Texas High School Rodeo Association, 2004 to 2005; lifeguard, Fort Detrick, summer 2004; student tutor, Texas A&M University, spring 2005; intern *Angus Journal*, summer 2005; graduate teaching assistant, Oklahoma State University (Agricultural Communications), 2005 to 2007; graduate Web designer, Oklahoma State University (Animal Science) spring 2007.

Professional Memberships: Agricultural Communicators of Tomorrow