THE MEASUREMENT OF ZOO AND AQUARIUM EDUCATION DIRECTORS' PHILOSOPHIES OF ADULT EDUCATION

A Thesis

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the degree Master of Science in the
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by

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THESIS ABSTRACT

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The purpose of this study was to measure American Zoo and Aquarium Association (AZA) member institutions' education directors' personal philosophies of adult education. This measurement was based on their scores on the Philosophy of Adult Education Inventory (PAEI) developed by Zinn (1983). The PAEI was part of a mail questionnaire sent to all 163 education contacts at AZA institutions. Personal philosophies may influence the decisions education directors make concerning educational programming and activities for adult visitors. The overall response rate was 92%. The Progressive orientation was the dominant philosophy followed by the Humanistic orientation.
For Helen, Madeline, and Joseph
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CHAPTER I

INTRODUCTION

The modern zoos of today have evolved from a long history of animal collections. Collections of animals date back as early as 4500 B.C. in Persia, and were also found in China, Egypt, Rome, and Mexico (Howard, 1989; JUDZG & CBSG, 1993; Marshall, 1994). Royalty and the powerful often kept animals for hunting, entertainment, ornamental value, and practical uses (i.e. skins, feathers, and food). This tradition of gathering and keeping animals continued and spread throughout the world. Many authors agree that the first collections resembling modern zoos originated in nineteenth century Europe (JUDZG & CBSG, 1993; Marshall, 1994). These zoos were mostly private, created primarily out of zoological society members' scientific and general interests in wild animals, and displayed animals taxonomically, by species, like a living natural history cabinet (JUDZG & CBSG, 1993). As these zoos became more accessible to the public, it became obvious that the general population also had a strong interest in seeing animals from the wild.

This popularity carried into the twentieth century along with a continuation in the evolution of zoos. These newer zoos were more comparable to living museums with ecological themes (JUDZG & CBSG, 1993). Exhibits began to resemble natural habitats,
and zoos sometimes displayed different animal species together. Throughout the century, zoos became increasingly more popular. According to the IUDZG and CBSG (1993), "the attractive power of zoos lies in the fact that they display live, exotic animals, and can simultaneously acquaint the visitor with many facets of nature and its conservation" (p. 4). Today, this power of attraction is evident by the over 100 million people who annually visit North American zoos and aquariums (Eaton, 1981; Howard, 1989; IUDZG & CBSG, 1993; Marshall, 1994). Using limited data from the approximately 1000 worldwide zoos affiliated with various organized zoo networks, this attendance figure grows to an estimated 600 million people globally. These numbers reflect the popularity of zoos in modern society.

Along with the continued evolution of zoos came the adoption of four main goals: 1) conservation; 2) research; 3) recreation; and 4) education (Conway, 1982). Although few zoos place equal emphasis on all of these goals, all professionally managed zoos reflect some degree of commitment to each (Chiszar, Murphy, & Iliff, 1990). The study reported herein focuses on the educational aspect of zoos.

Zoos vary in size, budgets, and the diversity of their animal collections. At whatever level of operation, however, zoos are potential educational resources for all of their visitors because of the live animals they display (Hatley, 1986; IUDZG & CBSG, 1993; Sanford, 1984; Sauro & Elsen, 1989; Sumi & Ryder, 1987; Tunnicliffe, 1992; Turkowski, 1972). Zoos also offer another resource— their professional staff— especially their education staff. These people can be direct resources to visitors by providing information through classes, lectures, demonstrations, or casual conversations. As
indirect resources, zoo educators design signage and other interpretive materials visitors may utilize during their visit. The educators and the live animals combined with the popularity of zoos create tremendous educational potential for all zoo visitors.

One group of visitors that comprises a large portion of all zoo visitors is adults. An assumption of many visitors is that zoo education is intended for children. Many authors (Conway, 1982; Cheek, 1973; IUDZG & CBSG, 1993) disagree and attempt to dispel this myth. Adults not only make up between 55-70% of zoo visitors (Conway, 1982), but they are also the decision makers in society (Bergevin, 1967). As such, adults make decisions that will directly and indirectly effect animals, the environment, and zoos themselves. They have the power to choose whether or not they will go to the zoo, donate money to help preserve a habitat, or write their congressperson to support legislation protecting wildlife. Given this position, adult zoo visitors are an extremely important group to consider in educational planning.

The people in charge of zoo education departments, education directors, often have the responsibility of determining and overseeing educational programming and activities for visitors. Like adult visitors, education directors are in a position of power. Because of the significant adult zoo visitor audience, zoo education directors are also adult educators, even if they do not recognize themselves as such. According to Zinn (1990), adult educators "often have the freedom, as well as the responsibility, to help set learner expectations, determine the purpose and outcomes of the learning activity, and conduct and evaluate the teaching/learning experience as they deem appropriate" (p. 39). In this position of control, zoo education directors have the potential to shape adult learning by
deciding the content, scope, and methods of education in zoos. These decisions are possibly guided by education directors' philosophies of adult education.

Zoo education directors are in the position of helping adult visitors learn during their visit. Education directors may play a variety of roles ranging from a director or manager to a coordinator or facilitator. Zinn (1983) describes that

In all of these cases, the adult educator makes decisions and acts according to what he/she believes to be appropriate. Even if an educational institution dictates or regulates certain aspects of the teaching process, the individual educator may support, modify, reject, or conform to such mandates based on his/her own beliefs and interpretations. (p. 5)

Included in whatever role education directors assume is their personal philosophy of adult education. This philosophy influences the decisions they make concerning adult education in zoos.

Statement of Problem

Zoo and aquarium education directors seldom have the opportunity or means to accurately examine and reflect on their personal philosophies of adult education. Even within the structure and goals of their zoo, personal philosophies can have direct and strong influences on decisions education directors make concerning adult education. The impact that personal philosophies may have on zoo education and adult visitors precipitates an examination of education directors' philosophies. Characteristics that may influence a zoo education director's philosophy of adult education are practical working experience, educational experience, and training or experience in adult education. The characteristics of the employing institution, such as annual attendance, annual budget, and
the number of full-time education department staff, may also influence education
directors' philosophies. Zinn (1983) has already addressed the inability of adult educators
to validly and reliably identify their personal philosophies of adult education by creating
the Philosophy of Adult Education Inventory (PAEI). The PAEI allows adult educators
to measure and compare their personal philosophies with prevailing philosophies in the
adult education field. In this study, the characteristics investigated are the education
directors' demographics, data from AZA zoos and aquariums, and education directors' scores on the PAEI.

The purpose of this study is to measure American Zoo and Aquarium Association
(AZA) member institutions' education directors' personal philosophies of adult education.
This measurement is based on their scores on the Philosophy of Adult Education
Inventory (PAEI) developed by Zinn (1983). Often one's philosophy of adult education
is unrecognized or undeveloped. The significance of this study is the opportunity and
means it gives zoo education directors to examine and reflect on their personal
philosophies of adult education. Through this kind of self-examination, it may be
possible for educators to clarify and develop their beliefs and philosophies of adult
education. This process may help zoo educators better understand how their philosophies
influence the decisions they make in zoos concerning adult education.
Objectives

This study addressed the following objectives:

Objective 1: To measure zoo and aquarium education directors' personal philosophies of adult education and create a profile of the education directors and their philosophies of adult education.

Objective 2: To determine if there is a significant difference between zoo and aquarium education directors in terms of their demographic characteristics and their philosophical orientations.

Objective 3: To determine if there is a dominant philosophical orientation among the education directors.

Objective 4: To determine if there is a significant difference among education directors in terms of the distribution of their philosophical orientations.

Objective 5: To determine if any significant relationships exist between the education directors' philosophical orientations and:

a. the number of years they have been the head of the education department

b. the total number of years they have worked in zoos and aquariums

c. their highest level of education (e.g. bachelors, masters, Ph.D.)

d. whether they have any training in adult education

e. gender

f. the characteristics of their employing institution (e.g. annual budget, annual attendance, number of full-time education staff).
Definitions

Several words need to be constitutively and operationally defined for this study. These words and definitions follow.

**adult**- someone who has accepted the social roles and functions that define adulthood. The roles of wage earner, marriage partner, parent, decision maker, and citizen denote the independent characteristics of adulthood (Darkenwald & Merriam, 1982).

**adult education**- the organized activities that agencies and institutions provide for adults (Smith, 1982). Education for adults can be any kind of learning that adds to their fund of knowledge, changes their attitudes, views or opinions, broadens their perspectives, or alters their behavior (Bergevin, 1967).

**adult education philosophical orientation**- the extent to which one agrees with selected premises of five of the prevailing philosophies which govern the practice of educating adult learners as classified by Elias & Merriam (1980) and adapted by Zinn (1983) in her Philosophy of Adult Education Inventory (PAEI).

**operational definition:** The respondents' score on the PAEI. A score of 95-105 on the PAEI for any of the five philosophies indicates a strong agreement with that philosophical orientation; a score of 15-25 indicates a strong disagreement; and a score between 55-65 probably means the person is neutral or not sure about a philosophy (Zinn, 1983). Zinn (1990) stated that a respondent's highest score reflects the philosophy that is closest to his/her own beliefs. The philosophy the respondent scores highest on is
designated as his/her philosophical orientation in this study. If there were two or more
philosophies with equally high scores, the respondent was designated as having an
eclectic orientation.

**aquarium** - an establishment where aquatic collections of living organisms are kept and
exhibited (Mish, 1988).

**operational definition**: aquariums are those institutions that exhibit fish and aquatic
organisms only. In this study, institutions that were a combination of a zoo and aquarium
were not considered aquariums.

**belief** - a statement of what one regards as true and factual; what one assumes to be true

**education** - the organized, systematic effort to foster learning, to establish the conditions,
and to provide the activities through which learning can occur (Smith, 1982).

**education director** - the person in charge of the education department at a zoo or
aquarium. Other synonymous terms include director of education, education curator,
education coordinator, and manager of education.

**operational definition**: In this study, all education contacts listed in the AZA’s 1994
Education Directory, regardless of their title, are referred to as education directors.
learning- an activity of one who learns. It may be intentional or random; it may involve acquiring information or skills, new attitudes, understandings, or values. It usually is accompanied by changes in behavior and continues throughout life (Smith, 1982).

philosophy- the rational approach to problems and questions in contrast to the materialistic, scientific, or emotive. It is a comprehensive and reasoned inquiry dealing with the foundations in thought of all human activity, especially in the fields of science, art, religion, and education (Howick, 1980). See adult education philosophical orientation.

theory- a) a plausible or scientifically acceptable general principle or body of principles offered to explain phenomena; b) the analysis of a set of facts in their relation to one another (Mish, 1988).

zoo- because of the enormous variation among the institutions known as "zoos," there is no concise definition for this word. However, there are two characteristics that all such institutions have in common:

1) Zoos possess and manage collections that primarily consist of wild (non-domesticated) animals, of one or more species, that are housed so that they are easier to see and study than in nature.
2) Zoos display at least a portion of this collection to the public for a significant part of the year, if not throughout the year. (IUDZG & CBSG, 1993)

operational definition: regardless of the type of animals they display and their official name (e.g. zoo, zoological park, aquarium, wildlife park), all of these institutions will be
referred to by the general term "zoo" within this paper unless otherwise noted. When comparing aquarium education directors with zoo education directors, "zoo" represents all institutions except aquariums.

Limitations

The limitations of this study included:

1) The willingness and the ability of subjects to respond, to respond in a timely fashion, and to correctly complete the questionnaire.

2) Because this study is based on survey research, it is limited to the answers the subjects provided on the questionnaires. There is no ability to probe further for more details within the framework of this study. There is also no control for the location, time, or situation under which the subjects completed the questionnaire.

3) Subjects used in this study were education contacts listed in the American Zoo and Aquarium Association's (AZA) draft 1994 Education Directory. In updating this list in the Spring of 1994, the AZA did not receive information from all of its 164 members. For the AZA list used in this study, information from the previous list was used for the eight (8) nonresponding institutions.

4) Six zoos do not have an official education director and list someone else as their educational contact on the AZA list. This person was usually the zoo director.

5) No measures were taken to link philosophy with actions. No attempt was made to differentiate between actual beliefs and responses reflecting perceived expected beliefs.
6) Zinn's (1983) Philosophy of Adult Education Inventory (PAEI) is reported as a valid and reliable instrument for measuring one's personal philosophy of adult education. Because of this existing validity and reliability, the researcher did not make any changes on the PAEI instrument. Many of the response items in the PAEI's were judged to be double-barrelled by members of the panel who reviewed the questionnaire for content validity.

7) This study is not an indepth look at the philosophical traditions as described in Elias and Merriam (1980). These traditions are used in conjunction with Zinn's (1983) PAEI to provide a comparison framework for zoo education directors.

8) The five philosophies of education on the PAEI may not be inclusive of all philosophical thought in the field. Also, these philosophies used on the PAEI may not be universally accepted by all educators.

9) Adult educators are often flexible in their practice. When one modifies teaching style to suit individuals or groups of learners, it may appear that one operates out of a different belief system. Zinn (1983) and this researcher acknowledge that teaching style and educational philosophy may be confused, especially if the philosophy of education is being identified through choices made in the approach to teaching.

**Assumptions**

This study was conducted with the recognition of the following assumptions:

1) Zinn's (1983) PAEI is a valid and reliable instrument for the identification of an individual's personal philosophy of adult education.
2) The reliability and validity findings for Zinn's (1983) PAEI can be generalized to include zoo education directors.

3) Zoo education directors have a philosophy of adult education that can be identified by the PAEI.

4) Zoo education directors completed the PAEI on the basis of what they generally believe and not on what they actually do in a specific educational situation.

5) The numeric scores generated on the PAEI reflect the individual's personal philosophy of adult education.

6) The process of examining and measuring one's personal philosophy of adult education is both personally and professionally beneficial.

7) Philosophies or belief systems are generally eclectic and changing; therefore, the identification of one's personal philosophy does not represent a definitive statement that will necessarily hold true for all time (Zinn, 1983).

8) Late respondents are similar to nonrespondents (Barrick, Catri & Na, 1994; Miller & Smith, 1983).
CHAPTER II
REVIEW OF LITERATURE

This review of literature is presented in four sections:

1) Zoo Visitors- adult visitors, social setting, urban access

2) Education- education vs. learning, educational settings, zoo education

3) Adult Education- role of adult educators

4) Philosophy- philosophy and education, philosophy of adult education, developing a personal philosophy of adult education, philosophy and action.

Zoo Visitors

Zoos are very popular recreation places. This popularity is evident by the more than 100 million people who annually visit North American zoos (Eaton, 1981; Howard, 1989; Marshall, 1994, IUDZG & CBSG, 1993). One of the main reasons for this popularity is the fact that zoos exhibit living, wild animals (IUDZG & CBSG, 1993). Humans are strongly attracted to living animals. According to Cherfas (1984), "people go to the zoo because they like to be with animals and that is where they can be with animals" (p. 225). Zoos give people the opportunity to see many animals during their visit and, according to Marshall (1994), this is the only chance that some people will ever have to "see, smell,
hear and, on occasion, touch an animal other than a house pet" (p. 6). This chance to see wild animals in close proximity attracts many people to zoos.

The millions of people who visit zoos have diverse backgrounds. Research on zoo visitors has indicated that these visitors represent groups of all ages, all educational levels and different social, ethnic, and cultural backgrounds (IUDZG & CBSG, 1993). Using past studies, Martin and O'Reilly (1989) describe some of the basic demographics of zoo visitors: a) general higher educational and socioeconomic level than average; b) likely to live near the zoo they are visiting; c) visit in small family groups (2-5 people). One concern that Martin and O'Reilly (1989) have expressed is that too much emphasis on these simple profiles, although necessary, may lead to neglecting important subpopulations such as children, the elderly, individuals with disabilities, the poor, and ethnic populations. Many studies have gone beyond basic descriptions of visitors and focus more on visitor attitudes, beliefs, knowledge, behavior, learning, and reasons for coming to zoos (Bitgood, Patterson & Benefield, 1986; Hood, 1983; Kellert, 1980; Ludwig, 1981; Rosenfeld, 1980; Whittall, 1992; Wolf & Tymitz, 1981). In many zoos, the importance of studying the diverse zoo audience has been recognized and is becoming a vital part of zoo research.

Adult Visitors

One of the assumptions of many zoo visitors is that zoos are for children. According to several researchers (Conway, 1982; Cheek, 1973; IUDZG & CBSG, 1993), this belief is a myth. Children do comprise a large portion of zoo visitors, but usually 55 to 70% of zoo visitors are adults (Conway, 1982). Cheek, Field, and Burdge's (1976) study found
that suggestions to visit a zoo more often came from adults rather than children. Adults are not only important as zoo attendees, but also in society where they are the decision makers (Bergevin, 1967). According to Marien (1983; quoted in Merriam & Caffarella, 1991), "the most important learning needs are not among children, but among adults... the decisions makers who will be shaping the Information Society over the next two decades" (p. 5). As Merriam and Caffarella (1991) explain, the rapid rate of change in our society dictates that adults must deal with today's realities. Adults can no longer wait for their children to act responsibly towards animals and the environment. In their position of power and authority, adults have and will make decisions that directly and indirectly affect wild animals and their habitats. These decisions can be in everyday choices or specific issues concerning wildlife (e.g. supporting endangered species through donations). Adults also make decisions that directly affect zoos. These may be as simple as deciding to visit a local zoo or deciding whether or not to support a zoo's expansion/renovation through voting for a bond issue. Because of the influences adult decisions have on animals, habitat, and zoos themselves, zoos have a definite interest in directly addressing this audience.

**Social Setting**

One characteristic of every zoo is that they are social organizations. They are created by humans for other humans (Cheek et al., 1976). In the results from Cheek et al. (1976), 96% of the people interviewed indicated they went to the zoo with other people. Milan and Wourms (1992) had similar results. This means that going to a zoo can be regarded as a social behavior in which each person is a member of a social group. These social
groups are predominantly non-organized and include families, relatives, and friends (Cheek et al., 1976). Most of the social interaction at zoos occurs within these existing groups and not between different groups. This interaction is a common and important aspect of a visit (Cheek, 1973; Rosenfeld, 1980). In some cases, families spent more than half of their total zoo visit engaged in non-animal related social activities (Rosenfeld, 1980). Although visitors do not usually interact with people outside their own social group, watching other people is common. Data from Cheek et al. (1976) revealed that over 75% of those surveyed purposefully observed other zoo visitors as an activity during their zoo stay. Overall, these results suggest strong human-oriented activities occur at zoos with some regularity.

Urban Access

The social organization of the zoo has changed since the original zoological parks of the nineteenth and twentieth centuries. Once only considered optional luxury establishments for wealthy people, zoos are now widely regarded as an essential part of every large city (Hediger, 1969). For many people, especially those who live in urban areas, zoos may be the only link to nature and wild animals (Turkowski, 1972). Because the majority of zoos are situated in urban areas, they are ideally located to bring these urban dwellers closer to wild animals (IUDZG & CBSG, 1993). Conway (1982) states that generations of people, who will be making future decisions about these creatures and their habitats, are growing up without any natural contact with wild animals. For Hediger (1969), zoos are "emergency exits to nature, secondary natural places where the city dweller can appease his [sic] hunger for nature" (p. 72). Whether or not there is a need to
see and be with wild animals, it is clear that there is a definite interest in doing so. The location of zoos combined with their animal exhibits provides urban citizens the opportunity to experience wildlife for themselves.

**Education**

An image that may be formed in the mind when one thinks of education is that of school and classrooms. As a result of our childhood and the experience of formalized education, this image can be strong and often unpleasant, especially for adults (Knowles, 1950). Bergevin (1967) states that for adults, "'school' calls up negative experiences... and we would prefer not to repeat them" (p. 49). Adults typically confront educational opportunities and participate in learning with mixed feelings, anxiety, and even fear (Smith, 1982). School was something that was once required of most people. At one time, adults went to school, performed certain tasks, and then were evaluated on their performance. According to Long (1990), the role of the learner/student is generally assigned to young people, not adults. When this learner/student role is assumed by adults, it is a low-priority role. Smith (1982) quotes Brnderager and MacKeracher (1980) who said that "if the adult thinks that learning is only for children or is a non-responsible status in society, he [sic] will likely not participate willingly in learning activities" (p. 39). Hence, when "education" is associated with a recreational setting such as a zoo, the adult visitor may have a negative reaction and may not participate. People come to zoos by choice. They bring their own various agendas and do not want something dictated to or forced on them. The same is true for education. People want to
be free and control their own learning pace (Screven, 1986). The possible conflict between the zoo's agenda of education and the visitors' agenda of leisure provides a challenge to all zoos regardless of their size, structure, or animal collection. The challenge is to provide educational opportunities that satisfy both visitors' and zoos' needs and goals.

Education vs. Learning

The use of the words "education" and "learning" has been explained in several previous studies (Courtney, 1992; Smith, 1982). The words education and learning often seem to be used interchangeably. As already mentioned, in a setting where education may be uncomfortable or threatening for adults, it is crucial to differentiate between the two terms. Jarvis (1987) defines learning as the process of transforming experience into knowledge, skills, and attitudes while education is the institutionalization of learning. For Courtney (1992), education suggests the stiff and formal, like "an artificial part of life suspended from the real world" (p. 17). Education is something organized, systematic, and planned while learning suggests something which is "natural" or "accidental," meaning it occurs in the pursuit of some other activity not explicitly educational in nature. For Smith (1982), learning and education are not that different in their definitions.

Learning... is the activity of one who learns. It may be intentional or random; it may involve acquiring information or skills, new attitudes, understandings, or values. It is usually accompanied by changes in behavior and goes on throughout life. Education can be defined as the organized, systematic effort to foster learning, to establish the conditions, and to provide the activities through which learning can occur. (p. 37)
As described, the word education often carries with it a connotation of formal, rigid school instruction. Learning is something which can happen by chance in day-to-day life and therefore may be less offensive to the potential learner. It may be the desire to avoid association with formality that influences the use of the term "learning" (Courtney, 1992). These differences are important to remember when dealing with adult zoo visitors before attempting to "teach" them anything. A learning climate that minimizes anxiety and fosters confidence needs to be provided (Smith, 1982). By removing terminology relating to formalized educational settings and shifting towards a more relaxed atmosphere, zoos can possibly remove any threat or pressure adult visitors may feel "education" puts on them. In this way, it is possible that both the zoo's agenda and the visitors' agenda can be met.

**Educational Settings**

In order to better understand the adult learning potential in zoos, it is necessary to examine the possible types of educational settings found in zoos. The formal education setting is well-defined in most zoos through the many classes offered to children. In general, however, little formal education is directed towards adults. Self-directed learning is not considered here as a common educational setting in zoos for two reasons. First, self-directed learning occurs when individuals are motivated to learn, and, although the educational benefit for children is often stated, most adults do not come to zoos specifically for education (Kellert, 1980; Rosenfeld, 1980; Wolf & Tymitz, 1981). Second, as Heimlich (1993) states, there is a great overlap between self-directed and other types of settings, particularly informal. This leaves nonformal and informal settings.
Heimlich (1993) uses Mocker and Spears' (1982) lifelong learning model based on who controls the inputs and outcomes of the learning exchange. In nonformal or interpretive settings, the individual controls the objectives but not the means. For example, if a person participates in a guided tour in the zoo, he/she can control what is learned (objectives) but how things are learned (means) are fixed by the tour. Individuals in informal settings control the means but not the objectives. The visitor who chooses to read an informational sign at an exhibit controls how the information is obtained (means) but not the message/information itself (objectives). Both nonformal and informal settings occur in zoos.

Jarvis (1987) does not adopt Mocker and Spears' definition in his work because their model relates more closely to the learning process than the social situation as a whole. For Jarvis, informal learning situations occur in social interactions between friends and acquaintances and are bounded by social class, ethnicity, gender, and interests. Understanding the learning situation is not always as straightforward as knowing who controls the inputs and outputs of the learning exchange because each situation has a variety of parameters that may be perceived in different ways by different people. Because of the great diversity of zoo visitors, this is an important point for zoo educators to be aware of.

According to Braverman and Yates' (1989), Heimlich's (1993), and Jarvis' (1987), explanations of learning settings, the informal learning setting is the most common in zoos and thus the most likely for the general adult zoo visitor to encounter. The majority of informal learning settings in zoos are based around animal exhibits, the main attraction
at any zoo. Braverman and Yates (1989) describe the zoo educational setting as mostly unstructured with the learner on "his or her own." Heimlich (1993) states that informal learning settings are structured by educators but the choice of participation is entirely with the individual. Learning opportunities are created by education staff and presented to visitors at exhibits, but visitors are free to visit any, all, or none of the exhibits. Jarvis (1987) describes informal situations as having no prespecified procedures of interaction. Overall, the majority of possible learning settings in zoos are loosely structured and not forced upon visitors.

Zoo Education

Education is an essential function of all zoos accredited by the American Zoo and Aquarium Association (AZA). Education is one of the four main goals and missions of most modern zoos (Conway, 1982; Eaton, 1981). In explaining the irreplaceable value of the earth's biological systems and its constituent components, education is a powerful tool in raising the general level of awareness of zoo visitors (IUDZG & CBSG, 1993). Increasing this awareness is necessary to establish a new balance between human development and the earth's biological systems. Through their education programs, zoos attempt to positively affect their visitors' level of awareness.

Education in zoos occurs at several levels. The basic level is the simple display of living animals (IUDZG & CBSG, 1993). Visitors may learn about animals just by the experience of seeing them in person. Zoos attempt to create experiences for their visitors (e.g. immersion exhibits), but the nature of an experience will be determined largely by the learner (Boud, Keogh, & Walker, 1985). This is one idea of experiential learning.
Jarvis (1987) believes that all learning has an experiential basis and Merriam and Clark (1993) think that all of life's experiences have potential for learning. Zoos also present information through various methods depending on the subject, desired effect, and the target audience. These areas of information include biological education (Sanford, 1984; Sauro & Elsen, 1989; Tunnicliffe, 1992), conservation education (IUDZG & CBSG, 1993) and environmental education (Masters, 1992; Serrell, 1981; Turner, 1985). Some of the various methods zoos use in their educational endeavors are signs, guided tours, direct contact with zoo staff, audio/visual equipment, publications, media sources, classes, lectures, workshops, and the animal exhibits themselves (IUDZG & CBSG, 1993; Thomas & Downing, 1961; Turkowski, 1972; Wakeman, 1982).

Zoos vary in size, budgets, and diversity of animals. At whatever level of operation, however, zoos are educational resources for all visitors because of their professional staff and the animals on display (Hatley, 1986; IUDZG & CBSG, 1993; Sanford, 1984; Sauro & Elsen, 1989; Sumi & Ryder, 1987; Tunnicliffe, 1992; Turkowski, 1972). These resources combined with the popularity of zoos create large educational potential for zoos and their visitors. In order for this potential to be effectively realized, a number of conditions must be fulfilled (IUDZG & CBSG, 1993):

1) Zoos should have information on their visitors;
2) Zoos should use evaluation techniques before and after establishment of educational displays, programs and animal exhibits;
3) Zoo education requires a professional approach. Every staff member must be involved in education in one way or another;
4) Zoos need a clear-cut educational plan to follow;
5) Zoos need to guarantee the well-being of the animals they have;
6) Zoos should share their educational experiences with other zoos. (p. 25)
**Adult Education**

There is no single definition of adult education that is universally accepted by adult educators (Schroeder, 1970). No agreement exists probably because of the diversity of what is being defined. Different organizations have different definitions of adult education to fit their goals and missions (Long, 1983). Adult education can vary in terms of the clientele served, the techniques and methods used, and the organization's purposes, goals, and functions. For Lindeman (1961), an adult's whole life is spent learning and therefore education can have no endings. He further states that "this new venture is called adult education- not because it is confined to adults but because adulthood, maturity, defines its limits" (p. 5). Smith (1982) also explores the problems of defining adult education and presents three different ways it is used: 1) a process where people continue to learn after formal schooling is complete; 2) organized activities that institutions and agencies provide for adults; 3) to convey the idea of a field of social practice. In Jarvis (1990) there are six entries for the term "adult education."

The lack of a clear definition of adult education has resulted in a range of related terms that are applied to the education of adults (Gago, 1985). Continuing education and lifelong learning are two common examples (Smith, 1982). Some other terms used are associated with specific organizations: postsecondary education, extension, and nontraditional education (colleges and universities); training and development (business, industry, and government); and community education (public schools). Under these categories, there are a wide variety of programs ranging from accounting to hatmaking to photography (Knowles, 1950, 1970).
The purpose of adult education can be as diverse as its definitions. For Lindeman (1961) the purpose of adult education is to put meaning into the whole of life. Long (1983) presents a table that provides a comparison of the purposes of adult education as noted by authors of seven different studies. These purposes range from intellectual skills development to leisure and recreation to personal growth. Bergevin (1967) is specific in what he considers the purposes of adult education:

1) To help learners achieve a degree of happiness and meaning in life.
2) To help learners understand him/herself, his/her talents and limitations and his/her relationship with other persons.
3) To help adults recognize and understand the need for life-long learning.
4) To provide conditions and opportunities to help the adult advance in the maturation process spiritually, culturally, physically and vocationally.
5) To provide, where needed, education for survival in literacy, vocational skills and health measures. (pp. 30-31)

Apps (1973) poses four questions about the purpose of adult education:

1. To help people make psychological adjustments to their social conditions and natural world by equipping them with the necessary knowledge, understanding, skills and attitudes?
2. To equip adults with the skills necessary for identifying and solving problems they may face with an emphasis on the skills in solving problems and not the content or subject matter?
3. To help people change their social conditions?
4. To help people become free, autonomous individuals? (pp. 37-38)

Given these broad reasons, Apps questions the search for a definite set of purposes. He believes that perhaps adult educators should not seek overall purposes for adult education because overall purposes may be impossible to determine and may hamper individual adult educators' efforts. This leads to the idea that the purpose of adult education should not be a one-time definition but instead should be clearly defined for each situation, setting, and group of learners.
A major area of focus concerning the definition of adult education has been its comparison to education for children. Knowles (1970) popularized the idea of andragogy, the art and science of helping adults learn. Since its introduction, andragogy has been examined closely and became a rallying point for those trying to define the field of adult education as separate from other areas of education. Merriam (1993) explains how andragogy does not characterize adult learning only and how it is more appropriate to say that it and pedagogy, the art and science of teaching children, "represent a continuum ranging from teacher-directed to student-directed learning... that are appropriate with children and adults depending on the situation" (p. 8.). Merriam (1993) also reviews other ways some authors continue to distinguish adult learning from childhood learning. Self-directed learning and critical reflection are two such differences. Pratt (1993) examined the idea of andragogy twenty-five years following its introduction. Although many educators had assumed or hoped andragogy would be the basis for a theory of adult learning, it has not proven to be so but, according to Merriam (1993), andragogy does "provide a set of guidelines for designing instruction with learners who are more self-directed than teacher-directed" (p. 9).

When considering adult education, its definition, and its purposes, it is necessary to consider the adult learner. Adults have been defined in several works but there is some confusion because of the question of adult and children learning differences (Jarvis, 1990; Smith, 1982). Smith (1982) offers a simple definition of an adult as "someone who regards him/herself as an adult and has assumed the responsibilities associated with adulthood" (p. 38). Age, psychological maturity, experience, and social roles seem to be
essential characteristics of adulthood (Darkenwald & Merriam, 1982; Elias & Merriam, 1980). Other common characteristics of adult learners have been examined in past studies (Brookfield, 1986; Galbraith, 1991; Knox, 1986; Long, 1983, 1990; Merriam & Caffarella, 1991; Smith, 1982) as have the ways adults learn (Brookfield, 1986; Knowles, 1970). The most important finding of these studies is that adult learners vary widely in terms of their backgrounds, past experiences, learning styles, goals, needs, and motivation to learn. It is erroneous to speak of the adult learner (Long, 1990).

Role of Adult Educators

In the relationship between zoo educators and adult visitors, the educator plays an important role in the learning process. These roles are diverse because of the nature of the learning and the setting in which it occurs. Common roles that zoo educators may play are demonstrators, learning guides, and content resource people.

Previous authors have examined what characteristics make educators more effective in these roles (Galbraith, 1990, 1991; Knowles, 1970; Knox, 1986; Long, 1983; Seaman & Fellenz, 1989). These characteristics range from specific areas of knowledge (e.g. content) to methods used to personality of the educator.

People who help adults learn have many titles: facilitator, mentor, teacher, instructor, trainer, or adult educator (Galbraith, 1990). This variation is comparable to the zoo setting in which heads of education departments may also have many titles: director of education, education director, manager of education, curator of education, and education coordinator. Simple categorization of this job is difficult because of the different learning settings and the variety of educational opportunities zoos offer.
One common approach to facilitating adult learning is the operational approach where effective practice is any activity in which adults are being taught how to acquire certain skills and knowledge, regardless of the content and context (Brookfield, 1986). A contrasting intrinsic approach focuses more on the learner, content, and context. This approach is based on the idea that education is a transactional encounter in which learners and teachers "are engaged in a continual process of negotiation of priorities, methods, and evaluative criteria" (Brookfield, 1986, p. 20). This negotiation might not directly apply to zoos, but the important concept is that the responsibility for selecting the methods of education is both with the educator and the participants. Brookfield (1986) describes this as a joint effort or collaboration between the facilitator and learner. If the educators were in complete control, as in a formal school setting, then an authoritarian style transmission of knowledge results. If the learners are in control, the learning process could just become a service to them and the facilitator would be only an administrator. Several writers fall somewhere between a student-centered and a teacher-centered approach (Merriam, 1977). A balance between the two provides a more stable and effective exchange of information. Galbraith (1991) describes this transactional process as a collaboration in which facilitators and learners are full partners in the learning experience. It is a way in which both parties can make the experience a more meaningful, rewarding, and cooperative activity.

The idea of a collaborative relationship as put forward by these authors has implications for the zoo setting. A partnership could be established through communication between zoo staff and adult visitors about their needs and goals. Instead
of only providing informational signs for people to read, zoo staff could determine what adult visitors want to learn (e.g. through workshops, interviews, or discussion groups) and then propose ways to accomplish the learning goals (Tunnicliffe, 1993). Methods selected could be designed to also meet zoos' goals.

The idea of a transactional approach to adult education in zoos does pose some problems. As Galbraith (1991) describes it, "the facilitator must be proficient in content area, understanding of the adult learners, and adult learning methodologies" (p. 7). Zoo educators are professional educators but may not be familiar with adult learning methodologies. Knox (1986) explains that "most instructors in adult education programs are expert in the content they teach, but they usually have little preparation in the process of helping adults learn" (p. xi). Further, Knowles (1970) states that few adult educators are even conscious that they are performing the role of adult educator. This may especially be true in zoos where much of the education seems to be focused on children. Education for adult visitors also may not be recognized or may just be taken for granted. This emphasizes the necessity for zoo educators to examine what they teach and also how and who they teach.

Another possible problem for adult education in zoos is communication. Galbraith (1991) states that "it is essential in the transactional process that thoughtful, open, and sincere dialogue exists" (p. 9). Communication between zoo staff and zoo visitors is essential in understanding adult zoo visitors' needs, goals, and desires. According to Knowles (1970), these needs and goals of the individual are only part of the mission of the adult educator. The needs and goals of the institution and society also need to be
considered. The partnership described in the transactional approach is a step towards satisfying all of these needs and goals.

**Philosophy**

In the examination of philosophy of adult education, it is essential to describe philosophy itself and its relationship with education. For many people, philosophy has a negative connotation (Elias & Merriam, 1980). Howick (1980) explains that this negativity may result from people's aversion to the abstract nature of philosophical subject matter. Comprehension of this often theoretical subject matter requires an investment of time and energy. Philosophy may even be regarded as "the exclusive domain of a few select academicians" (White & Brockett, 1987, p. 11). It may also be that the concerns of philosophy appear to have little or no practical applications for most people. Even with these reservations, everyone has a philosophy whether or not he or she recognizes it (Howick, 1980; Wislock & Flannery, 1992; Zinn, 1990). Kneller (1971) explains that "philosophy attempts to establish a coherence throughout the whole domain of experience" (p. 4). Philosophies are both natural and necessary to humans. Kneller (1971) feels that people are "constantly seeking some comprehensive framework within which their separate findings may be given a total significance" (p. 4).

Given this common occurrence of philosophy, it is important to define what is meant by philosophy. Philosophy has many meanings so it is often examined by the three basic questions it addresses (Apps, 1973; Brauner & Burns, 1965; Howick, 1980): 1) What is real? (Metaphysics); 2) How do we know? (Epistemology); 3) What is of value?
Axiology). Most philosophers agree that these questions help give direction for philosophical inquiry. Philosophy also has two dimensions, process and content (product), as described by Apps (1973) and Brauner and Burns (1965). Philosophy as a process is an approach for analyzing ideas, concepts, and experiences. Brauner and Burns (1965) describe this as "the process of posing meaningful questions and seeking intelligent responses to those questions" (p. 21). Apps (1973) describes philosophy as a product (or content) that can give us "a source of information about various belief systems" (p. 7). According to Brauner and Burns (1965), hopefully "the product is understanding: the clarification of words, ideas, concepts, and experience so that instead of confusing and mystifying us they serve us... as tools for even further inquiries" (p. 21).

Defining philosophy is not easy and varies depending on the content, context, and definer. In one sense, for Lawson (1991), philosophy denotes "systems of thought, the academic study of such thought, and also particular techniques of study and analysis" (p. 284). Zinn (1983) uses four perspectives of other authors to define philosophy as "a statement or expression of beliefs, the activity of stating or expressing beliefs, a way of looking at knowledge, and the activity of reflecting upon that in which one is engaged" (p. 11). Howick (1980) defines philosophy as "the rational approach to problems and questions... a comprehensive and reasoned inquiry dealing with foundations in thought of all human activity" (p. 7). A philosophy does not provide answers as much as it questions answers. It is concerned with basic considerations and underlying assumptions. Elias and Merriam (1980) describe philosophy as "interested in the general principles of any phenomena, object, process, or subject matter" (p. 3). Jarvis (1990) defines
philosophy as "the study of knowledge, ideas, and values, and the logical structure of arguments or speech" (p. 266). For Darkenwald and Merriam (1982), a major purpose of philosophical inquiry is to "clarify issues so that decisions can be made on rational grounds" (p. 38). Hiemstra (1988) simply states that the main power of philosophy is its ability to help people better understand and appreciate what they do. Marshall (1973) explains philosophy as a human attempt to make an articulate and logical appraisal of the meaning, value, and continuity of life. Although there are some similarities in the way philosophy is defined, the tendency appears to be to adapt a meaning for a particular setting.

Philosophy and Education

Philosophy and education are closely related areas in both origin and development. According to Howick (1980), both are "interested in humans, human nature, human behavior, knowledge and relationships" (p. 1). Both are inclined to systematize content, organize ideas into groups, and develop methods. Education and philosophy are also very misunderstood and misinterpreted. Brauner and Bums (1965) explain that education and philosophy are "inseparable because the end of education is the end of philosophy--wisdom; and the means of philosophy is the means of education--inquiry, which alone can lead to wisdom" (p. 6). Philosophy and education cannot be separated but they can be distinguished. This is why, according to Brauner and Burns (1965), the philosophy of education is a distinct but not a separate discipline from either philosophy or education. Howick (1980) takes an even stronger stance as he states that "to acquire knowledge in either discipline void of the other results in a warped perspective" (p. 2).
Philosophies of Adult Education

Beder (1989) explains philosophies as the beliefs about how adult education should be conducted and the general principles that guide practice. Zinn (1994) describes a philosophy of education as a:

comprehensive and interrelated set of values and beliefs as applied to education--including beliefs about the purpose and nature of human life, the role of the individual in society, purposes or goals of education, role(s) of teachers and students, important subject matter, and effective teaching approaches. (p. 13)

Compared with teaching, an educational philosophy is much broader than a preference for a specific teaching technique. Zinn (1994) explains how philosophies are deeply held, aligned with one's values, and unlikely to change significantly. Teaching techniques differ because they may change with the particular situation.

A person's philosophy of life provides a type of framework by which he or she lives and acts (Zinn, 1990). A philosophy of adult education may also provide a framework to guide one in education concerning adults. Zinn (1990) describes that when the adult educator engages in the practice of education "certain beliefs about life in general are applied to the practice" (p. 40) and these beliefs may constitute the basis for a philosophy of adult education. The importance of developing a personal philosophy of adult education has been recognized by Zinn (1983, 1990) in her creation of the Philosophy of Adult Education Inventory (PAEI), an instrument that is designed to help adult educators begin a process of reflection on their educational practices and beliefs.

The philosophies of adult education each have their own viewpoint of particular problems, issues, and challenges. Elias and Merriam (1980) present an overview of six
philosophies: Liberal, Behaviorist, Progressive, Humanistic, Radical, and Analytic. Zinn (1983, 1990) uses Elias and Merriam's descriptions to present a concise overview of five of these philosophies. According to Zinn (1983), the Analytic philosophy "was not actually a statement of philosophy, but a philosophical method or approach" (p. 23) and as such, it was not used by Zinn in her research nor included in her overview of philosophies. Zinn's overview is in the form of a table that compares each philosophy's view of the purpose of adult education, the role of the learner, the role of the teacher, key words and concepts, methods, and people and practices in that philosophy (Appendix A). Elias and Merriam (1980) provide brief descriptions of the philosophies of adult education:

- **Liberal Adult Education** - emphasis is on liberal learning, organized knowledge and the development of the intellectual powers of the mind.
- **Behaviorist Adult Education** - emphasizes concepts of control, behavioral modification and learning through reinforcement and management objectives.
- **Progressive Adult Education** - emphasizes concepts of relationships between education and society, experience-centered education, vocational education and democratic education.
- **Humanistic Adult Education** - emphasizes freedom and autonomy, trust, active cooperation and participation and self-directed learning.
- **Radical Adult Education** - emphasizes education as a force for achieving radical social change. (pp. 9-11)

Hiemstra (1988), Mulcrone (1993), Saddlington (1992), Podeschi (1986), and White and Brockett (1987) incorporate these five philosophies in their papers.

These philosophies of adult education are not mutually exclusive. Some overlaps occur (McKenzie, 1985). Zinn (1990) said that most respondents on her PAEI often have high scores in two similar philosophies. Howick (1980) explains that even though there are common points shared by two philosophies or two thinkers, it does not mean overall
agreement in theory and/or practice. Similarities between philosophical orientations may result from their creation. Differences in theory, although they may be significant, are usually differences in degree of emphasis. Howick (1980) describes every thinker as eclectic with the "tendency to incorporate in one philosophy what has been taken from several other sources" (p. 3). A problem with eclecticism is that its subjectivity decreases consistency that may lead one to contradictory positions. An advantage of eclecticism that Elias and Merriam (1980) note is the flexibility it offers persons constantly working towards a synthesis and integration of views.

**Developing a Personal Philosophy of Adult Education**

The idea of a continuing process of developing a personal philosophy of adult education is shared by several authors (Apps, 1973; Hallenbeck, 1953; White & Brockett, 1987; Wislock & Flannery, 1992). This process is described as developing a working philosophy of adult education. Apps (1973) defines a working philosophy as "an individual adult educator's system of beliefs" (p. 7). Developing a working philosophy is a search for principles that is a continuum with common sense at one end and an ultimate working philosophy on the other. The working philosophy is never completely developed as one is always moving forward, hopefully, towards a more complete, and more useful, working philosophy. Hallenbeck (1953) stresses that a working philosophy is not an academic matter but rather "that which a practical person doing a job works by" (p. 150). Some of the points Hallenbeck (1953) lists that are involved in a working philosophy include the reasons for adult education, the objectives, and the plan of operation. According to White and Brockett (1987), everyone has a working philosophy
that is an "outgrowth of the sum of our personal values, experiences and lifestyles" (p. 12). The challenge is to articulate this philosophy. Wislock and Flannery (1992) agree with Apps' position that a working philosophy is a continual process of raising questions about what we do, why we do it, and what should be. This idea of a continual, on-going process is important to remember for those contemplating their philosophy of adult education.

The examination of one's beliefs and practices to form a philosophy of adult education has generally been described as a positive experience yet many educators have not reflected on their work. Merriam (1982) cites several possible reasons why educators have not done so. These include busy schedules and institutional constraints. Long (1983) also offers several possible explanations:

1. Limited appreciation for philosophy as a means for guiding behavior.
2. Limited appreciation for philosophy as a means for understanding.
3. Expectations that adult education should be guided by one monolithic philosophical system.
4. The expectation that one's philosophy must be rigorously mature and complete in all aspects.
5. The perception that action and philosophy are mutually exclusive— that one is doing and the other is thinking. (p. 293)

If these reservations to developing a personal philosophy of adult education exist, why should educators develop one? Of what value might it be for educators to systematically examine their basis for educational decisions and actions? According to Elias and Merriam (1980), a philosophy of adult education does not give someone the "whats" and "hows" but the "whys" of education. A philosophy may help explain process more than providing direct answers. For Elias and Merriam (1980), "true professionals
know not only what they are to do but are also aware of the principles and the reasons for so acting" (p. 9). They stress how a philosophy is a necessary component of educational activity. "Theory without practice leads to empty idealism and action without philosophical reflection leads to mindless action" (p. 4). White and Brockett (1987) explain how a "philosophy doesn't provide cookbook solutions to the many dilemmas we face in day-to-day practice. However, it can help us understand ourselves and why we make certain decisions" (p. 12). Darkenwald and Merriam (1982) suggest the same idea of a personal philosophy as being part of a professional educator's repertoire:

An evaluation and understanding of one's own philosophical orientation is one factor that distinguishes a professional adult educator from a nonprofessional or novice. Thoughtful practitioners know not only what they are to do, but why they are to do it. (p. 37)

McKenzie (1985) also believes that adult education practice should include theoretical reflection:

One of the differences between a proficient adult educator and a marginally effective adult educator is that the practice of the proficient adult educator refers continually to theoretical principles which allow the individual to move... beyond repetitive actions. (p. 20)

Unfortunately, given the results of his study, McKenzie (1985) feels that many adult educators "merely accept patterns of practice... without testing these patterns critically" (p. 20). It is not uncommon for adult educators to be concerned with only techniques, procedures, and instructional aides while avoiding the philosophical grounds of practice.

DeCoux and others (1992) examined Zinn's PAEI and concluded that it can encourage adult educators to reflect on their philosophy and practices. Similar to McKenzie (1985) and Darkenwald and Merriam (1982), DeCoux et al. (1992) feel strongly about
professional adult educators reflecting on their philosophies:

A critical examination of philosophy... should have the salutary effect of confirming sound practice or amending questionable practice. On the other hand, to the extent that adult educators operate within a philosophical vacuum, their practice is not so much a reasoned, thoughtful commitment to a set of educational values as it is an uncritical adherence to habit. (p. 23)

Hiemstra (1988) believes there are at least four reasons why adult education professionals should be able to explicate a personal philosophy: 1) to promote an understanding of human relationships; 2) to sensitize one to the various needs associated with positive human interactions; 3) to provide a framework for distinguishing, separating, and understanding personal values; 4) to promote flexibility and consistency in working with adult learners (p. 179).

Similar to Hiemstra, Maxcy (1980) also presents three ways adult educators profit from having a developed philosophy of adult education:

1. Philosophy helps the instructor of adults by cultivating the perception of the finer-grained characteristics of human relationships.
2. Philosophy may aid in the making of judgements or choices.
3. A philosophic attitude benefits adult educators by yielding a more studied understanding of how their work relates to community, society, and culture. (p. 8)

Philosophies will not tell educators how to make changes, but they can help educators recognize problems and possible solutions.

In deciding on a philosophy of adult education, Elias and Merriam (1980) state that educators may: 1) choose an existing philosophy or determine they already espouse one; 2) choose an eclectic approach of combining parts from several philosophies; or 3) choose one theory as a framework upon which to build a personal educational philosophy.
Philosophy and Action

A common topic that arises when discussing philosophy is the philosophy-action connection. Elias and Merriam (1980) state that many people see philosophy and action as mutually exclusive concepts; however, they believe there is a definite connection between action and philosophy as "it is clear that philosophy inspires one's activities, and gives direction to practice" (p. 5). Long (1983) explains how many people equate philosophy with a more passive pattern of behavior. Adult educators are typically action oriented and therefore developing a philosophy may not be a priority. Wislock and Flannery (1992) describe the relationship between philosophy and action as interactive. For them "philosophy informs practice and practice must test philosophy which in turn contributes to the building of new theory" (p. 6). Elias' (1982) definition of a philosophy or theory is "the attempt to understand rationally the various aspects of practice" (p. 7). One can have a philosophy of law, medicine, and education. Elias (1982) provides a framework of four elements present in the relationship between philosophy and practice: explanation, criticism, direction, and imagination. Wislock and Flannery (1992) utilize Elias' framework in the area of extension. Mulcrone (1993) looks at the application of philosophy for adult and continuing education administrators.

Heimlich and Norland (1994) explain the idea of congruence as the matching of belief and behavior. The implication is that the more closely one's values, beliefs, and attitudes-- which together equal philosophy-- are aligned to behavior, the more congruent the teaching and thus the better the teacher. Identifying one's philosophical orientation may help educators become aware of any discrepancies between their philosophies and
actions. In this sense, this identification is a step towards becoming a more effective teacher or facilitator of adults.

The results from McKenzie (1985) indicate "that the practice of adult education in particular settings controls theoretical orientation more than theoretical orientation conditions practice" (p. 20). Even though there may be a connection between theory/philosophy and practice, the order is not always consistent or clear. It appears that action may not always follow a philosophy or theory.

Summary

This literature review presented background information on the zoo as an educational setting and its significant adult visitor audience. Given the role and influence that zoo education directors have with these visitors, this review emphasizes the importance for these directors to examine their philosophies on how they promote learning. Zinn's (1983) Philosophy of Adult Education Inventory is presented here as a way zoo education directors can reflect on their educational practice with adults.
CHAPTER III
METHODOLOGY

Research Design

This study was descriptive survey research. Data were collected using a mail questionnaire created to measure zoo and aquarium education directors' philosophies of adult education (Appendix B). One hundred sixty-three (163) education directors surveyed were from American Zoo and Aquarium Association (AZA) member institutions. In this census study, all 164 member institutions were involved (19 were part of the field/pilot test and 144 participated in the larger survey). The total number of potential respondents was one less than the total number of AZA member institutions because one person was the education contact at two institutions.

Design and Objectives

Objective 1: To measure zoo and aquarium education directors' personal philosophies of adult education and create a profile of the directors and their philosophies.

Profiles were created by comparing all education directors' responses in Section II of the questionnaire to the five philosophical orientations described in Elias and Merriam (1980). Profiles were also created using descriptive statistics and central tendencies with data gathered on the questionnaire.
**Objective 2:** To determine if there is a significant difference between zoo and aquarium education directors' in terms of their demographic characteristics and their philosophical orientations.

This objective was addressed by comparing zoo and aquarium education directors on their demographic data and PAEI scores using t-tests. The statistical hypothesis for this objective (i.e. null hypothesis) was that there is no significant differences between zoo and aquarium education directors in terms of their demographic characteristics and their philosophical orientations.

**Objective 3:** To determine if there is a dominant philosophical orientation among the education directors.

This objective was addressed by examining education directors' scores from Section II. Descriptive statistics were generated.

**Objective 4:** To determine if there is a significant difference among the education directors in terms of the distribution of their philosophical orientations.

A chi-square analysis was used to compare expected and observed frequencies across the six philosophical orientations (including an eclectic orientation). The statistical hypothesis for this objective (i.e. null hypothesis) was that there is no significant difference among the education directors in terms of their distribution across the six philosophical orientations.

**Objective 5:** To determine if any relationships exist between the education directors' philosophical orientations and:

a. the number of years they have been the head of the education department
b. the total number of years they have worked in zoos and aquariums

c. their highest level of education (e.g. bachelors, masters, Ph.D.)

d. whether they have any training in adult education

e. gender

f. the characteristics of their employing institution (e.g. annual budget, annual attendance, number of full-time education staff).

This objective was addressed by examining and comparing education directors' responses from Section II with their demographic data from Section III and existing data from the 1994-95 AZA Directory. Correlation coefficients were generated to test for significant relationships between PAEI scores and respondents' characteristics and PAEI scores and institutional characteristics. The statistical hypothesis for this objective (i.e. null hypothesis) was that there is no significant and strong correlations between education directors' philosophical orientations and the number of years they have been the head of the education department, the total number of years they have worked in zoos and aquariums, their highest level of education (e.g. bachelors, masters, Ph.D.), whether they have any training in adult education, gender, or the characteristics of their employing institution (e.g. annual budget, annual attendance, number of full-time education staff).

Internal and External Validity

A possible threat to the internal validity of this study was measurement error. To control for this, the questionnaire was field tested for face and content validity and suitability for the population. The reliability of the instrument has already been determined by Zinn (1983) in her development of the PAEI and is explained in the
Outcome Measures section of this paper. Zinn's instrument, instructions for completion, and instructions for scoring were used exactly as she designed them. Possible threats to the external validity of this study included sampling error, selection error, frame error, and non-response error. Sampling error was not a real threat because this was a census study. All subjects in the population were surveyed. Selection and frame error were controlled by using the most current list of subjects obtained from the AZA in July 1994. Non-response error was controlled by comparing early respondents to late respondents. Data from these two groups were compared statistically using t-tests to determine if they were significantly different.

Population

The population consisted of 163 education contacts from AZA member zoos and aquariums. Most of these contacts were the head of their education department (i.e. education director). There were 158 institutions from the United States, four from Canada, one from the Dominican Republic and one from Bermuda. Education directors from zoos, the majority of the population (143), were chosen as the survey population. The remaining aquarium education directors (20) were used in the field/pilot test.

Subject selection

The subjects of this study were all of the education directors from zoos and aquariums that are members of the American Zoo and Aquarium Association (AZA). A census or direct route inference method was used. This method was appropriate for this study because of the small size of the population (164). The mailing list of education directors
was obtained from the AZA in July, 1994. The mailing list used had only 163 names because one person was the education contact for two institutions.

The American Zoo and Aquarium Association (AZA) represents 164 institutional members and over 7,000 zoo and aquarium professionals, commercial suppliers, and interested individuals (Ramin & Beard, 1994). This organization includes almost every major zoological park, aquarium, wildlife park, and oceanarium in North America. Founded in 1924 as the American Association of Zoological Parks and Aquariums (AAZPA), the AZA continues to expand its involvement in conservation, science, education, and recreation. Conservation of the world's wildlife and its habitat is the highest priority of the AZA (Ramin & Beard, 1994).

Existing data describing the subjects of this study are either not published or are not readily available. The AZA does have a directory with information on all member institutions. At the time of this study, a new 1994-1995 AZA Directory was published. This directory has information about member institutions' annual attendance, annual budget, address, phone numbers, animal collections, staff positions, hours of operation, and other characteristics of each institution.

Subjects that in someway indicated a refusal to participate in this study were not included in the analysis. Questionnaires with obvious response sets were dropped from the study. After the second mailing, remaining nonrespondents were contacted by phone to encourage their participation in the study. Final non-response bias was handled by comparing early respondents to late respondents. This procedure was based on the assumption that late respondents are more nearly like nonrespondents than like the early
respondents (Barrick, Catri, & Na, 1994; Miller & Smith, 1983). With this assumption, if no differences are found between early and late respondents, then respondents are generalizable to the sample (in this census study, to the population). Some disagreement with the technique of comparing early and late respondents has been raised and Barrick, Catri, and Na (1994) address them. They examine different ways early and late respondents have been defined in previous studies and make recommendations based on their conclusions. For the present study, respondents were equally divided into two groups, early and late respondents, based on the arrival time of returns. Each returning questionnaire was stamped with the date for later separation into these two groups. The groups were compared using t-tests.

Subjects who returned incomplete questionnaires were contacted by phone to attempt to complete the questionnaire over the phone. If there were large sections of missing data on any questionnaire, the incomplete portion was faxed to the respondent for completion.

This research was approved by The Ohio State University Human Subjects Review Committee.

**Outcome Measures**

The questionnaire used in this study had three sections to address the objectives and research questions of the study. Section I consisted of three partially close-ended questions intended to familiarize respondents with some of the terminology in Section II (e.g. educational activities, learning outcomes). Section II, the majority of the questionnaire, was the Philosophy of Adult Education Inventory (PAEI) created by
Lorraine Zinn (1983). Zinn's permission was obtained (Appendix C) and the
tasknaire was adapted from her dissertation into a booklet form. Section III had four
open-ended demographic questions. Information was collected on respondents' number
of years experience as the education director at their zoo/aquarium, their total number of
years experience in zoos and aquariums, their educational background, and any
professional or graduate training in adult education they may have had.

**Zinn's PAEI**

The PAEI is a self-administered, self-scored, and self-interpreted instrument that
requires approximately twenty (20) minutes to complete. Zinn (1983) "decided to design
an instrument that would incorporate key elements of Apps' (1973), Brostrom's (1979),
and Elias and Merriam's (1980) work" (p. 46). The sentence completion items on the
PAEI represent beliefs in each of the four categories Apps (1973) described as essential
to the development of a personal philosophy of adult education. These categories are
beliefs about the learner, the overall purpose of adult education, the content or subject
matter, and the learning process. Brostrom's (1979) Training Style Inventory (TSI)
provided the framework for the PAEI as well as the scoring and interpretation procedures.
The five philosophies from Elias and Merriam (1980) (excluding Analytic philosophy)
were used in the interpretation of PAEI scores.

Zinn's PAEI consists of 15 statements each with five response items to which the
respondents indicate their level of agreement on a seven point Likert scale. Each of the
five response items represents a different viewpoint of the five philosophical orientations
(Liberal, Behaviorist, Humanist, Progressive, Radical) described in Elias and Merriam
(1980). On the scale, a 1 indicates a "strongly disagree," a 4 is "neutral" and a 7 is "strongly agree." For each response item, there is a small letter near the right margin after the Likert scale. These letters are used in scoring the PAEI. The number the respondent chooses on the seven point scale is assigned to the letter in the margin (e.g. Statement #1: respondent chooses "4" and the letter is (a) so for that statement: a= 4 for scoring). There are five different letters for each statement. On the scoring matrix, all the numbers for each letter are added up to produce ten subtotals. These subtotals are paired and added to produce five totals, one for each philosophical orientation (L, B, H, P, R). These totals can range from 15 to 105. According to Zinn (1990), the highest score reflects the educational philosophy that is closest to the respondent's philosophy and the lowest score the orientation with which he/she least agrees. A score of 15-25 indicates a strong disagreement, a score of 55-65 indicates a neutral/not sure position and a 95-105 score indicates a strong agreement with a particular philosophy. In the creation of the PAEI, Zinn (1983) gave more interpretation of PAEI scores: mostly disagree 23-37; mildly disagree 38-52; mildly agree 68-82; and mostly agree 83-97. The validity and reliability of this instrument was determined in its creation (Zinn, 1983) and is described below.

Validity and Reliability of PAEI

The preliminary validation process conducted by Zinn (1983) included review of the PAEI by four people who analyzed its content and provided feedback. After this review, the PAEI was revised to produce the first draft. This first draft was presented to attendees at a conference who completed the PAEI and also filled out a feedback form (Zinn,
1983). A second version of the PAEI resulted from this feedback. During a period of six months, the PAEI was field tested with five different populations (Zinn, 1983). Further revisions were made and the PAEI underwent its final field test before the validity testing. The results of the field tests are given in Zinn (1983).

In the creation of Zinn's (1983) PAEI, there was some concern raised by one of the jury members selected for a content validation procedure. This person did not cooperate in this procedure because he/she believed it would "result less in understanding than in self-classification, pigeon-holing" (p. 84). Zinn responded to this concern in her conclusions by emphasizing that the purpose of the PAEI is to "provide a starting point for exploration and inquiry, rather than an end point for identification and classification" (p. 148). Zinn acknowledged that personal philosophies are often eclectic and changing and the five philosophies used from Elias and Merriam (1980) were "accepted as being representative of the field, with the acknowledgement that the labels and description of the philosophies were not universally accepted and the philosophies not necessarily mutually exclusive" (p. 148). The instructions for completing the PAEI also inform the respondent that there are no "correct" or "incorrect" responses. Elias and Merriam (1980) explain that for philosophies of adult education, "the systemization of the discipline continues and schools of thought develop because similarities and affinities do exist among theorists" (p. 1).

The PAEI was tested for both content and construct validity. Content validity was determined by a jury of individuals recognized by their peers as being knowledgeable about philosophy of adult education. Content validity was important to determine the
extent to which the PAEI items were a representative sample of indicators of a particular philosophy of adult education. Response data were collected from a jury of six individuals (Zinn, 1983). The degree of validity of each response option was measured by a mean score calculated from the rating assigned by each juror to the individual option. The results of the jury validation indicated a high content validity on an item-by-item analysis. The instrument was judged to have a fairly high degree of validity based on these jury mean scores of >.50 (on a 7-point scale) on 93% of the response options.

Construct validity was measured using statistical methods (factor analysis) with data from 86 individuals who completed the test version of the PAEI (Zinn, 1983). Factor analysis was used to determine the number and nature of underlying variables among larger numbers of variables. In the first factor analysis of the PAEI, 21 factors were measured. This was a large number of factors and it was thought that perhaps these factors were elements that comprised the philosophies of education (Liberalist, Behaviorist, Progressive, Humanist, Radical). Further analysis by Zinn (1983) indicated that all of the response options on the PAEI were significant measures of at least one of the factors on each scale (L, B, P, H, R) and therefore, none of the individuals items could be eliminated without making other modifications and retesting for validity. The degree of common factor variance of variables (items) on an instrument provides a measure of validity. Sixty-five out of seventy-five (87%) of the individual response options had a moderate to high common factor variance (> .50) which indicated that they were both valid and reliable measures for the inventory (Zinn, 1983).
Reliability of the PAEI was determined in Zinn (1983) through internal consistency testing and test-retest measures. Internal consistency is the extent to which an instrument is an accurate measure of what it intends to measure (Zinn, 1983). Test-retest reliability is used to determine if an instrument yields similar results for repeated use under the same or similar conditions. Reliability coefficients of >.40 on 87% of the response options and alpha coefficients ranging from .75 to .86 on the five scales were considered moderate to high measures of reliability for Zinn (1983). Test-retest data were judged unreliable because of the small size of Zinn's sample. These data did show a tendency toward moderate to high reliability (r of .48 to .83) for the five scales.

Based on the results of her study and testing, Zinn (1983) judged that "the Philosophy of Adult Education Inventory... is a valid and reliable instrument that can be used to identify one's personal philosophy of adult education and compare it with prevailing philosophies for the field" (p. 154).

Zinn's PAEI has been used in several other studies to measure philosophical orientations of occupational therapy educators (Barrett, 1988); continuing educators (Carson, 1985); business and technical school, college and university, health care agency, and business and industry educators (Gago, 1985); and business trainers, religious educators, and graduate students in adult education (McKenzie, 1985). DeCoux et al. (1992) reviewed the PAEI and its applications in these studies. The PAEI's validity and reliability were not tested further in any of these studies.

Zinn's PAEI has already been judged to be valid and reliable (1983) and it is the majority of the questionnaire used in the present study (Section II). The researcher for
this study wanted to get feedback on the questionnaire from professionals in the aquarium education field because, to his knowledge, Zinn's instrument has never been applied to educators in zoos or aquariums before. Professionals in aquarium education were chosen for the field/pilot test because they were perceived as being a subset of the larger zoo and aquarium population.

In this study, content validity, face validity, and suitability of the instrument were determined by conducting a combination field/pilot test. Nineteen (19) aquarium education directors from American Zoo and Aquarium Association (AZA) member institutions were sent a draft copy of the questionnaire and a content validation form (Appendix D). They were instructed to complete the questionnaire, score their responses from Section II (PAEI), interpret their scores using Zinn's description of the five philosophical orientations, and then complete the content validation form. The answers and comments from the validation forms were used to judge the clarity of the questionnaire and its suitability to the population. Any necessary revisions were made to the questionnaire before conducting the larger survey. Face validity was also determined by a panel of reviewers that included the researcher's thesis committee, a professor of research methods, several graduate students in a research methods course, and an evaluation specialist from a zoo. Data from these questionnaires were compared with data obtained from zoo education directors to determine if the two groups were significantly different.
Conditions of Testing

In this survey research, data were collected using a mail questionnaire during the months of August and September, 1994. Zinn's (1983) Philosophy of Adult Education (PAEI) was adapted into a booklet form as part of this 14 page questionnaire. The questionnaire went through several revisions to reach its draft form that was used for the field/pilot test. The questionnaire included directions for the subjects to follow.

The list of aquarium and zoo education directors obtained from the AZA was compiled from a survey that the AZA conducted in the Spring of 1994 to update its education directory. The AZA was unsuccessful in receiving updated information from all of its member institutions (eight non-respondents) and had to substitute information for these non-respondents with data from the previous AZA education directory. The survey the AZA conducted actually asked for education contacts because, for eight smaller zoos, there is no separate position of "education director." In these instances, the head director of the zoo is listed seven times and a program and publicity coordinator is listed once as the education contacts. For this study, all education contacts were considered education directors.

Field/pilot Test

The field/pilot test was conducted using education directors from AZA member aquariums. Twenty (20) such directors were recognized from the AZA list. Attempts were made to initially contact all 20 aquarium education directors by phone to explain the field/pilot test and ask for their assistance in completing and reviewing the questionnaire. Fourteen of these education directors were successfully contacted by phone, one person
was out of the country, and five were unavailable. The field/pilot test packet (see below) was mailed to the 19 education directors, including the five unreachable education directors who also received a written explanation of the attempted contact by phone. The one education director who was out of the country was sent a questionnaire at the same time as the larger mailing to zoo education directors. His data were only used for the part of the analysis comparing aquarium educators with zoo educators.

The purposes of the field/pilot test included:

1) To determine if the questionnaire required too much time to complete. This was based on aquarium education directors' comments and approximate times it took them to complete the questionnaire (as noted on the content validation forms).

2) To determine approximately how long it took subjects to self-score Section II. There was some concern with the self-scoring procedure (Barrett, 1988) so it has not been used in several past studies. The concern is that the additional time required to score the PAEI section will deter subjects from completing the questionnaire. If the researcher scores all the questionnaires, it decreases the time required for subjects to respond.

3) To determine if there are any ambiguous terms in Section II (PAEI) that may need to be introduced and clarified in Section I. Since Zinn's PAEI is being used exactly as it was created, the researcher could not change it. However, there is a concern about the zoo and aquarium education directors' familiarity with terms used in the PAEI. On the advice of a zoo staff member, one of the validity panel members, Section I was created to clarify several words which might be unfamiliar to zoo/aquarium staff (e.g. educational activities).
4) To collect data from the aquarium education directors for the pilot test.

The 19 aquarium education directors were each sent a packet that included a cover letter on, a draft copy of the instrument, a content validation form, an interpretation of scores from Section II, and a stamped, self-addressed return envelope. As an incentive to encourage response, they also received an instant coffee packet to enjoy as they completed the questionnaire. The cover letter explained the study, its importance, and the need for their assistance (Appendix E).

Zoo Survey

The larger survey included mailing final versions of the questionnaire to all zoo education directors from AZA member institutions (143 subjects) and the one aquarium education director previously unavailable. This mailing packet included a cover letter, the revised questionnaire, a stamped, self-addressed return envelope, and an instant coffee packet to encourage response. The cover letter was similar to the one for the field/pilot test (Appendix F). Subjects had the option of self-scoring their questionnaire.

Instead of a stamped return envelope, the six education directors (one from the field/pilot test and five from the larger study) from foreign countries were each sent a U.S. one-dollar bill to cover return postage to mail back the completed questionnaire. The researcher was not able to purchase foreign postage.

Much effort was made to get a response from every zoo and aquarium education director in both the field/pilot test and the larger survey. Procedures from Dillman (1978) and the researcher's coursework on survey methods were used to increase response rate. These procedures are explained below.
For the field/pilot test, packets were mailed out to 19 aquarium education directors. The cover letters were printed on School of Natural Resources letterhead. Approximately two weeks after the survey packet was mailed, a reminder postcard was sent out. After three weeks, those field/pilot test participants still not responding were contacted by phone to confirm that they received the packet and encourage their responses. Second questionnaires were sent to those who still did not respond after five weeks. The data for the field test portion of the field/pilot test were needed as soon as possible to make any necessary changes and revise the questionnaire for the larger survey. A deadline was set for the field test portion (two weeks after the first mailing), but because the aquarium education directors were also part of the total population, their responses were needed for the whole study (pilot test). Those field/pilot test respondents who returned their questionnaire and validation form after the deadline were not used in the revision of the questionnaire, but their data were used to compare with data from zoo education directors.

For the zoo education directors, Dillman's (1978) survey schedule was used. A precard was sent to all zoo education directors two days before the questionnaire was mailed (Appendix G). This card briefly described the upcoming questionnaire. Two days after the precards were mailed, the initial packet (cover letter on School of Natural Resources letterhead, questionnaire, coffee packet, and return envelope) was mailed. Both the cover letter and questionnaire contained a deadline date (approximately one week after the packet was mailed) by which the subjects were supposed to return the questionnaire. One week after this initial mailing, reminder postcards were sent to all
non-respondents (Appendix II). Three weeks after the first mailing, a second complete packet (new cover letter, questionnaire, coffee packet, and return envelope) was sent to those zoo education directors who had not responded. Approximately two weeks after the second mailing, those education directors still not responding were contacted by phone to confirm that they received the packets and encourage their responses (see Subject Selection for control of non-response error).

The design of the questionnaire included a picture of a wolf on the cover. The same graphic was used on all mailing labels for the field/pilot test, precards, postcard reminders, and the larger survey. The questionnaire cover also had The Ohio State University School of Natural Resources' logo below the wolf graphic. The School of Natural Resources' logo was also included on the precard and postcard reminder.

The cover letter sent to the zoo education directors (not field/pilot test) included the endorsement of the American Zoo and Association (AZA) in the form of the signature of Lynne H. Baptista, the current director of education for the AZA. This letter and the questionnaire were reviewed and approved by Ms. Baptista prior to their use.

**Data Analysis**

All data analysis was conducted using the SPSS/PC+ Version 6.0 statistical program. Data gathered from the field/pilot test were compared with data from the zoo education directors using t-tests. If there were no significant differences, all data were combined into one data set for the remainder of the analysis.
All data gathered from the field/pilot test and survey of zoo education directors were analyzed using descriptive statistics. A chi-square analysis was used to examine
distribution of education directors across the six philosophies. Comparisons were made
between data from Sections III with Section II to determine any possible correlations
between the education directors' philosophical orientations and their demographic data.
Correlation coefficients (Pearson's r) were generated. Possible correlations were also
examined between the data gathered on the questionnaire and the existing data on the
institutions. Results from previous studies using Zinn's PAEI (Barrett, 1988; Carson,
1985; DeCoux et al., 1992; Gago, 1985; McKenzie, 1985) were compared as well. Early
respondents were compared with late respondents using t-tests.
CHAPTER IV

RESULTS

The purpose of this chapter is to present the results of the data analysis including the statistical tests of significance. The objectives of this study will be addressed. This chapter is organized into three sections: demographics of respondents, results of field/pilot test, and overall results of study. The overall response rate was 92% with 150 of 163 questionnaires being returned. Of these, 139 questionnaires were usable.

The objectives of this study were:

1) To measure zoo and aquarium education directors' personal philosophies of adult education and then create a profile of the directors and their philosophies.

2) To determine if there is a significant difference between zoo and aquarium education directors' in terms of their demographic characteristics and their philosophical orientations.

3) To determine if there is a dominant philosophical orientation among the education directors.

4) To determine if there is a significant difference among the education directors in terms of the distribution of their philosophical orientations.
5) To determine if any significant relationships exist between education directors' philosophical orientations and:

a. the number of years they have been the head of the education department  
b. the total number of years they have worked in zoos and aquariums  
c. their highest level of education (e.g. bachelors, masters, Ph.D.)  
d. whether they have any training in adult education  
e. gender  
f. the characteristics of their employing institution (e.g. annual budget, annual attendance, number of full-time education staff).

**Demographics of Respondents**

The demographic characteristics examined in this study are listed above in Objective 5 (a-e). As seen in Tables 1 and 2, 96 respondents were female (69.1%) and 86 respondents had bachelors degrees (61.9%). Another 44 respondents (31.6%) had masters degrees and nine (6.5%) had a Ph.D.

Not all respondents reported an area of study with their highest level of education. For those who did, education (32.1%) and biology (26.9%) were the two most common degree areas. Examples of the other areas reported included anthropology, recreation/leisure studies, social work, classical languages, psychology, nutrition, business, and management.

Practical experience in zoos and aquariums was also examined. As seen in Table 3, 86 respondents (almost 62%) have worked in zoos and aquariums between 6 and 15 years. The average length of time was 11.8 years (standard deviation= 5.7) and the range of time was one to 27 years. Average time as head of the education department was 5.3 years (SD= 4.5). Experience as education director ranged from one month to 19 years.
TABLE 1

Distribution of Respondents by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>female</td>
<td>96</td>
<td>69.1%</td>
</tr>
<tr>
<td>male</td>
<td>42</td>
<td>30.2%</td>
</tr>
<tr>
<td>missing</td>
<td>1</td>
<td>0.7%</td>
</tr>
<tr>
<td>n= 139</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

TABLE 2

Distribution of Respondents by Highest Education Level

<table>
<thead>
<tr>
<th>Degree</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor</td>
<td>86</td>
<td>61.9%</td>
</tr>
<tr>
<td>Masters</td>
<td>44</td>
<td>31.6%</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>9</td>
<td>6.5%</td>
</tr>
<tr>
<td>n= 139</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Zoo education directors were asked whether or not they had any professional or graduate training in adult education. Of the 120 respondents to this question, 95 (79.2%) reported no previous training and 25 (20.8%) reported previous training in adult education. Several reported having taken one class in adult education.
TABLE 3

Distribution of Respondents by Total Years in Zoos and Aquariums

<table>
<thead>
<tr>
<th>Years</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>18</td>
<td>13.0%</td>
</tr>
<tr>
<td>6-10</td>
<td>44</td>
<td>31.6%</td>
</tr>
<tr>
<td>10.75-15</td>
<td>42</td>
<td>30.2%</td>
</tr>
<tr>
<td>16-20</td>
<td>26</td>
<td>18.7%</td>
</tr>
<tr>
<td>21-27</td>
<td>9</td>
<td>6.5%</td>
</tr>
<tr>
<td>n= 139</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Description of Institutions

The average number of full-time education staff was 6.0 and ranged from 0 (all education programs conducted by docents) to 70 people. The average number of annual visitors to responding institutions was 645,984 people and ranged from 5,000 to 4.6 million people. The average annual budget of responding institutions was $5.75 million and ranged from $120,000 to $65 million.

Field/pilot Test

Twenty questionnaires were mailed to aquarium education contacts. Nineteen were returned (95%). Ten of these were received in time to use comments to modify the questionnaire for the larger zoo survey.

The purposes of the field/pilot test were:

1) To determine if the questionnaire required too much time to complete. This was based on aquarium education directors' comments and approximate times it took to complete
the questionnaire (as noted on the content validation forms).

**field/pilot results:** Twelve respondents recorded the time required to complete the questionnaire. Completion times ranged from 15 to 32 minutes and averaged 23.2 minutes.

2) To determine approximately how long it took subjects to self-score Section II. There was some concern with the self-scoring procedure in Barrett (1988) and it has not been used in several past studies.

**field/pilot results:** Eleven respondents recorded the time necessary to score their questionnaires. This time ranged from eight to 20 minutes and averaged 12 minutes. Only one person reported that the scoring procedure required too much time to complete.

3) To determine if there were any ambiguous terms in Section II (PAEI) that may need to be introduced and clarified in Section I.

**field/pilot results:** Field/pilot test participants did not report any ambiguous terms on the questionnaire.

4) To collect data from aquarium education directors for the pilot test.

**Overall Results**

After the field/pilot test, 143 questionnaires were mailed out to zoo education directors and 131 were returned. Eleven of those returned were not useable for the following reasons: four were incomplete and never completed despite several attempts to contact the respondents; four education contacts declined to participate in the study; and for three questionnaires, someone other than the education contact reported completing
the questionnaire (e.g. secretary, docsents). Data from the useable questionnaires (120) and field/pilot test (19) were used to address the objectives of this study.

**Objective 1:** To measure zoo and aquarium education directors' personal philosophies of adult education and then create a profile of the directors and their philosophies. To address this objective, descriptive statistics were used to analyze data gathered on the questionnaires.

Tables 4 and 5 present a profile of aquarium (Table 4) and zoo (Table 5) education directors' scores on the Philosophy of Adult Education Inventory (PAEI). These PAEI scores can range from 15 to 105. For aquarium education directors, scores ranged from 39 to 93. The highest mean was the Progressive philosophy at 78.05 and the lowest was the Radical philosophy at 68.95. For zoo education directors, scores ranged from 46 to 105. The highest mean was also the Progressive philosophy at 80.68. The lowest mean was the Radical philosophy at 72.19.

**TABLE 4**

**Distribution of Aquarium Education Directors' Scores on the PAEI**

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>76.16</td>
<td>7.9</td>
<td>62.0</td>
<td>89.0</td>
</tr>
<tr>
<td>Behaviorist</td>
<td>75.26</td>
<td>8.8</td>
<td>56.0</td>
<td>93.0</td>
</tr>
<tr>
<td>Progressive</td>
<td>78.05</td>
<td>6.3</td>
<td>66.0</td>
<td>86.0</td>
</tr>
<tr>
<td>Humanistic</td>
<td>77.53</td>
<td>7.5</td>
<td>66.0</td>
<td>92.0</td>
</tr>
<tr>
<td>Radical</td>
<td>68.95</td>
<td>10.6</td>
<td>39.0</td>
<td>85.0</td>
</tr>
</tbody>
</table>

Possible scores range from 15 to 105
TABLE 5

Distribution of Zoo Education Directors' Scores on the PAEI

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>73.61</td>
<td>9.0</td>
<td>51.0</td>
<td>95.0</td>
</tr>
<tr>
<td>Behaviorist</td>
<td>76.45</td>
<td>7.3</td>
<td>60.0</td>
<td>96.0</td>
</tr>
<tr>
<td>Progressive</td>
<td>80.68</td>
<td>8.1</td>
<td>62.0</td>
<td>101.0</td>
</tr>
<tr>
<td>Humanistic</td>
<td>78.42</td>
<td>7.0</td>
<td>59.0</td>
<td>105.0</td>
</tr>
<tr>
<td>Radical</td>
<td>72.19</td>
<td>10.0</td>
<td>46.0</td>
<td>96.0</td>
</tr>
</tbody>
</table>

Possible scores range from 15-105

Zoo and aquarium education directors' philosophical orientations were also examined. Their philosophical orientation was that philosophy on which they had the highest score on the PAEI. Two or more identical scores indicated an eclectic philosophy.

Tables 6 and 7 present a profile of aquarium (Table 6) and zoo (Table 7) education directors' philosophical orientations. For aquarium education directors, six respondents had Humanistic orientations (31.6%) and five had Liberalist orientations (26.3%). No aquarium education director had a Radical orientation. For zoo education directors, 45 respondents had Progressive orientations (37.5%), 22 had Humanistic orientations (18.3%), and 17 had eclectic orientations (14.2%).
TABLE 6

Distribution of Aquarium Education Directors' Philosophical Orientations

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>5</td>
<td>26.3%</td>
</tr>
<tr>
<td>Behaviorist</td>
<td>1</td>
<td>5.3%</td>
</tr>
<tr>
<td>Progressive</td>
<td>3</td>
<td>15.8%</td>
</tr>
<tr>
<td>Humanistic</td>
<td>6</td>
<td>31.6%</td>
</tr>
<tr>
<td>Radical</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Eclectic</td>
<td>4</td>
<td>21.0%</td>
</tr>
<tr>
<td>n=19</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

TABLE 7

Distribution of Zoo Education Directors' Philosophical Orientations

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>11</td>
<td>9.2%</td>
</tr>
<tr>
<td>Behaviorist</td>
<td>15</td>
<td>12.5%</td>
</tr>
<tr>
<td>Progressive</td>
<td>45</td>
<td>37.5%</td>
</tr>
<tr>
<td>Humanistic</td>
<td>22</td>
<td>18.3%</td>
</tr>
<tr>
<td>Radical</td>
<td>10</td>
<td>8.3%</td>
</tr>
<tr>
<td>Eclectic</td>
<td>17</td>
<td>14.2%</td>
</tr>
<tr>
<td>n=120</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Objective 2: To determine if there is a significant difference between zoo and aquarium education directors' in terms of their demographic characteristics and their philosophical orientations. The null hypothesis ($H_0$) was that there is no significant difference between zoo and aquarium education directors in terms of their demographic characteristics and philosophical orientations. To address this objective, data from the
aquarium education directors were compared with data from zoo education directors using t-tests. T-tests were run on the philosophy scores from the PAEI, the total number of years in zoos/aquariums, and the number of years as head of the education department. Two examples of these tests are given in Table 8.

**TABLE 8**

**T-tests of PROGRESS and YRSTOTAL for Zoo and Aquarium Education Directors**

<table>
<thead>
<tr>
<th>Progressive PAEI score</th>
<th>Total number of years in zoos/aquariums</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group</strong></td>
<td><strong># cases</strong></td>
</tr>
<tr>
<td>field/pilot</td>
<td>19</td>
</tr>
<tr>
<td>zoo survey</td>
<td>120</td>
</tr>
</tbody>
</table>

d.f. = 137  α = .05  **p > .05**  
Not Significant

Not Significant

**p** = two-tailed test of significance

None of the t-tests produced significant t-values so the null hypothesis failed to be rejected. There was no significant difference between aquarium and zoo education directors in this study. As a result, data from both groups were combined and analyzed together.

The PAEI score profile of zoo and aquarium education directors is presented together in Table 9. The Progressive philosophical orientation had the highest mean at 80.32. Humanistic philosophy was second highest with 78.29 and Radical was lowest with 71.75. The philosophical orientations of zoo and aquarium education directors are also presented together in Table 10. Forty-eight (34.5%) zoo and aquarium education
directors had Progressive orientations. Twenty-eight education directors had Humanistic orientations (20.1%) and 21 had eclectic orientations (15.1%). Ten education directors had Radical orientations (7.2%).

TABLE 9

Distribution of Zoo and Aquarium Education Directors' PAEI Scores

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>73.96</td>
<td>8.9</td>
<td>51.0</td>
<td>95.0</td>
</tr>
<tr>
<td>Behaviorist</td>
<td>76.29</td>
<td>7.5</td>
<td>56.0</td>
<td>96.0</td>
</tr>
<tr>
<td>Progressive</td>
<td>80.32</td>
<td>8.0</td>
<td>62.0</td>
<td>101.0</td>
</tr>
<tr>
<td>Humanistic</td>
<td>78.29</td>
<td>7.9</td>
<td>59.0</td>
<td>105.0</td>
</tr>
<tr>
<td>Radical</td>
<td>71.75</td>
<td>10.1</td>
<td>39.0</td>
<td>96.0</td>
</tr>
</tbody>
</table>

Possible scores range from 15 to 105

TABLE 10

Distribution of Zoo and Aquarium Education Directors' Philosophical Orientations

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>16</td>
<td>11.5%</td>
</tr>
<tr>
<td>Behaviorist</td>
<td>16</td>
<td>11.5%</td>
</tr>
<tr>
<td>Progressive</td>
<td>48</td>
<td>34.5%</td>
</tr>
<tr>
<td>Humanistic</td>
<td>28</td>
<td>20.1%</td>
</tr>
<tr>
<td>Radical</td>
<td>10</td>
<td>7.2%</td>
</tr>
<tr>
<td>Eclectic</td>
<td>21</td>
<td>15.1%</td>
</tr>
<tr>
<td>n= 139</td>
<td></td>
<td>99.9%</td>
</tr>
</tbody>
</table>

Objective 3: To determine if there is a dominant philosophical orientation among the education directors. This objective was addressed by examining descriptive statistics of the data. In Table 9, the philosophical orientation with the highest mean was the
Progressive orientation (mean = 80.32). As shown in Table 10, 48 respondents scored highest on the Progressive orientation (34.5% of all respondents).

Given these figures, it appears that the Progressive orientation was the dominant philosophy held by respondents.

**Objective 4**: To determine if there is a significant difference among the education directors in terms of the distribution of their philosophical orientations. The null hypothesis ($H_o$) was that there is no significant difference among zoo and aquarium education directors in terms of the distribution of their philosophical orientations. To address this objective a chi-square analysis was conducted for the six philosophical orientations. In Table 11, the chi-square was found to be significant at the $\alpha = .05$ level. Therefore, the null hypothesis was rejected. There was a significant difference among the education directors in terms of the distribution of their philosophical orientations.

**TABLE 11**

**Chi-square Analysis of Philosophical Orientations for All Respondents**

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Observed</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal</td>
<td>16</td>
<td>23.17</td>
</tr>
<tr>
<td>Behaviorist</td>
<td>16</td>
<td>23.17</td>
</tr>
<tr>
<td>Progressive</td>
<td>48</td>
<td>23.17</td>
</tr>
<tr>
<td>Humanistic</td>
<td>28</td>
<td>23.17</td>
</tr>
<tr>
<td>Radical</td>
<td>10</td>
<td>23.17</td>
</tr>
<tr>
<td>Eclectic</td>
<td>21</td>
<td>23.17</td>
</tr>
</tbody>
</table>

$\chi^2 (5, N=139) = 39.75$, $^{*}p<.05$ Significant

$^{*}$ = two-tailed test of significance
**Objective 5:** To determine if any relationships exist between the education directors' philosophical orientations and:

- the number of years they have been the head of the education department
- the total number of years they have worked in zoos and aquariums
- their highest level of education (e.g. bachelors, masters, Ph.D.)
- whether they have any training in adult education
- gender
- the characteristics of their employing institution (e.g. annual budget, annual attendance, number of full-time education staff).

The null hypothesis ($H_0$) was that there are no significant and strong correlations between zoo and aquarium education directors' philosophical orientations and the number of years they have been the head of the education department, the total number of years they have worked in zoos and aquariums, their highest level of education (e.g. bachelors, masters, Ph.D.), whether they have any training in adult education, gender, or the characteristics of their employing institution (e.g. annual budget, annual attendance, number of full-time education staff). To address this objective, Pearson's $r$ correlation coefficients were generated for the interval data. Categorical data (i.e. gender, adult education training, and level of education) were compared with PAEI scores using crosstabs. There were no significant and strong correlations between any of the education directors' characteristics or institutional characteristics and the philosophies measured on the PAEI. Based on these measures, the null hypothesis failed to be rejected.

There were some significant and strong relationships between the characteristics and PAEI scores themselves. These correlation coefficients are presented on Table 12 in Appendix I. The highest correlation was between annual zoo budget and annual attendance ($r = .90$). According to Davis (1971), this is a very high correlation. Other
significant correlations with their Pearson's r value included: annual zoo budget and full-time education staff (r = .69); number of full-time education staff and annual attendance (r = .69); Radical and Progressive philosophy scores on the PAEI (r = .62); Progressive and Humanistic philosophy scores on the PAEI (r = .52); Progressive and Behaviorist scores (r = .47); and Liberal and Behaviorist (r = .46).

**Non-response Error**

For the handling of nonresponse error, questionnaires in the zoo survey were coded with the date they were returned. The 120 useable questionnaires were divided equally into early and late respondents and compared using t-tests on the variables of Progressive score and total number of years in zoos and aquariums.

**TABLE 13**

**T-tests of Variables PROGRESS and YRSTOTAL for Early and Late Respondents**

<table>
<thead>
<tr>
<th>PROGRESS</th>
<th># Cases</th>
<th>Mean</th>
<th>YRSTOTAL</th>
<th># Cases</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>early respon.</td>
<td>60</td>
<td>79.85</td>
<td>early respon.</td>
<td>60</td>
<td>5.75</td>
</tr>
<tr>
<td>late respon.</td>
<td>60</td>
<td>81.5</td>
<td>late respon.</td>
<td>60</td>
<td>5.55</td>
</tr>
<tr>
<td>d.f. = 118</td>
<td>p &gt; .05</td>
<td></td>
<td>d.f. = 118</td>
<td>p &gt; .05</td>
<td></td>
</tr>
<tr>
<td>Not Significant</td>
<td></td>
<td></td>
<td>Not Significant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The t-tests in Table 13 did not produce any significant t-values so the null hypothesis failed to be rejected. Early and late respondents came from the same population. This allows generalization of results from the respondents to the population in this census study.
Comments

On the questionnaires, participants in both the field/pilot test and zoo survey were asked to comment on the usefulness of examining their personal philosophy of adult education. There seemed to be three general areas of comments. One area was that respondents' results on the PAEI simply reinforced existing ideas. Another area of comments was the disagreement/dislike for the way the questionnaire was structured. Several respondents thought the Likert-style questions were not the best method to measure philosophy. The third general area of comments was positive. Many people responded that this questionnaire stressed important areas of concern for adult audiences that are often overlooked in zoo education. Many respondents also commented on how the questionnaire made them think about their educational practices. Overall, the comments were fairly balanced in the three areas.
CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

The purpose of this study was to measure American Zoo and Aquarium Association (AZA) member institutions' education directors' personal philosophies of adult education. Philosophies were measured using Zinn's (1983) Philosophy of Adult Education Inventory (PAEI). The objectives were:

1) To measure zoo and aquarium education directors' personal philosophies of adult education and then create a profile of the directors and their personal philosophies of adult education.

2) To determine if there is a significant difference between zoo and aquarium education directors in terms of their demographic characteristics and their philosophical orientations.

3) To determine if there is a dominant philosophical orientation among the education directors.

4) To determine if there is a significant difference among the education directors in terms of the distribution of their philosophical orientations.
5) To determine if any relationships exist between the education directors' philosophical orientations and:

a. the number of years they have been the head of the education department

b. the total number of years they have worked in zoos and aquariums

c. their highest level of education (e.g. bachelors, masters, Ph.D.)

d. whether they have any training in adult education

e. gender

f. the characteristics of their employing institution (e.g. annual budget, annual attendance, number of full-time education staff).

Zoos and aquariums are very popular places that attract large audiences. A major portion of these visitors are adults, the decision makers in society. Given the prominence of adults in zoos and the emphasis all accredited AZA zoos and aquariums place on education, an examination of zoo and aquarium education directors' philosophy of adult education has positive implications for educational practice in these settings.

Data were collected using a mail questionnaire with three sections. The Philosophy of Adult Education Inventory (PAEI), section two on the questionnaire, was identified as a valid and reliable instrument capable of measuring zoo and aquarium education directors' philosophies of adult education. The PAEI consists of 15 statements each with five response items to which respondents indicate their level of agreement on a seven point Likert scale. Each of the five response items represents a different viewpoint of five philosophical orientations (i.e. Liberal, Behavioral, Humanistic, Progressive, and Radical). The first section of the questionnaire introduced terms used in section two.
Demographic data were collected in section three.

In this census study, all 163 AZA zoo and aquarium education contacts listed in the 1994 AZA Education Directory were surveyed. Most of these contacts were education directors. The AZA includes almost every major zoological park, aquarium, wildlife park, and oceanarium in North America, the Dominican Republic, and Bermuda. Of those surveyed, 150 responded (92%) and 139 of these questionnaires were useable.

All data gathered for this study were analyzed using descriptive statistics. Using t-tests, zoo education directors were compared with aquarium education directors. Chi-square analysis was used to examine the distribution of philosophical orientations of all respondents across the six philosophies. Comparisons were made between all education directors' PAEI scores and their demographic and employing institution's data to determine if any significant correlations existed.

Based on the data gathered and statistical procedures used, a profile of zoo and aquarium education directors was created. The majority of these educators (69.1%) were female and held bachelors degrees (61.9%). Of the degree areas reported, education and biology related fields were most common. The mean total years of experience in zoos and aquariums was 11.8 years and the mean number of years as head of the education department was 5.3 years. Both of these time frames varied widely. Twenty-five (20.8%) of the 120 zoo education directors reported previous experience in adult education. Institutional information ranged widely. The number of full-time education staff ranged from zero to 70 and the mean was six people. The mean annual attendance was about 646,000 people and actual attendance ranged from 5,000 to 4.6 million people.
The annual budget mean was $5.75 million and the range was from $120,000 to $65 million.

Zoo and aquarium education directors were not found to be significantly different on their demographic characteristics and philosophical orientations so their data were combined. Zoo and aquarium education directors' scores on the PAEI ranged between 39 (the minimum score for Radical philosophy) and 105 (the maximum score for Humanistic philosophy). The mean scores for all five philosophies were within 10 points of each other. Progressive philosophy had the highest mean at 80.32 and Radical philosophy had the lowest mean of 71.75. For this study, an individual's philosophical orientation was that philosophy on which he/she scored highest on the PAEI. Forty-eight people had progressive orientations (34.5%) and 28 people had Humanistic orientations (20.1%). There were no strong correlations between any of the demographic or employing institutional variables and education directors' philosophy (PAEI) scores.

An interesting outcome was the high response rate of this mail survey (92%). In this census study, the researcher attempted to get responses from all 163 subjects in the population. Dillman's (1978) suggestions for conducting mail surveys were followed and may account for some of the success. Dillman reports that previous studies using his suggestions had average response rates of 74%. Even with these suggestions, however, given that the questionnaire was distributed during the busiest time of the year for the subjects (i.e. summer), the length of the questionnaire (14 pages), and the fact that zoo and aquarium educators receive many questionnaires, this 92% rate is exceptional. Two other studies conducted with the same population during the same time period as the
current study reported approximate response rates of 65% and 50% (J. S. Foster, personal communication, November 8, 1994).

There are several ideas to explain the high amount of participation. This is a very specialized group of professionals. An assumption at the onset of this study was that an opportunity to reflect upon one's beliefs in his/her career field would be valued and beneficial. Thus this questionnaire containing questions of a more personal nature may have had some value for the subjects.

The questionnaire itself was unique and may have contributed to the high response rate. The PAEI is designed so that respondents can score their own answers if they want. Over 40% of the zoo education directors self-scored their questionnaire. One problem noted at the beginning of this study was that previous studies involving this population did not give adequate feedback to participants or allow them access to results. The self-scoring option, a place for respondents to request results, and a comment page allowed participants to both get and give feedback. This design was intended to make participants feel they were actually participating in the study instead of just reporting information.

The questionnaire may have also been unique because it dealt only with the subjects' beliefs and ideas. Respondents were asked to indicate their level of agreement with statements and thus did not have to research any data to answer questions. Using a Likert style format made completing the questionnaires fairly easy and quick.

Another possible factor contributing to the high response rate may be the uniqueness of the study topic: philosophy of adult education. To the researcher's knowledge, no previous studies have been conducted on philosophy of zoo and aquarium education.
directors. This unusual topic may have caught the attention of these educators. This investigation allowed zoo and aquarium educators to step back from their daily schedules and reflect on their beliefs and actions.

The dominant philosophical orientation was the Progressive philosophy. The Progressive mean score on the PAEI was the highest (80.32) as was the number of people with Progressive orientations (48). In Carson (1985), DeCoux et al. (1992), and Gago (1985), the Progressive philosophy also was the dominant philosophy. In the current study, the Progressive philosophy seemed to represent a middle point between the other four philosophies. The Liberal philosophy (mean = 73.96, orientation for 16 people) and Radical philosophy (mean = 71.75, orientation for 10 people) were at either end. The Progressive orientation may be a midpoint between two extremes in thought. The Liberal tradition, with its goal of intellectual understanding by individuals, is at one end and the Radical tradition, with its goal of bringing about new social order, is at the other end.

The Progressive orientation includes some aspects of both of these orientations: individual growth through learning and problem solving that will lead to bringing about social change (Saddington, 1992). Podeschi (1986) describes both the Liberal and Radical philosophies as running against mainstream value patterns in the United States. He also commented on how the Behaviorist and Humanistic philosophies are more dominant because they reflect American mainstream values. McKenzie (1985) pointed out that the Progressive orientation seems to agree with the other orientations because it includes values that are not incompatible with the main ideas of the other four philosophies.
In this study, respondents' philosophical orientations were determined by their highest score on the PAEI. This agrees with Zinn (1983) who said that the respondents' highest score reflects the philosophy closest to his/her own. She also said that most respondents have either a clear primary philosophical orientation or have high scores in two similar philosophies. What is not described is how far apart the high score has to be from the next highest score for it to be a "clear" orientation. In this study, many respondents had high scores in only one philosophy; however, many other respondents had similar high scores on three or more philosophies. When this happens, Zinn (1990) suggests that respondents may need to work on clarifying their beliefs and look for contradictions among them. Several education directors even had high scores in philosophies with contradicting ideas (e.g. Liberal and Radical). These common high scores may be interpreted as eclecticism, the combining of elements from different philosophies. Eclecticism has been described as one way to form a personal philosophy of adult education (Elias & Merriam, 1980), but from how many philosophies can one choose and what about philosophies that have conflicting beliefs?

This idea of eclecticism was addressed briefly in Barrett (1988). In her study, many of the respondents had a tendency to agree with all items on the questionnaire, even those representing beliefs that were incompatible with one another. Similarly, some respondents tended to disagree with all items. Barrett (1988) suggested that perhaps the idea of eclecticism is more a tendency to view things "holistically." The holistic idea may help explain the equal scoring across several philosophies. On the questionnaire, respondents may indicate similar levels of agreement to statements from different
philosophies because they are thinking more in terms of their practice. If the education
directors think more in terms of their personal beliefs, their scores might better reflect
their philosophy of adult education.

The holistic idea may also help explain some of the comments received on the
questionnaires. Several respondents indicated that this questionnaire was difficult to
complete because they perform a variety of tasks and approach each one in a different
way. A few respondents even used the words philosophy and teaching methods or
techniques together. If these educators approach each learning situation differently, they
may use different techniques and, therefore, think they are operating out of several
different philosophies. This idea was mentioned in the limitations of the study. Zinn
(1994) explained that educational philosophies are much broader than preferences for
specific teaching methods. Philosophies are more deeply held, aligned with one's values,
and unlikely to change significantly, while teaching methods may change as the situation
and needs vary. Teaching techniques of one philosophy may be used by someone who
has a different philosophy. Zoo and aquarium education directors may not clearly
understand the differences between philosophies and teaching methods. Philosophy and
action may be confused. A zoo educator may think he/she is operating out of several
philosophies (i.e. holistic approach) when in fact he/she holds one or two dominant
educational philosophies but chooses techniques from other philosophies best suited to
the situation.

Another consideration about the equal scoring distribution is the validity of the
Philosophy of Adult Education Inventory (PAEI). In its creation, the PAEI was tested
and judged to be valid and reliable and it was assumed to be so for this study; however, it may need to be retested using other audiences. A recommendation from a previous study using the PAEI (Barrett, 1988) was to conduct an item analysis and review the instrument for specific groups. In the content analysis for the current study, those reviewing the questionnaire noted a double-barrelled nature of response items, especially those with conjunctions (e.g. #13e). Zinn (1983) did note that the results from her study supported the need for additional testing and revision of the PAEI. Several respondents questioned the use of the Likert format (i.e. levels of agreement) as being a valid way to measure philosophy and commented that their answers would probably have been different if another collection method were used. Other studies that used the PAEI (Carson, 1985; DeCoux et al., 1992; Gago, 1985) involved different populations but also had the Progressive orientation as dominant. Are the philosophical scores measured on the PAEI in this study representative of zoo and aquarium education directors or are they indicative of the instrument itself and the way the data were collected?

Based on previous studies using the PAEI and the researcher's experience in zoos and aquariums, there was speculation that relationships would exist between several demographic characteristics of respondents and their philosophies. Past studies have indicated significant relationships between work setting (Barrett, 1988), gender, highest degree obtained, and presence of graduate study in adult education (Carson, 1985) and philosophical orientations. Characteristics in the current study thought to be related to philosophy were experience in adult education, total number of years in zoos and aquariums, highest level of education, and the number of full-time staff. None of these or
any other demographic or employing institutional characteristics measured in this study were significantly and strongly related to philosophy scores on the PAEI. Are there other characteristics of zoo and aquarium educators not measured here that may be significantly related to philosophy scores on the PAEI?

Significant relationships did exist between institutional characteristics and between philosophy scores. In this study, the highest significant correlation was between annual attendance and annual budget \((r = .90)\). This was statistically significant but not practically significant for the purposes of this study. The significant relationships between different philosophies included: Radical-Progressive \((r = .62)\); Progressive-Humanistic \((r = .52)\); Progressive-Behaviorist \((r = .47)\); and Liberal-Behaviorist \((r = .46)\). Barrett (1988), DeCoux et al. (1992), and McKenzie (1985) all reported strong correlations between Liberal-Behaviorist and Progressive-Behaviorist philosophies.

In this and past studies, there were no negative correlations between any of the philosophies. Even the Liberal-Radical correlation, a combination that Zinn (1983) stated people should not have, had a positive correlation. In McKenzie (1985), this relationship was fairly strong \((r = .52)\). DeCoux et al. (1992) pointed out that the lack of mutual exclusivity between philosophies and the lack of any negative correlations raises a question about the validity of the instrument.
Conclusions

Some of the conclusions from this study have been reached by addressing the objectives:

Objective 1: profiles of zoo and aquarium education directors were created using data gathered on the questionnaires and existing data on the zoos and aquariums. The majority of these educators were women. All education directors have at least a bachelors degree, and almost 40% of them have either a masters or Ph.D. Over 60% of these educators have worked in zoos and aquariums between six and 15 years. Twenty percent of zoo education directors reported having some form of training in adult education. Over 50% of all the education directors had Progressive or Humanistic philosophical orientations.

Although this group can be described with the above data, their characteristics vary widely. Degrees were well-represented by biological and educational fields but also included classical languages, history, business, bacteriology, and many other areas. Experience in zoos and aquariums ranged from one year to 27 years. The institutions also varied tremendously and included huge zoos with multimillion dollar budgets and large education staffs to ten acres zoos with one educator and $100,000 annual budgets. With such a diverse group, it is important to find more commonalities for comparison when examining philosophies. This relates to objective five. None of the characteristics compared in this study significantly and strongly correlated with educators' philosophy scores. More detailed demographics would be helpful in describing the population and in determining correlations to help understand philosophical orientations, how they are
formed, and how they may change.

Objective 2: zoo and aquarium education directors were not significantly different from each other based on their demographics and philosophical scores on the PAEI. For this study, these two groups were considered to be from the same population.

Objective 3: the Progressive philosophy appeared to be the dominant orientation for all zoo and aquarium education directors. Although this orientation had the highest mean on the PAEI and 48 people (34.5%) had Progressive orientations, the Progressive domination was not absolute. The mean for the Humanistic philosophy was only 2.03 less than the Progressive philosophy and 28 people had Humanistic orientations. Given the high Progressive mean in this and previous studies, the Progressive philosophical orientation may be the base orientation that all adult educators have. From this base, there are educators who also agree with ideas of the other four philosophies, but the majority of zoo and aquarium educators agree with Progressive ideas the most.

The way an individual's orientation was determined for this study also may influence which philosophy was dominant. For example, if a respondent had a score of 78 for Progressive and a score of 77 for Humanistic, by the definition used in this study, his/her orientation would be Progressive. Should this person be classified as having an eclectic or a Progressive philosophy? In the creation of the PAEI instrument, Zinn (1983) provides some interpretation of scores, but fails to give interpretation for the difference between scores. Do high PAEI scores that are equal indicate an eclectic orientation or is there a range of differences in scores (e.g. +/- 5) to indicate eclecticism? The Philosophy of Adult Education Inventory (PAEI) is useful for quantifying one's philosophy of adult
education and allowing comparison with existing philosophies but requires additional qualitative descriptions to clarify dominant and eclectic orientations.

Objective 4: there was a significant difference among all the education directors based on the distribution of their philosophical orientations. There was an unequal distribution of all six philosophical orientations among education directors. The Progressive orientation was most common (34.5%) followed by the Humanistic orientation (20.1%) and an eclectic orientation (15.1%).

Another conclusion from this study is that, overall, zoo and aquarium education directors agree with the five philosophies of adult education used in the PAEI. This conclusion is supported by several outcomes of the study. The average scores for all five philosophies were in the mildly agree range (68-82) that Zinn (1983) described. None of the scores on the PAEI were below 39, which is near the bottom of the range for mildly disagreeing. There were seven scores in the strongly agree range (95 or above) including one score of 105. Given this concentration of scores on the agreement side and that fact that many education directors had high scores in several philosophies, even ones with opposing views, it seems that many of these zoo and aquarium educators do not have clearly formed philosophies of adult education.

Reasons for not having a clearly defined philosophy of adult education vary according to each situation. One possibility is that a zoo education director is unaware of the idea of educational philosophy and does not have the opportunity to examine his/her own philosophy. As stated before, many educators of adults are not even aware that they are adult educators. They may think an examination of their philosophy of adult
education does not apply to them. Another explanation is a lack of resources (e.g. money, time, and staff). If there are only a few educators at a zoo, their time may be divided into several daily tasks. Reflecting on one's personal philosophy may be perceived as a luxury of time that many zoos cannot afford. McKenzie (1985) described another possibility. Many educators, even if they are aware of their philosophy of education, are more concerned with implementation and practice than with theoretical consideration. Unfortunately, practice of adult education, and other forms of education, controls theoretical orientation more often than theoretical orientation influences practice. This is what seems to be the case for many zoo and aquarium educators. There needs to be a balance between practice and theory. Studies such as this one help make educators more aware of the theoretical side of education and its implications for their work.

A conclusion from these observations is that philosophical inspection and reflection is probably not a common practice among zoo and aquarium education directors. Although these institutions do formulate mission statements, inspection on an individual level is probably not a widespread behavior. It is recommended that some type of reflective practice, such as the use of the Philosophy of Adult Education Inventory, is initiated, continues, and becomes a part of an education department staff's practice. Education directors should involve all education staff and volunteers in this process. Staff can share results on the PAEI and help each other determine how congruent their behaviors are with their philosophy. This type of evaluation may allow educators to move toward an ideal working philosophy.
Based on the high response rate and positive comments received, there is some interest in this study and the idea of zoo and aquarium education directors examining their personal philosophies of education. As this study is only a beginning in a continuing process, it was intended to help zoo and aquarium education directors become more aware of philosophies of adult education and also introduce them to one method they can utilize to examine and measure their own philosophies. This study focused on adult education but the ideas it presented can be applied to different audiences, situations, and conditions.

The interest generated, together with the information presented in this study, will hopefully motivate zoo and aquarium educators to begin and continue examining their philosophy and learn how it influences the decisions they make in their field.

Recommendations

Based on the data gathered in the current study and knowledge from the literature, several recommendations are made here both for zoo and aquarium educators and for further research.

Zoo and Aquarium Educators

This study focused on education directors but the ideas and methods described apply to all educators in these institutions. Some type of reflective practice examining one's philosophy should be introduced in education departments. Education directors who participated in this study can share their experience of completing the PAEI with other education staff and education volunteers. Education directors should encourage their
staff to consider developing a working philosophy of adult education. For education staff members, use of the PAEI can be a beginning to an exploration into one's underlying beliefs. Some staff may go beyond this instrument to reflect more deeply into the congruence between their beliefs and actions.

As a whole, education departments could meet and discuss their institution's philosophy, mission statements, and goals. Along with individual reflection, these conversations would give the individual staff members something to compare their own personal philosophies with. From this, they may be able to observe similarities between their own philosophies and the ideas of their employing institution and determine what factors influence their philosophies.

Education staff can also share their philosophies to help each other determine how congruent their behaviors are with their beliefs. This process will help staff discover how theoretical reflection influences their practice. They may also realize if and how their educational practice has followed routines or acceptable patterns without reflection or testing.

This study focused on adult education. The use of the PAEI may also serve as a catalyst to motivate education directors and others to investigate their beliefs and philosophies in other areas with different audiences.

A systematic process of examining and measuring one's philosophy of adult education will help zoo and aquarium education staff realize they are adult educators. In zoos and aquariums, adults may be considered as the general public and may be taken for granted in educational programming. Focusing on adults will help draw attention to them as an
important visitor audience. Adults need to be targeted with educational messages and programs.

In Chapter II of this study, the ideas of operational and intrinsic approaches to adult education were compared. The operational approach is when information is passed on to others from a source. The intrinsic approach involves the potential learner more in the process of learning. Zoos have both kinds of learning situations, but often times the operational approach dominates. More interaction between adult visitors and zoo staff would allow feedback and create more of a partnership between both groups. One way zoos have improved in this respect is by conducting visitor studies and evaluation. These types of practices need to continue and expand. A shift from the operational approach to a more intrinsic approach of facilitating adult learning may improve the learning that occurs in zoos and help zoos and visitors understand each other better.

**Further Research**

One of the strenghts of the current study is as a beginning for additional research. It is preliminary research that opens the door for more investigation. Some ideas for further qualitative and quantitative studies follows.

As mentioned in the discussion, Zinn's PAEI needs additional testing and revision. A Philosophy of Education inventory is currently being developed and tested by Zinn (1994). Any revised form of the PAEI can be reapplied to the same subjects here, or a related group, for comparison to this study.

Since this study focused on education directors, a possible companion study would be to administer the PAEI to all education staff. This would be a much larger population
that would yield results to compare with this study. It would also be interesting to compare staff philosophies and their education director's philosophies with their institution's philosophies/mission.

Several respondents indicated that they would have answered differently if their information had been collected in a different manner. They felt a discussion would have been appropriate for measuring philosophies. One idea for a follow-up study is to contact the respondents from this study and conduct telephone interviews to collect additional information and determine how their philosophies differ/compare with their results on the PAEI.

Another possible follow-up study would be to investigate teaching style of adult education directors. This research would look more into the relationship between theory and practice.
LIST OF REFERENCES


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## APPENDIX A  Zinn's Overview of Philosophies of Adult Education

<table>
<thead>
<tr>
<th>Philosophies of Adult Education*</th>
<th>LIBERAL ADULT EDUCATION (CLASSICAL, TRADITIONAL)</th>
<th>BEHAVIORIST ADULT EDUCATION</th>
<th>PROGRESSIVE ADULT EDUCATION</th>
<th>HUMANISTIC ADULT EDUCATION</th>
<th>RADICAL ADULT EDUCATION (RECONSTRUCTIONIST)</th>
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<tbody>
<tr>
<td>PURPOSE</td>
<td>To develop intellectual powers of the mind; to make a person literate in the broadest sense—intellectually, morally, spiritually, aesthetically.</td>
<td>To bring about behavior that will ensure survival of human species, societies, and individuals; to promote behavioral change.</td>
<td>To transmit culture and societal structure; to promote social change; to give learner prescriptive knowledge and problem-solving skills.</td>
<td>To enhance personal growth and development; to facilitate self-actualization.</td>
<td>To bring about, through education, fundamental, social, political, and economic changes in society.</td>
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<tr>
<td>LEARNER</td>
<td>&quot;Renaissance person&quot;: cultured; always a learner; seeks knowledge rather than just information; conceptual, theoretical understanding.</td>
<td>Learner takes an active role in learning, practicing new behavior, and receiving feedback; strong environmental influence.</td>
<td>Learner needs, interests, and experiences are key elements in learning; people have unlimited potential to be developed through education.</td>
<td>Learner is highly motivated and self-directed; assumes responsibility for learning.</td>
<td>Equality with teacher in learning process; personal autonomy; people create history and culture by combining reflection with action.</td>
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<tr>
<td>TEACHER</td>
<td>The &quot;expert&quot;; transmitter of knowledge; authoritative; nearly directs learning process.</td>
<td>Manager; controller; predicts and directs learning outcomes.</td>
<td>Organizer; guides learning through experiences that are educative; stimulates, instigates, and evaluates learning process.</td>
<td>Facilitator; helper; partner; promotes but does not direct learning.</td>
<td>Coordinator; suggests but does not determine direction for learning; equality between teacher and learner.</td>
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<tr>
<td>CONCEPTS/KEY WORDS</td>
<td>Liberal learning; learning for its own sake; rational, intellectual education; general education; traditional knowledge; classical humanism.</td>
<td>Stimulus-response; behavior modification; competency-based; mastery learning; behavioral objectives; trial and error; skill training; feedback; reinforcement.</td>
<td>Problem-solving; experience-based learning; democracy; lifelong learning; pragmatic knowledge; needs assessment; social responsibility.</td>
<td>Experiential learning; freedom; individuality; self-directedness; interactive; openness; cooperation; authenticity; ambiguity; feelings.</td>
<td>Consciousness-raising; praxis; noncompulsory learning; autonomy; critical thinking; social action; deinstitutionalization; literacy training.</td>
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<td>METHODS</td>
<td>Dialectic; lecture; study groups; consensual; critical reading and discussion.</td>
<td>Programmed instruction; contract learning; teaching machines; computer-assisted instruction; practice &amp; reinforcement.</td>
<td>Problem-solving; scientific method; activity method; experimental method; project method; inductive method.</td>
<td>Experiential; group tasks; group discussion; team teaching; self-directed learning; individualized learning; discovery method.</td>
<td>Dialog; problem-solving; maximum interaction; discussion groups.</td>
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<tr>
<td>PEOPLE/PRACTICES</td>
<td>Socrates, Aristotle, Adler, Kalven, Van Doren, Houle; Great Books: Lyceum; Chautauqua; Elderhostel; Center for the Study of Liberal Education.</td>
<td>Skinner, Thonnette, Watson, Tyler; APL (Adult Performance Level); competency-based teacher education; behavior modification programs.</td>
<td>Spencer, Dewey, Bergerich, Sheats, Lindeman, Benson, Blasby; ABE; ESL classes; community education; cooperative extension; schools without walls.</td>
<td>Rogers, Mazzur, Knowles, Bly, Awesome, McKenzie; encounter groups; group dynamics; self-directed learning projects; human rights training; Essalen Institute.</td>
<td>Brunfled, Holt, Kozol, Freire, Goodman, Illish, Ohliger; Freedom Schools; Freire's literacy training; free schools.</td>
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* Chart from Zinn (1990)
APPENDIX B  Questionnaire

What is Your Philosophy of Adult Education in Zoos?
INSTRUCTIONS FOR COMPLETION

The purpose of this questionnaire is to measure your personal philosophy of adult education. The questionnaire has three sections. There are a total of 19 questions that should take less than 30 minutes to answer. All of your responses will remain confidential. No names will be associated with any answers.

Section I covers general information about the educational activities at your zoo.

Section II contains items designed to help identify your philosophical orientation to adult education. Each of the fifteen (15) items in Section II begins with an incomplete sentence, followed by five different options that might complete the sentence. To the right of each option is a scale from 1 to 7, followed by a small letter in parentheses. Please ignore the letters; use only the numbers on the scale. The letters will be used later for scoring purposes.

To complete Section II, read each sentence stem and each optional phrase that completes it. On the 1-7 scale, CIRCLE the number that most closely indicates how you feel about each option. The scale goes from 1 (strongly disagree) to 7 (strongly agree), with a neutral point (4) if you don't have any opinion or aren't sure about a particular option.

Continue through all the items, reading each sentence stem and indicating how strongly you agree or disagree with each of the options. Please respond to every option, even if you feel neutral about it. THERE ARE NO RIGHT OR WRONG ANSWERS.

As you go through the fifteen questions in Section II, respond according to what you generally believe, rather than thinking about a specific project you may be working on. When marking your answers, please think in terms of educational activities for adults.

Section III contains some general questions about you the respondent.

After Section III, there are instructions if you want to self-score your responses from Section II. This self-scoring is OPTIONAL.

INSTRUCTIONS FOR OBTAINING RESULTS

If you would like results of this study and an interpretation of what your scores mean, please mark the box below. If you self-score Section II, make a copy of your scores for your reference when you get the results.
SECTION I.

1) The types of educational activities at my zoo are in the form of:
(circle all letters that apply)

A. Informational signs or gallery labels
B. Animal Demonstrations
C. Lectures
D. Classes
E. Guided Tours
F. Other ____________________________

2) Are any of these educational activities designed specifically for adults?

A. NO

B. YES

If YES, please indicate which activities are designed specifically for adults:
(circle all letters that apply)

A. Informational signs or gallery labels
B. Animal Demonstrations
C. Lectures
D. Classes
E. Guided tours
F. Other ____________________________

3) The objectives and desired learning outcomes of my zoo's educational activities involve:
(circle all letters that apply)

A. Knowledge change
B. Attitude change
C. Behavioral change
D. Skill change
E. Aspiration change
F. Other ____________________________
SECTION II.

1. In planning an educational activity, I am most likely to:

- identify, in conjunction with learners, significant social and political issues and plan learning activities around them.

- clearly identify the results I want and construct a program that will almost run itself.

- begin with a lesson plan that organizes what I plan to teach, when and how.

- assess learners' needs and develop valid learning activities based on those needs.

- consider the areas of greatest interest to the learners and plan to deal with them regardless of what they may be.

2. People learn best:

- when the new knowledge is presented from a problem-solving approach.

- when the learning activity provides for practice and repetition.

- through dialog with other learners and a group coordinator.

- when they are free to explore, without the constraints of a "system."

- from an "expert" who knows what he or she is talking about.
3. The primary purpose of adult education is:

- to facilitate personal development on the part of the learner.  
  
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- to increase learners' awareness of the need for social change and to enable them to effect such change.  
  
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- to develop conceptual and theoretical understanding.  
  
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- to establish the learners' capacity to solve individual and societal problems.  
  
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- to develop the learners' competency and mastery of specific skills.  
  
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4. Most of what people know:

- is a result of consciously pursuing their goals, solving problems as they go.  
  
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- they have learned through critical thinking focused on important social and political issues.  
  
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- they have learned through a trial-and-feedback process.  
  
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- they have gained through self-discovery rather than some "teaching" process.  
  
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- they have acquired through a systematic educational process.  
  
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5. Decisions about what to include in an educational activity:

- should be made mostly by the learner in consultation with a facilitator.  
  1 2 3 4 5 6 7 (d)

- should be based on what learners know and what the teacher believes they should know at the end of the activity.  
  1 2 3 4 5 6 7 (b)

- should be based on a consideration of key social and cultural problems.  
  1 2 3 4 5 6 7 (e)

- should be based on a consideration of the learners' needs, interests and problems.  
  1 2 3 4 5 6 7 (c)

- should be based on careful analysis by the teacher of the material to be covered and the concepts to be taught.  
  1 2 3 4 5 6 7 (a)

6. Good adult educators start planning instruction:

- by considering the end behaviors they are looking for and the most efficient ways of producing them in learners.  
  1 2 3 4 5 6 7 (g)

- by identifying problems that can be solved as a result of the instruction.  
  1 2 3 4 5 6 7 (h)

- by clarifying the concepts or theoretical principles to be taught.  
  1 2 3 4 5 6 7 (f)

- by clarifying key social and political issues that affect the lives of the learners.  
  1 2 3 4 5 6 7 (j)

- by asking learners to identify what they want to learn and how they want to learn it.  
  1 2 3 4 5 6 7 (i)
7. As an adult educator, I am most successful in situations:

- that are unstructured and flexible enough to follow learners' interests.

- that are fairly structured, with clear learning objectives and built-in feedback to the learners.

- where I can focus on practical skills and knowledge that can be put to use in solving problems.

- where the scope of the new material is fairly clear and the subject matter is logically organized.

- where the learners have some awareness of social and political issues and are willing to explore the impact of such issues on their daily lives.

8. In planning an educational activity, I try to create:

- the real world--problems and all--and to develop learners' capacities for dealing with it.

- a setting in which learners are encouraged to examine their beliefs and values and to raise critical questions.

- a controlled environment that attracts and holds the learners, moving them systematically toward the objective(s).

- a clear outline of the content and the concepts to be taught.

- a supportive climate that facilitates self-discovery and interaction.
9. The learners' feelings during the learning process:

- must be brought to the surface in order for learners to become truly involved in their learning.
- provide energy that can be focused on problems or questions.
- will probably have a great deal to do with the way they approach their learning.
- are used by the skillful adult educator to accomplish the learning objective(s).
- may get in the way of teaching by diverting the learners' attention.

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10. The teaching methods I use:

- focus on problem-solving and present real challenges to the learner.
- emphasize practice and feedback to the learner.
- are mostly non-directive, encouraging the learner to take responsibility for his/her own learning.
- involve learners in dialog and critical examination of controversial issues.
- are determined primarily by the subject or content to be covered.

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11. When learners are uninterested in a subject, it is because:

- they do not realize how serious the consequences of not understanding or learning the subject may be.  
  1 2 3 4 5 6 7 (e)

- they do not see any benefit for their daily lives.  
  1 2 3 4 5 6 7 (c)

- the teacher does not know enough about the subject or is unable to make it interesting to the learner.  
  1 2 3 4 5 6 7 (a)

- they are not getting adequate feedback during the learning process.  
  1 2 3 4 5 6 7 (b)

- they are not ready to learn it or it is not a high priority for them personally.  
  1 2 3 4 5 6 7 (d)

12. Differences among adult learners:

- are relatively unimportant as long as the learners gain a common base of understanding through the learning experience.  
  1 2 3 4 5 6 7 (f)

- enable them to learn best on their own time and in their own way.  
  1 2 3 4 5 6 7 (i)

- are primarily due to differences in their life experiences and will usually lead them to make different applications of new knowledge and skills to their own situations.  
  1 2 3 4 5 6 7 (h)

- arise from their particular cultural and social situations and can be minimized as they recognize common needs and problems.  
  1 2 3 4 5 6 7 (j)

- will not interfere with their learning if each learner is given adequate opportunity for practice and reinforcement.  
  1 2 3 4 5 6 7 (g)
13. Evaluation of learning outcomes:

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- is not of great importance and may not be possible, because the impact of learning may not be evident until much later.

- should be built into the system, so that learners will continually receive feedback and can adjust their performance accordingly.

- is best done by the learners themselves, for their own purposes.

- lets me know how much learners have increased their conceptual understanding of new material.

- is best accomplished when the learner encounters a problem, either in the learning setting or the real world, and successfully resolves it.

14. My primary role as a teacher of adults is to:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Strongly Agree</th>
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- guide learners through learning activities with well-directed feedback.

- systematically lead learners step-by-step in acquiring new information and understanding underlying theories and concepts.

- help learners identify and learn to solve problems.

- increase learners' awareness of environmental and social issues and help them learn how to have an impact on these situations.

- facilitate, but not to direct, learning activities.
15. In the end, if learners have not learned what was taught:

- the teacher has not actually taught.  
  1 2 3 4 5 6 7 (a)

- they need to repeat the experience, or a portion of it.  
  1 2 3 4 5 6 7 (b)

- they may have learned something else which they consider just as interesting or useful.  
  1 2 3 4 5 6 7 (d)

- they do not recognize how learning will enable them to significantly influence society.  
  1 2 3 4 5 6 7 (e)

- it is probably because they are unable to make practical application of new knowledge to problems in their daily lives.  
  1 2 3 4 5 6 7 (c)

SECTION III.

16) How long have you been head of the education department at this zoo?  
(circle one: months  years)

17) How many total years experience do you have working in zoos and other similar settings?  
__________ years

18) What is your academic background?  
(degree and field, example: B.S. Biology, M.A. Education)

Undergraduate  ________________________________

Graduate  ________________________________

19) Have you had any professional or graduate training in adult education?  

NO

YES if yes, please describe ________________________________

__________________________________________________________

continued on next page >>>
INSTRUCTIONS FOR SCORING SECTION II

Scoring this section is optional. After completing the questionnaire, please return to your responses in Section II and find the small letter in parentheses to the far right of each rating scale. This is a code letter for scoring.

First, transfer each of your numbers on the rating scale to the matrix included. For item #1, if you circled a 5 for option (e), write the number 5 in the box for 1(e). Item #1 has five different responses: e, b, a, c, d. Record all five of your responses for item #1, then go on to #2 and continue through #15. When you finish, there will be numbers in every other square in the matrix (like a checkerboard).

**FINAL SCORE:**

\[
\begin{align*}
 a + f &= L \\
b + g &= B \\
c + h &= P \\
d + i &= H \\
e + j &= R
\end{align*}
\]

Note: final score should be no higher than 105; nor lower than 15.

Now, add all the numbers on the matrix by columns, from top to bottom, so you have ten separate subtotals. None of these subtotals should be higher than 56; nor should any be lower than 7. For your FINAL SCORE, add the subtotals from the columns as shown in the box above.
Scoring Matrix

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COMMENTS

Please use the remaining space to comment on the usefulness for you of examining your personal philosophy of adult education.
Please return the questionnaire by **August 15** in the stamped, self-addressed envelope provided.
If you have any questions or concerns, please call Jason Diem at (614) 292-8436.

Community Development
Ohio State University Extension
2120 Fyffe Road, Room 14
Columbus, OH 43210-1010

Thank you for participating in this study!
APPENDIX C Lorraine Zinn's Letter of Permission

PERMISSION TO USE COPYRIGHTED MATERIAL

As the sole owner of the copyright to this material, I hereby
grant permission for Jason Diem to reproduce in its entirety,
and to use for purposes of gathering research data for a
Masters thesis, the Philosophy of Adult Education Inventory (c)
(August, 1983, pp. 1-9). I further grant permission for Mr.
Diem to cite portions of this assessment instrument, as well
as selected segments from the following documents in writing
the thesis:

Zinn, L. M. (1983.) Development of a valid and reliable
instrument to identify a personal philosophy of
adult education. Dissertation Abstracts
International, 44, 1667A-1669A. (University
Microfilms No. DA 8323851).

Zinn, L. M. (Reprinted 1991.) Identifying your
philosophical orientation, in M. Galbraith (Ed.),
Adult Learning Methods (pp. 39-77). Malabar, FL:

\[Signature\]  \[Signature\]
Lorraine M. Zinn, Ph.D.  Date
Questionnaire Content Validation Form

DIRECTIONS: STARTING TIME: ____________
ENDING TIME: ____________

Mark your starting time above and then complete the enclosed questionnaire "What is Your Philosophy of Adult Education in Zoos?" Please score your answers from Section II (note how long it takes you to score it) and read the interpretation provided (What your Section II scores mean). After completing the questionnaire, scoring Section II and interpreting your scores, please return to this form, mark your ending time and answer the following questions:

1) How long did it take you to complete the questionnaire?

_________________ minutes

2) Approximately how long did it take you to score your answers from Section II?

_________________ minutes

3) Please comment on the clarity of the instructions for these sections:

A. Completion ____________________________________________________________

B. Results ______________________________________________________________

C. Scoring ______________________________________________________________

D. Interpretation _________________________________________________________

4) Write your scores from the Section II:

L ___ B ___ P ___ H ___ R ___

5) Please comment on the clarity of the language used in the questionnaire noting any specific words or items of concern

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________
6) In addition to any suggestions you have made so far, what else do you think ought to be added, changed or deleted on this questionnaire?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

7) Please comment on the usefulness for you of examining your philosophy of adult education (i.e. how is the information about your philosophy helpful to you as an adult educator?)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

THANK YOU FOR YOUR INPUT!

Please use the pre-addressed, stamped envelope to return this form and your completed questionnaire by July 22 to:

Jason Diem  
Community Development  
Ohio State University Extension  
2120 Fyffe Road, Room 14  
Columbus, OH 43210-1010  
(614) 292-8436
APPENDIX E  Field/Pilot Test Cover Letter

July 18, 1994

Dear Aquarium Education Director:

Thank you for agreeing to participate in this field test examining the questionnaire "What is Your Philosophy of Adult Education in Zoos?" This questionnaire is part of a study involving all American Zoo and Aquarium Association (AZA) member institutions. The study's purpose is to measure education directors' philosophies of adult education. In this study, the word "zoo" represents any nonformal educational setting such as zoos, aquaria or museums.

Enclosed is a draft copy of the questionnaire and a validation form with directions on how to proceed with the field test. Please sit back and enjoy a cup of coffee on me, take some time to reflect on your philosophy of adult education and complete the questionnaire and validation form.

Your participation in this field test is very important. You will help determine the suitability and appropriateness of the questionnaire for zoos and aquaria. The intention of this study is to provide zoo educators with a way of examining their beliefs and philosophies concerning their educational practices.

You may be assured of complete confidentiality. The questionnaire has an identification number on the front cover for mailing purposes only. This is so we can check your name off the mailing list when you return your questionnaire. Your name will never be placed on the questionnaire.

All AZA member aquaria are involved in this field test. If the response rate is high and the validity/reliability of the results are also high, the field test data will be incorporated into the final study. The results of the final study will be made available to you. There is a place on the questionnaire to mark if you want to receive a copy of the results.

Please return the questionnaire and validation form in the stamped, self-addressed envelope provided by July 25. If you have any questions or concerns, please call me at (614) 292-8436. Thank you again for your assistance!

Sincerely,

Jason J. Diem
Graduate Research Associate

enclosures
APPENDIX F  Zoo Survey Cover Letter

August 5, 1994

Dear Zoo Education Director:

As professional educators, it is important that you have the opportunity and means to reflect on your beliefs about your educational practices. The enclosed pamphlet gives you this chance. The pamphlet is part of a study involving all American Zoo and Aquarium Association (AZA) member institutions. The study's purpose is to measure zoo and aquarium education directors' personal philosophies of adult education. Information on one's philosophy can help in the planning, conducting and evaluation of educational activities. This study is being conducted under the direction of Drs. Joseph E. Heimlich and Gary W. Mullins of The Ohio State University School of Natural Resources.

Your participation in this study is very important. Because this study involves all AZA institutions, each completed questionnaire is essential to produce accurate results. With your participation, this study has the potential to provide the field of zoo and aquarium education with a meaningful set of data. Please sit back and enjoy a cup of coffee on me, take some time to reflect on your philosophy of adult education and complete the questionnaire.

You may be assured of complete confidentiality. The questionnaire has an identification number on the front cover for mailing purposes only. This is so your name can be checked off the mailing list when you return your questionnaire. Your name will never be placed on the questionnaire.

The results of this study will be available to you. There is a place on the questionnaire to mark if you would like to receive a copy of the results. The questionnaire itself can be self-scored if you so desire. Instructions for this optional scoring are included.

Please return the questionnaire by August 15 in the stamped, self-addressed envelope provided. If you have any questions or concerns, please call Jason Diem at (614) 292-8436.

Thank you for your assistance!

Sincerely,

Jason J. Diem  Lynne Hardie Baptista
Graduate Research Associate  Director of Education
The Ohio State University  American Zoo and Aquarium Association

enclosure
APPENDIX G  Precard

Dear Zoo Education Director:  

In a few days you will receive a pamphlet with questions about your philosophy of adult education in zoos. This questionnaire is part of a study involving education directors from all American Zoo and Aquarium Association (AZA) institutions.

Your participation in this study is very important. With your help, this study has the potential to provide the field of zoo and aquarium education with a meaningful set of data. This questionnaire will also allow you to reflect on your own educational practices and beliefs.

Jason J. Diem  
Graduate Research Associate

---

APPENDIX H  Reminder Postcard

Dear Zoo Education Director:  

Aug 12, 1994

Last week a questionnaire was sent to you seeking your philosophy of adult education in zoos. This is part of a study involving all education directors from AZA institutions.

If you have already completed and returned the questionnaire, thank you! If not, please do so today. Your responses are extremely important to the quality of the study.

If by some chance you did not receive the questionnaire or it was misplaced, please call me (614-292-8436) and I will mail you another one today.

Jason J. Diem  
Graduate Research Associate
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<th>TABLE 12 Correlation Coefficients for Education Directors' Demographic Data and their PARI Scores</th>
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2-tailed significance

* is printed if a coefficient cannot be computed.