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Next of Kin: A Compassionate Curriculum

Rachel Jacqueline Fouts-Carrico

NEXT OF KIN

A COMPASSIONATE CURRICULUM

A Thesis Project

Presented to

The Graduate Faculty

Central Washington University

In Partial Fulfillment

of the requirements for the Degree

Master of Education Administration

Supervision and Curriculum

By

Rachel Jacqueline Fouts-Carrico

August, 2001

ABSTRACT

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Free-living and captive chimpanzees are faced with a struggle to survive. Those chimpanzees that are free-living are faced with extinction through habitat destruction and poaching. Many of the chimpanzees living in captivity are faced with poor treatment, dehumanizing experiments and inhumane living condition.

With limited curricula on chimpanzees and animal experimentation, the author was given the task to develop a curriculum focusing on these two subjects. The curriculum will be focused on middle level students (6^{th}, 7^{th}, 8^{th}, and 9^{th} grade) with activities informing, educating and enlightening the students on issues concerning free-living and captive chimpanzees as well as all animals used in experimentation.

ACKNOWLEDGEMENTS

Thank you to Brian, my husband, without your support and 'Mr. Mom' time the completion of my project would not have been possible. To my family, whose support and guidance was influential and enlightening throughout my growth as a fellow-animal.

Much appreciation goes to all those at CHCI and NEAVS who helped during the development process of the curriculum. Especially to, Heidi Tourneaux, Debbi Fouts, Patty Bury, Ryan McDowell, Jessica Martinson, Theo Capaldo, Melinda Everett and Ann Stauble.

TABLE OF CONTENTS

BRIEF – Page 1

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Courses presented for the Master's degree

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CHAPTER ONE
BACKGROUND OF THE PROJECT

Introduction

"If the beasts were gone, men would die from a great loneliness of spirit. For whatever happens to the beasts, soon happens to man. All things are connected."
Chief Seattle, 1854

Researchers have found that it is not only humans who have culture, so do chimpanzees! When attempting to teach understanding and compassion for chimpanzees the bridging of the species gap becomes important.

A book entitled Chimpanzee Cultures by Wrangham, McGrew, De Waal, and Heltne (1996) includes studies of free-living chimpanzees found in the African Tai Forest, Mahale Mountains, Gombe Stream Reserve and other locations. The studies identified certain behaviors common to different groups of chimpanzees while other behaviors were found to be unique to one group. The studies not only identified different cultures within different groups of chimpanzees but also found similarities between the human and chimpanzee cultures. Goodall (1986) and McGrew (1996) along with other researchers have suggested that there are strong similarities in tool use, communiative gestures and modeling a skill for the younger generation.

While studies of both free-living and captive chimpanzees have provided insight and more understanding, there still exists a gap of knowledge between the two species and the misuse and abuse of chimpanzees continues. Free-living chimpanzees are faced with habitat destruction and bushmeat trade/poaching. Poachers hunt adult chimpanzees and when they kill a mother chimpanzee with an infant they will generally sell the infant to a zoo, for entertainment or businesses (http://goldray.com/bushmeat/).

Much of the research on captive chimpanzees is both invasive and detrimental to the species. Diamond (1992) states that chimpanzees share 98.4% the same genetic material as humans. Because of this genetic closeness many captive chimpanzees are

faced with a life of imprisonment and medical experimentation. For example in an attempt to find a cure, chimpanzees have been infected with Hepatitis and HIV in order to study its effects on their bodies. However as Fouts and Mills (1997) point out the chimpanzees immune system does not respond to all diseases in the same way as a humans immune system. Operations, injections of infectious materials, biopsies and frequent anesthesia which does not lead to death often leads to a lifetime of incarceration since the chimpanzees are infectious and cannot be reintroduced to other chimpanzee groups.

Experimentation on all animals can be argued against from a variety of perspectives. Biomedical research has been a long-standing tradition in our society because it is believed that non-human animals are able to provide us with information that will help to save humans from disease, Rollins (1990). Although animals are believed by the researchers to be adequate, they are an imperfect substitute for humans, Greek (2000). Many drugs that have been tested on animals have been found to be deadly, but not to humans and the opposite is also true (2000).

The five chimpanzees at the Chimpanzee and Human Communication Institute (CHCI) Central Washington University (CWU) has helped educate the public on the intelligence of chimpanzees. Washoe, the first chimpanzee to acquire American Sign Language (ASL), her adopted son Loulis, as well as Moja Tatu and Dar communicate with each other and humans with ASL(Gardner, Gardner, Van Cantfort, 1989). This ability to communicate has allowed humans a chance to learn more about the relationships between this unique family as well as give an inside look at some of their chimpanzees' private thoughts. The CHCI is a sanctuary for these five chimpanzees and all the research conducted there is non-invasive and non-abusive. The five chimpanzees at the CHCI help educate the public not only about their own lives but also the sanctity of the lives of all chimpanzees through educational Chimposiums.

There is little, if any curricula that supports or educates students on humane and inhumane treatment of chimpanzees and other animals. There are published curricula covering primates and the jungle but none that go into detail regarding chimpanzees, their behavior and issues surrounding them and their culture. Some humane curricula exists that focuses on caring for animals, increasing compassion for animals, but none covers the issue of vivisection.

Purpose of the Project

The purpose of the project was to design and develop a curriculum that would educate middle level students on captive and free-living chimpanzees. The curriculum also deals with issues surrounding the use of animals in experimentation.

Limitations

The following limitations are acknowledged in relation to the project:

1. The curriculum was designed to incorporate the parameters and scope of the New England Anti-Vivisection Society (NEAVS) grant.
2. The curriculum was designed to be used in conjunction with the Chimpanzee and Human Communication Institute (CHCI) in Ellensburg, Washington.
3. The curriculum was specifically designed for students in grades six, seven, eight and nine.
4. The curriculum reflects a bias on the issues of animal experimentation and captive chimpanzees.

Definition of Terms

Significant terms used in the context of this project have been defined as follows:

1. Anti-Vivisection: Opposing the act or practice of operating on live animals for scientific study or experimentation. (Adapted from: *A History of Compassion 1895-2000.* A publication from NEAVS (New England Anti-Vivisection Society).)

2. Biomedical Research: The study and application of the principals of the natural sciences. (Adapted from: http://www.curedisease.com/)

3. Captive Chimpanzees: Chimpanzees who have been taken from their natural environment or born into captivity (Adapted from: Fouts & Mills, 1997).

4. Chimposiums: Educational symposiums for the public based on information generated Project Washoe and the five chimpanzees at CHCI. (D. Fouts, personal communication, February, 2001)

5. CHCI: The Chimpanzee and Human Communication Institute is a sanctuary for five adult chimpanzees who communicate with humans and eachother using American Sign Language. (www.cwu.edu/~cwuchci/)

6. Free-living Chimpanzees: Chimpanzees who are born in Africa and live their life in their natural environment (Adapted from: Fouts & Mills, 1997).

7. Friends of Washoe (FOW): A non-profit organization which cares for the five chimpanzees at the Chimpanzee and Human Communication Institute (CHCI) at Central Washington University in the State of Washington. (Adapted from: http://www.cwu.edu/~cwuchci/)

8. Humane Community: A community where people and animals are cared for and respected on their own terms and not used in experimentation (Adapted from: Beckoff, 2000).

9. Humane Education: Education that promotes respect and kindness towards all people, all animals and the earth on which we live. (Adapted from: http://www.e4ars.org/)

10. Middle Level Students: Students in grades six, seven, eight and nine.

11. Non-invasive: No physical or emotional harm inflicted upon non-human animals during research. (D. Fouts, personal communication, February, 2001)

12. Pan Troglodytes: The scientific clarification for chimpanzees. Pan (genus), Troglodytes (species). (Adapted from: Goodall, 1986)

13. Sanctuary: A safe haven where chimpanzees will never be used in any invasive research for the rest of their lives. (D. Fouts, personal communication, February, 2001)

14. Taxonomy: A branch of science that is centered in identification and clarification (Adapted from: McGrew, 1996).

15. Vivisection: The practice of operating on living animals for scientific study or experimentation. (Adapted from: www.neavs.com)

CHAPTER TWO
REVIEW OF RELATED LITERATURE

Introduction

The purpose of the project is to design and develop a curriculum that would educate middle level students on captive and free-living chimpanzees. The curriculum will also deal with issues surrounding the use of animals in experimentation.

The research and literature in Chapter 2 was identified through related texts and computer searches. Specifically, the computer search included search engines for the Internet including Google, Altavista, GoTo and Excite. Related articles were also found on Proquest through the Central Washington University library on-line.

The review of literature and research summarized on the following pages has been organized to address:

1. Free-living Chimpanzees
2. Captive Chimpanzees
3. Chimpanzee Language and the Chimpanzee and Human Communication Institute
4. Animal Experimentation
5. Summary

Free-Living Chimpanzees

Chimpanzees are classified as Pan Troglodytes. They are a member of the Primate order, the Anthropoidea suborder, and the Catarrhini infraorder. Chimpanzees are closer genetically to humans than they are to gorillas (Sibley & Ahlquist, 1984). Diamond (1992) states that the genetic similarity between chimpanzees and humans is 98.4% whereas the genetic similarity between chimpanzees and gorillas is 97.7%. There are at least three regional subspecies of chimpanzee: Pan troglodytes verus (western Africa), Pan troglodytes troglodytes (central Africa), and Pan troglodytes schweinfurthii (eastern Africa). Variation occurs within subspecies, though, the differences in size and

other characteristics often cannot be connected to subspecies classification (Wrangham, de Waal, & McGrew, 1994).

Chimpanzees live in groups ranging in size from 20-120 individuals (Nishida, 1968; Goodall, 1986) and have a dynamic fission-fusion social organization, (The members of the group separate into subgroups that travel independently with a common home range) (Dolhinow and Fuentes, 1999).

Chimpanzees living in different areas have diverse cultural traditions (Wrangham, de Waal, and McGrew, 1994). These behaviors include cooperative hunting of colobine monkeys, nut cracking in West Africa (Boesch and Boesch-Acherman, 2000) and termite fishing in Tanzania (McGrew, 1992). These behaviors are passed down through generations and some of them take up to five years to master (Boesch and Boesch, 1990).

Goodall (1986) states that strong social bonds form within chimpanzee communities. In addition, alliances and coalitions that are formed by the males influence many dominance relationships. Chimpanzees perform aggressive displays, which are a combination of several threat behaviors (piloerect hair, bipedal or quadrapedal swaggering, charging, foot stomping, branch flailing, loud vocalizations, etc.). Chimpanzees have been observed to console another individual who participated in a conflict (de Waal, 1993).

Chimpanzees have a wide range of cognitive abilities. In the wild, chimpanzees use tools to acquire food items and operate in complex social structures. Wild chimpanzees have also been observed using gestures to communicate with one another. "At Gombe, a mother reaches back with a characteristic *climb-aboard* gesture, which signals her infant to get onto her back." (Goodall, 1986, p. 144)

A meta-analysis "Chimpanzee Cultures" (Whiten, Goodall, McGrew, Nishida, Reynolds, Sugiyama, Tutin, Wrangham, and Boesch, 1999) identified behavior patterns

across long-term chimpanzee study sites in Africa. This study found relationships between the behavioral patterns of the different groups of chimpanzees. Of the seven study sites, six were found to have at least one behavior pattern that was unique to their group (Whiten, et. al, 1999).

The habitat of wild chimpanzees shows their flexibility in adaptation to many different environments. Wild chimpanzees range in a series of discontinuous populations along the equatorial belt of Africa from the dry savannas of far west Africa, through the rain forests in central Africa, to the montane forests and dry woodland-savanna mosaics of east Africa (Fruth, Hohmann, and McGrew, 1999; Goodall, 1986). Chimpanzee habitat ranges from Guinea to Ghana through Nigeria, Cameroon, Gabon, Congo Republic, Central African Republic, Democratic Republic of Congo, Uganda, and Tanzania (Rowe, 1996). Wild chimpanzees range across large areas on the ground as well as traveling arboreally. Goodall (1986) has observed the chimpanzees at Gombe Stream Reserve in Tanzania to travel from 1 to 10 km each day in search of food.

Threats exist to the free-living chimpanzee. The bushmeat trade, the killing of chimpanzees, gorillas and bonobos for commercial meat (http://bushmeat.net, 2000) is effecting their populations. "People pay a premium to eat more great apes each year than are now kept in all the zoos and laboratories of the world" (http://bushmeat.net, 2000). Approximately 4,000 chimpanzees are killed illegally every year by poachers to meet the demand of the bushmeat trade (http://bushmeat.net, 2000).

Due to the encroachment of humans, the range of habitat has diminished considerably since the early 1900s. The historical range of chimpanzees went as far east as Senegal to as far west as Tanzania (Heltne, Marquardt, 1989). At the turn of the century, the population of chimpanzees was approximately 2 million (1989). A census conducted in 1999 identified between 100,000 to 150,000 free-living chimpanzees the total number left (Cincotta, Engelman, 1999). Cincotta and Engelman (1999) also share

that with these rapidly declining numbers, the status of the free-living chimpanzee is identified as endangered. Not only are free-living chimpanzees in danger, captive chimpanzees are also faced with threats to their welfare.

Captive Chimpanzees

Although chimpanzees are 98.4% genetically similar to humans (Diamond, 1992) this genetic closeness still carries with it similarities and differences between the two species. Some of these similarities are listed below.

- Both have large brains that result in increased intelligence.
- Both chimpanzees and humans frequently have single births (they will also have twins) and have a high maternal investment in their offspring.
- As primates, humans and chimpanzees both have a reliance on learned behavior.
- Both chimpanzees and humans have long childhoods.
- Both also have opposable thumbs, see color, and have binocular stereoscopic vision (helps with depth perception).
- Both chimpanzees and humans are capable of communicating through language.
- Chimpanzees and humans both have complex social and cultural structures. (Beals, Hoijer, 1963; Johnston, Selby, 1978)

Even with the genetic closeness, the 1.6% can make a considerable difference. Some of the differences are:

- Chimpanzees are much stronger than humans, 8-10 times stronger in their arms alone. (5-7 times stronger overall) (Rowe, 1996).
- Chimpanzees have denser bones (so they sink in water) and much tougher skin (Rowe, 1996).
- Chimpanzees are not equipped physically for vocal speech; their larynx is higher and they have a thinner tongue. Also, the majority of their vocalizations are controlled by the limbic system, which is more emotionally rooted. (Fouts, Mills, 1997)
- Chimpanzees do respond to many diseases like humans do. With the exception of HIV, they can be infected but never develop AIDS (Samglik, 1999).

Chimpanzees pay a price that is sometimes fatal because they are our closest relatives. Chimpanzees in captivity are placed in situations for human need, desire and entertainment. Chimpanzees that live in captivity can be found in biomedical research facilities, zoos, the entertainment industry, sanctuaries and even private homes. There are approximately 2000 chimpanzees that live in captivity in the United States (Cincotta,

Engelman, 1999), 1700 live in Biomedical research facilities (Bolognesi, Butler, Davies, First, Flesness, Fritz, Fultz, Theran, Williams-Blangero, Russow, 1997), and the other 300 live in Zoos or Sanctuaries.

Entertainment

Many of the chimpanzees seen on TV are infants or younger than 3-4 years old (who should still be with their mother). At this age they are easy to manipulate. As the chimpanzees in entertainment age, the human who works with them will use physical force to get them to do what is expected and to insure the chimpanzees' undivided attention. Many adult chimpanzees in entertainment have had their teeth knocked out with crowbars or pulled to prevent major injury to their trainers from bites. (www.primates-online.com, 1999-2000)

The facilities where the chimpanzees are kept consist of small cages that are often enclosed in wooden boxes for transport; they are usually isolated from other chimpanzees in their cages. Often they will have to sit in their own excrement for long periods of time before they reach their destination. (www.faunafoundation.org, 1999)

Biomedical Research

Chimpanzees that live in Biomedical research facilities live lives of isolation and fear. They are subjected to treatment that is inhumane and invasive. Even though chimpanzees are an endangered species, their captive relatives are only classified as threatened; thus it is legal to conduct invasive tests on them and to breed them. (Fouts, Mills, 1997)

Most chimpanzees who live in this restricted environment show signs of stress and deprivation. They cause self-inflicted wounds, they may develop stereotypies - continual rocking, become very withdrawn, and even throw feces. (www.faunafounation.org, 1999)

The cages that the chimpanzees live in are supposed to be at least 5'x 5' x 7' (www.access.gpo.gov/nara/cfr/waisidx/9cfr3.html, 1999). They may even be suspended

off the ground, so the chimpanzees living in the cages do not even have many opportunities to touch the ground. (The cages are suspended off the ground so it is easier for the animal technicians to clean excrement, etc.) The facilities are very sterile, chimpanzees do not have any or much contact with other chimpanzees, they may see others through the cages, but rarely share cages with each other. The infant chimpanzees born to mothers in biomedical research are often taken away shortly after birth and are used for research (Fouts, Mills, 1997).

Due to their genetic closeness, chimpanzees are considered a prime specimen to test diseases. The 1.6% difference between chimpanzees and humans (Diamond, 1992) is a much bigger gap than researchers indicate. Greek and Greek (2000) argue that chimpanzees who are infected with disease (like Hepatitis and HIV) are not yielding accurate results to help humans because their immune system does not respond to diseases as a human's immune system would (2000). In essence, chimpanzees are faced with the trauma of the infection, liver biopsies, frequent anesthesia and then are incarcerated forever because they cannot be reintroduced to chimpanzee groups that are not infected (www.faunafoundation.org, 1999). Chimpanzees are also tranquilized to conduct punch liver biopsies, lymph node and bone marrow biopsies (www.faunafoundation.org, 1999). Often times the findings of these studies are inconclusive and impractical (Greek, Greek, 2000).

If a chimpanzee is to be used and soon to be anesthetized, there are often signs that warn the chimpanzee. There tend to be two doors to every barrack. From one door comes the food; if a chimpanzee is being tested that day they will not receive breakfast. From the other door come the animal technicians in surgical masks and jackets. The chimpanzee is then taken down (anesthetized with dart guns) so they can be taken out of their cage and transported to the laboratory. Even though the chimpanzee is anesthetized, they are still able to hear what is going on and what is being said about

them. This causes tremendous stress. (G. Grow, personal communication, October, 1997)

Often if a chimpanzee is not being used in a procedure, the chimpanzee is referred to by the name he/she was given. If the chimpanzee is being used for a medical procedure or study, he/she is referred to by numbers they have been assigned. (www.faunafoundation.org, 1999) This helps to separate the chimpanzee into something more like a *thing* than a *being*.

While living this life of extreme stress and isolation they often are not given objects to enrich their lives or problems to help them exercise their mind. Chimpanzees are an intelligent species, and just like humans who are deprived of their social, intellectual and physical needs they exhibit severe anti-social behavior. (Fouts, Mills, 1997)

Zoos

Zoos defend their exhibits as a form of educating the public on the endangered status of animals in the wild, and to give the public an opportunity to see examples of animals whose relations are free-living. (www.oregonzoo.org/ScienceResearch/main.htm, date unknown)

AZA accredited zoos also breed to create a captive population (not only chimpanzees but also many other endangered animals found in zoos) for the Species Survival Plan (SSP). They justify the breeding by stating that they are maintaining gene pools so that endangered species may be preserved for future generations. It is important to be aware that every SSP program produces a surplus (www.oregonzoo.org /ScienceResearch/main.htm, date unknown). The programs can be found to focus on "the species" and forget about "the individual." Unfortunately, most of the surplus animals do not stay protected and nurtured in the communities where they are born. Often ending up in circuses, roadside zoos, or Hollywood films. (Derby, Swart, date unknown)

When comparing free-living chimpanzees to those in captivity, you will observe different frequencies of behavior shown in the two chimpanzees. Many chimpanzees in zoos and captivity will show the following examples of behavior with more frequency, e.g. over grooming (bare skin patches on arms and legs), stereotypies, spitting and feces throwing. (Erwin, Maple, Mitchell, 1979)

Free-living chimpanzees travel for 60% of their day and can cover as much as 10 kilometers in that day. They also take time to forage for a variety of foods, group and self-grooming, playtime with children and friends and napping. Throughout the day free-living chimpanzees can be faced with many challenges, anywhere from defending their territory against strangers, crossing bodies of water, to dealing with conflicts within the group. (Dolhinow, Fuentes, 1999)

Chimpanzees in zoos aren't always given the opportunity to experience the situations that their free-living relatives experience. They aren't given facilities that enable them to move any distance, problem solve, or forage for their own food.

Even though some zoos are improving their facilities you can still see chimpanzees and other animals caged in inhumane conditions. They may be isolated in single cages, or placed in outdoor areas surrounded with cement and separated by moats with water in them. Moats can be extremely dangerous. Rowe (1996) states that, chimpanzees have very dense bones and because of this are not able to float in water. If a chimpanzee falls into a moat, they will not just be injured, they will drown. (www.greatapeproject.org/cgi-bin/archive.cgi, date unknown)

The zoos that have improved their facilities have tried to incorporate enrichment into the chimpanzee's area. One zoo, The Detroit Zoo, is even taking a step further, and not only improving their environments; they are also not importing animals who were once free-living. The Detroit Zoo is trying to celebrate and save wildlife. With this philosophy the zoo has chosen to adopt animals who were once raised as exotic pets and/or have

been retired from entertainment. The zoo director, Dr. Ron Kagan, believes that zoos need to believe in the ethical treatment of animals, and act upon this belief (Meriwether, 2000). Unfortunately, not all zookeepers and administrators believe in preserving a free-living species.

Sanctuaries

Many sanctuaries have been developed out of necessity. Chimpanzees who were once pets or in entertainment find themselves as adults in biomedical research. Chimpanzees are bred and their offspring are raised for the sole purpose of vivisection and other forms of medical testing. (www.faunafoundation.org, 1999)

Once chimpanzees are no longer used for testing they are still condemned to a life behind bars. They are deprived of natural light, contact with other chimpanzees and are still subjected to stressful situations. The life of a chimpanzee in biomedical research is never chimp-friendly. (Fouts, Mills, 1997)

Thanks to animal welfare organizations and donations from a concerned public, sanctuaries have been built for the permanent retirement of chimpanzees from biomedical research. The key word to keep in mind is *permanent*, since not all sanctuaries are dedicated to this belief. It is important to be aware of the board of directors for each sanctuary. These sanctuaries that do not support permanent retirement will often take the chimpanzees out of the sanctuaries and place them back into biomedical research facilities for further research and testing. Semi-permanent retirement also includes those sanctuaries who use their chimpanzees for entertainment purposes.

Sanctuaries which support "full-retirement" can be locations which provide a quality of life many chimpanzees have not experienced. "Full-retirement" situations can give the chimpanzees who live in the sanctuary different forms of enrichment, health care and a nurturing environment.

Chimpanzees in captivity are not only used for invasive research. They have also been used in other forms of behavioral research as well. Some of the chimpanzees in behavioral research are found in biomedical research facilities as well as in sanctuaries. Among this research, comes the question of the use of language. Chimpanzees have been able to bridge the species gap through the acquisition of a human language.

Chimpanzee Language and The Chimpanzee and Human Communication Institute

The theory of ape language research has been considered since the 1600s. In 1699, Edward Tyson a well-known English anatomist performed the first dissection on a chimpanzee. His dissection "revealed an anatomy that resembled *man in many of its parts, more than any ape-kind, or any other Animal in the world.*" The Brain and the laryngeal region looked similar to humans, so Tyson concluded that chimpanzees could talk (Fouts, Mills, 1997, p. 50).

In 1925, Robert Yerkes found that his chimpanzees could understand spoken English. He believed that they could comprehend 100-200 words but they never imitated his sounds. They were great masters at reproducing what they saw but not what they heard. With these observations Yerkes resolved that if an animal doesn't imitate sounds, they "cannot be reasonably expected to talk" (Fouts, Mills, 1997, p. 26).

Winthrop and Luella Kellogg were the first to cross foster a chimpanzee. They raised Gua along with their son Donald. This study was to follow the chimpanzees' ability to acquire tool use and behaviors from Humans. The study was suddenly terminated when Donald began acquiring more chimpanzee sounds than Gua was acquiring human sounds (Fouts, Mills, 1997).

In 1947, Keith and Kathy Hayes made an attempt to teach Vicki vocal speech. What resulted were four voiceless approximations of the words: Mama, Papa, cup and up. The

words were very difficult to understand due to the heavy chimp accent (Fouts, Mills, 1997).

Allen and Beatrix Gardner followed the research on ape language and tried to learn from the past experiences. In their studies of chimpanzees they found physical and behavioral characteristics that were not conducive to vocal language. Their tongue is thinner and they have a higher larynx (which make pronunciation of vowels difficult). For the most part, chimpanzees are very quiet animals and the vocalizations that are used are difficult to control. The limbic system generates most of the sounds chimpanzees make. (Gardner, Gardner, Van Cantfort, 1989)

The Gardners adopted Washoe, an infant chimpanzee on June 21, 1966. The Gardners proposed the possibility of a chimpanzee acquiring sign language. This was to be conducted through a cross-fostering project. Washoe was to be raised as if she was a deaf human child, being immersed in American Sign Language (ASL) (Gardner, et al, 1989). All communication between Washoe and her human caregivers was through the use of ASL. They used a high chair for meals, played with dolls, drew pictures, took naps and even learned to use the "potty". (D.H. Fouts, personal communication, June, 2000)

Washoe was immersed in ASL where she learned to communicate by using signs in her daily interactions. For instance, Washoe signed about when it was TIME to EAT, WHO was coming over to PLAY and if she wanted to eat BANANAS or APPLES. (D.H. Fouts, personal communication, June, 2000)

In 1970, when Washoe was approximately five years old she moved from Reno, NV to Norman, OK with Dr. Roger Fouts. From 1972 to 1976 the Gardners adopted four other chimpanzees; Moja, Pili, Tatu and Dar to continue their language studies. These studies began with newborn chimpanzees (Washoe was nearly one year old when she arrived in Reno). Newborns were easier to obtain from research laboratories and the

interactions between the chimpanzees added a new dimension to the cross-fostering. (Gardner, Gardner, Van Cantfort, 1989).

During both Project Washoe and the second project, the Gardners (1989) found a parallel between the acquisition of sign language with chimpanzees and deaf human children. The study showed that both young chimpanzees and human children use immature diction as they as learning a new sign (Gardner, et al, 1989). For example, instead of signing FATHER ("F" hand on forehead) the young chimp or human would point to their forehead (Fouts, Mills, 1997).

Herb Terrace a psychology professor at Columbia University adopted Nim Chimpsky, an infant chimpanzee in 1973. "The purpose of Project Nim was to teach an infant chimpanzee to use ASL and to prove more conclusively that chimpanzees can create sentences" (Fouts, Mills, 1997, p. 273). The differences in Project Nim and the Gardner's studies were: Nim was not cross-fostered, nor immersed in ASL. Nim was not to be treated as a child and a more Skinnerean approach was taken (Fouts, Mills, 1997). Project Nim did not prove what it was originally intended to prove. Nim did not use his signs spontaneously, Terrace found evidence to show that Nim would repeat signs from his human trainers. Terrace then made the claims to disprove Washoe's acquisition of ASL (Fouts, Mills, 1997). In response to Terrace's accusations "two comparative psychologists, Thomas Van Cantfort and James Pimpau, published a fifty-page article in the journal *Sign Language Studies* that detailed Terrace's distortions of the scientific record" (Fouts, Mills, 1997, p. 277).

In 1979, Project Loulis began. The purpose of this project was to see if Washoe could transmit ASL to her adopted son Loulis. From the beginning of the project humans "were restricted to using only seven signs when they talked in front of Washoe and Loulis: WHICH, WANT, WHERE, WHO, SIGN, and NAME" (Fouts, Mills, 1997, p. 242). As the project continued the study found Washoe using techniques to help Loulis with

new signs. She would mold Loulis' hand into the sign for FOOD (flat 'm' hand touching lips) and touched it to his lips (Fouts, Mills, 1997).

> Much of Loulis' signing was spontaneous and not prompted by Washoe. This led to creative breakthroughs. For example, one day after Loulis had learned the signs for HURRY and GIMME, I was giving him a drink when I accidentally took the cup from his mouth without warning. Loulis looked at me and signed HURRY GIMME – his first two-sign combination (Fouts, Mills, 1997, p. 243).

Loulis became the first non-human primate to acquire a human language from another non-human primate.

In September 1980 Washoe, Loulis and Moja moved with Dr. Roger Fouts to Central Washington University (CWU), Dar and Tatu joined them in May 1981. One study conducted during the first few years at CWU was by Deborah Fouts. Deborah Fouts studied the conversations between this adopted family in ASL while humans were not present (Gardner, et al, 1989). Fouts used a remote video to record the use of sign language between the five chimpanzees in her care (Gardner, et al, 1989). This study was to disprove the critics that claimed the chimpanzees were being cued when using ASL. Fouts' study showed that without human interference the chimpanzees use and communicate amongst themselves using ASL.

In May 1993, Washoe and her adopted family moved to a new facility on the campus of CWU. This new facility became the Chimpanzee and Human Communication Institute (CHCI). The CHCI, in addition to being a sanctuary for these chimpanzees, and an educational facility, is also a non-invasive research facility. There are at least 30 research projects going on at any given in time. (D. Fouts, personal communication, June, 2000)

In the past, the research centered around the chimpanzees acquiring a human language, passing language on to the next generation, as well as remote video showing

the conversations between chimpanzees while humans were not present. Currently, some of the research has to do with the natural gestures of chimpanzees. Students at the CHCI are trying to classify non-ASL gestures that have been observed in these chimpanzees and compare them to the gestures observed in wild chimpanzee populations with the aid of many hours of videotape.

At the CHCI, over 160 communicative behaviors have been classified and are used by these chimpanzees. Student interns can tell the difference between a scratch or a natural gesture and a sign because each sign has its own place, hand shape and movement.

Another research project involves the post conflict interactions of the chimpanzees. Like any human family, this family of chimpanzees has been observed to have conflicts. This on-going research, focusing on post conflict interactions, is trying to determine if and how reconciliation occurs, and who if anyone, uses reassurance or discipline during conflicts.

In addition to behavioral research, there is also an interest in finding out how to make the lives of captive animals more interesting. Student interns are systematically studying how the chimpanzees at the CHCI use their space, in terms of structures, and how they use the objects that are provided them on a day to day basis (Sanz, Bilcher, Dalke, Gratton-Fabbri, McClure-Richards, Fouts, 1999). The results from these studies will add knowledge about how to more effectively design facilities for captive animals, as well as the types of objects that provide them the most interest.

Animal Experimentation

Although, Washoe and her family are living in a sanctuary, many of their relatives and fellow animals in research are not. They are found in desolate conditions. Not only do humans use chimpanzees in research, we also inflict invasive, experimental and behavioral research on other animals as well.

Vivisection is defined as the cutting or experimentation upon living animals, it is the nvasive animal experimentation (T. Capaldo, personal communication, June 2001). Weil (1991) states that experimentation can range from drugging, shocking, starving, burning, irradiating, and blinding, to killing animals. Vivisection is prevalent is in laboratories which test products and cosmetics on animals, in laboratories that conduct biomedical experimentation, and in education. Each year an estimated that 20 - 60 million animals in the United States are used in experimentation (Capaldo, 2001). As of January, 2001 official records do no include rats, mice or birds. These animals represent 90% of all animals used in laboratories. (Capaldo, 2001)

Product and Cosmetic Testing

Many people believe that testing products and cosmetics on animals will help keep humans safe. That is more of a myth than fact. Many of the tests are unreliable for predicting whether or not a product is safe for human use and many products, although found as irritants to animals, are still marketed (www.navs.org, 2000). The testing acknowledges the risks of using something but does not give any information explaining how to treat the injuries that may occur (2000).

Even though this testing does not protect consumers, millions of animals continue to experience the pain and trauma associated with tests. On the National Antivivisection Society (NAVS) web site (ww.navs.org) it is found that animals are forced to consume huge amounts of a household product or have chemicals dumped into their eyes or onto their skin. The Draize Eye Irritancy Test is used to measure the harmful effects of chemicals found in household products and cosmetics by observing the damage they cause to the eyes and skin of a conscious animal. During the Draize test, the animal (usually an albino rabbit) will often have its eyes held open permanently with metal clips. At the end of the test the animal is killed to ascertain the internal effects. The LD-50 test (Lethal Dose 50 percent) measures the amount of a substance that is

required to kill half the test group of animals within a certain period of time. Many results are inconclusive since the results vary widely between species and cannot be related to humans. (www.navs.org, 2000)

Many companies have stopped testing products on animals, some because of public pressure and others because of the unreliability of tests. Animal welfare organizations like to keep the public informed of those companies that test or do not test on animals (www.neavs.org, 2000). The Coalition for Consumer Information on Cosmetics (CCIC), www. leapingbunny.org. The CCIC is a highly effective and repsected coalition dedicated to promoting the Corporate Standard of Compassion for Animals. The Standard is a consumer's best assurance that companies, laboratories and suppliers do not test household, personal and cosmetic products on animals in any phase of product development. (T. Capaldo, personal communication, June 2001)

Biomedical Research

Biomedical research has been a long-standing tradition in our society because it is believed that non-human animals are able to provide us with information that will help to save humans from disease. In the book Sacred Cows and Golden Geese, the authors Greek and Greek (2000) explain that although animals are believed by the researchers to be adequate, they are an imperfect substitute for humans.

Researchers that support vivisection are quick to point out the medical breakthroughs because of animal research, such as: the polio vaccine, cancer chemotherapy and coronary bypass surgery. These researchers try to minimize the many strides medically that have been made without the use of animals. A few examples of the advances in three specific areas are: 1) *drugs*- penicillin, digitalis, nitrite, quinine, 2) *anesthetics*- chloroform, ether, nitrous oxide gas and 3) *surgical procedures*- for cardiac aneurysms, appendicitis, bladder and gall stones, brain tumors and cataracts. (www.curedisease.com, 2000)

Epidemiologists can often be considered detectives in their work. They interview people about their health habits and find correlation's between those with the disease and accompanying risk factors. (www.curedisease.com, 2000)

Clinical Studies

Clinical studies include the involvement of human volunteers to actually try out drugs. For example; drugs which help lower cholesterol, treat AIDS and the HIV infection, treat childhood leukemia or even to help treat children with Attention Deficit Hyperactive Disorder (ADHD) (www.navs.org, 2000).

The New England Antivivisection Society's (NEAVS) web site (www.neavs.org) states that clinical research includes solicitous observations and investigation of patients as they use the drug or a placebo. Strict guidelines are used to protect the volunteers. The study of clinical pharmacology helps to ascertain the appropriate dosage for humans and whether the drug will be safe and effective. (www.neavs.org, 2000)

The information that is found in these studies is much more relevant and valuable than animal studies. Even though drug companies with animals repeat much of the same tests, the findings are far more relevant for humans when humans are involved (www.curedisease.com, 2000).

Clinical studies are not as present in research as they could be due to limited funding. This could change if some of the money allocated to animal research is transferred to physicians (2000).

Post-Marketing Surveillance

Even if the FDA has cleared a drug because the animal tests found no conclusive problems, there are still possibilities that the drug will have an adverse affect on humans. Post-Marketing Surveillance helps to keep track of the drug and what side effects or problems may be occurring with humans. (2000) Not only does this detailed

growing, as people become educated about other more applicable and useful techniques now available (www.navs.org, 2000).

Many schools also engage students in the concept of Science Fairs. Here students are able to showcase their talents and gain knowledge through the experience and scientific process.

The NAVS web site also indicates that many schools and school districts do not have rules against using animals in their projects. There are actually rules with one science fair organization that allow high school students to use invasive techniques while studying an animal (www.navs.org, 2000).

Certain states have taken an active role and have actually enacted laws that prohibit the use of executing harmful projects on animals. In addition, students have received awards for projects that used non-invasive techniques while studying an animal (2000).

The web site "Americans For Medical Advancement" (www.curedisease.com) states that for each of the forms of vivisection mentioned earlier, there are alternatives that are humane, applicable, realistic and appropriate. A number of these alternatives have been available for some time, with accurate results, but have been under funded because of the support of vivisection. Still, other alternatives have arisen from technical advances, thanks to computers and technology (www.curedisease.com, 2000).

Epidemiological Studies

Epidemiologists study a population of people, their health characteristics and disease. This form of observational/interview method has revealed many diseases with their links in our society. The epidemiological studies, for example were able to establish a link between heart disease and high cholesterol, smoking and lung cancer, as well as identifying AIDS in the 1970's. (www.neavs.org, 2000)

going. Whether the business supplies equipment or wants to put a new drug on the market, the businesses depend on biomedical research. (2000)

There are alternatives to biomedical research especially in light of the technological advancements being made almost daily. These human-based methodologies are more reliable in the fight to cure human disease and there is no longer any guesswork (www.curedisease.com, 2000). The findings of alternatives would be consistent to humans, thus helping to continue the fight against disease.

Education

K-12 Education uses vivisection in two different ways: 1) *dissection* and *2) science fair experiments* (www.navs.org, 2000).

Dissection (the cutting up of preserved specimens) was introduced in the 1920s as a learning tool for the study of anatomy, physiology and the theory of evolution. Today, thanks to technology, there are many more practical teaching methods available, but are not often used. (2000)

The business of dissection is lucrative. Millions of animals are killed each year to be dissected for educational purposes. Some of the animals are collected from their natural environment, while others are raised in laboratories to be used specifically for dissection. And still, others are stolen from streets of foreign countries only to make their way back to US suppliers. (2000)

The NAVS web site (www.navs.org) states that dissection is a powerful tool in teaching students to become desensitized toward dismembering of animals in the name of science. Students learn is that the lives of animals are expendable and insignificant.

There are parents, students and teachers speaking out against the unnecessary use of animals in education. Some teachers are also giving options to those conscientious objectors by making alternatives available at their request. The numbers are small, but

Three more examples that show how animal testing has actually impeded human health are:

- Penicillin was deemed unsafe at first because it killed guinea pigs, cats and deactivated the blood systems of rabbits. It wasn't known to be effective until 10 years later when the developer used it on a human patient who was near death (www.curedisease.com, 2000).
- Health warnings were delayed regarding the link between cancer and smoking because animals being used in inhalation of cigarette smoke tests were not getting cancer (www.curedisease.com, 2000).
- "Seldane (terfenaldine), an allergy drug, ws tested extensively on animals. Although it did not cure allergies, it had no ill effect. It caused life-threatening heartbeat abnormalities in humans. Taking it with grapefruit juice increased blood levels thus raising the risk of dysrhythmia. Seldane is no longer on the market." (Greek, Greek 2000)

Public Health studies have found that at least 50% of the deaths in the United States are caused by lifestyle. Virtually no money from the National Institute of Health's budget is allocated to educating the public in the prevention of illness, nor is much spent on epidemiological and clinical studies. More than $5 billion a year of tax revenue is spent on animal research, with results that cannot be directly related to humans. (www.curedisease.com, 2000)

Greek and Greek (2000) state that the genetic relationship between animals and humans makes the animal data inconsistent. Yet the testing continues. If it isn't necessary, why is it still happening? First: It safeguards industry against legal responsibility and second, animal research is highly profitable. There are many organizations that depend on the biomedical research industry to keep their business

and comprehensive information record the negative side effects of a drug, it can also show unforeseen favorable side effects as well. (2000)

Autopsies and Post-Mortem Studies

The NEAVS web site also explains that as human bodies are examined after death, information from these exams has been responsible for the discovery and description of thousands of diseases. Some of the diseases that have been found are viral hepatitis, aplastic anemia and fetal alcohol syndrome (www.neavs.org, 2000).

Autopsies have been instrumental in studying environmental and occupational diseases, such as: cancer, heart disease, AIDS, Sudden Infant Death Syndrome and aging (2000). Studies from autopsies have also found that physicians misdiagnose approximately 10% of the time (www.navs.org, 2000). Another study has shown that the undiagnosed diseases very often contribute to the death of the patient (2000).

The NAVS web site explains that cadavers are useful for teaching operating techniques, whether fixing a fracture, stabilizing the spine or a ligament reconstruction (2000).

Because people will not pay for autopsies, the frequency of this procedure has decreased. It is stated that "...if 1 out of 5 patients were autopsied, an immense amount of valuable information would be retrieved." (www.curedisease.com, 2000). There would also be more organs for research, and to give medical students more applicable experience.

Our country has not continued the use of autopsies, but many European countries have redirected funds from futile animal experiments to autopsies, thus spending money for human health in a more relevant manner (www.navs.org, 2000).

Tissue and Cell Culture

There are many different ways cells or tissue cultures can be obtained: from human volunteers, from surgical operations, from biopsies and from post-mortem specimens. These cells or tissue cultures can be grown in the laboratory and used for in vitro studies. (www.neavs.org, 2000)

There are some cells that can continually be reproduced, so researchers have a constant supply of an identical test material. (2000)

The National Cancer Institute has changed from screening possible anti-cancer drugs on mice to testing on human cancer cell-lines. This is a much cheaper and more reliable method, providing information that is directly applicable to humans. AIDS drugs are also being screened in vitro. These studies can help to determine whether the drug can block the virus' ability to kill human T-cells. Researchers in Germany are using diseased human hearts to evaluate drug therapies. (www.neavs.org, 2000)

Non-Invasive Imaging Techniques

These techniques can inform doctors how the human body works and can monitor the progress of a disease and response to therapy. The imaging techniques used here are the CAT(Computer Axial Tomography), MRI (Magnetic Resonance Imaging), PET (Positron Emission Tomography) and SPECT (Single Photon Emission Computerized Tomography). (www.neavs.org, 2000)

"CAT scans use computers to reconstruct three-dimensional images of the body from x-rays" (2000). The MRI enables researchers to make useful maps of the human brain. The CAT helps to assess patients with epilepsy, while the MRI can follow changes in the blood flow, which may help doctors understand the mechanism of stroke. (2000)

"PET and SPECT use compounds that have been tagged with isotopes and measure how these interact with the human body" (2000). PET has been used to study drug addiction by introducing tagged cocaine and observing where it binds in the human

brain. Both PET and SPECT forms have been used to study Alzheimer's, Parkinson's and Huntington's disease as well as other psychiatric disorders. (2000)

Microbiological Studies

Different "microorganisms, such as bacteria, are ideally suited for screening large numbers of toxins, mutagens and irritants. They reproduce rapidly and can be maintained at low cost" (2000). Tests use bacteria to investigate a chemical's potential to alter a cell's hereditary information (mutagenicity), which is one of the steps in the growth of cancer (2000).

Mathematical and Computer Models

As technology advances, so do its capabilities. This is a fairly new branch of medical research, and yet it has been useful in many ways.

The way in which a drug will work can be determined by its structure. "New drugs can be designed using computers to evaluate the structure-activity relationships". Computer models can simulate human disease states and allow physicians to try out new therapies and drugs" (2000).

Using complex software, human clinical and epidemiological data can be imported in computer models which help to stimulate biochemical reactions and recreate structural body components. The structural components are then categorized in terms of healthy and diseased chemical reactions. The reactions they observe through this model are similar to the observations in vitro, however simulated on computer screens. The toxicity of a drug can be predicted by formulating the structures on computers without resorting to animal tests, which are not capable of providing reliable information. (www.curedisease.com, 2000)

Some discoveries as, a result of the use of computer models are:

- There are two distinct types of breast cancer with different forms of treatment for each type.

- The development of high blood pressure medications
- Prosthesis development
- And new information regarding epilepsy. (www.curedisease.com, 2000)

Dissection Alternatives

NEAVS states that there are a number of computer programs available which can help tutor students through the proper techniques of dissection and anatomy the of animals. It has been found that students who use the alternatives gain as much knowledge and test as well as those students who use the more traditional approach (www.neavs.org, 2000).

Not only are interactive CD-ROMs available, but there are models which can help to educate students on the anatomy of an animal. A booklet entitled "Beyond Dissection" has been published by the NEAVS (2000) affiliate, the Ethical Science and Education Coalition (ESEC) listing all different forms of non-invasive biological tools that can be used in the classroom.

Summary

As our closest genetic relative, chimpanzees are a species that have intrigued and educated humans. Through field studies we have learned that we share many traits intellectually, socially and culturally with chimpanzees. These similarities have helped to bridge the species gap between chimpanzees and humans.

The genetic closeness and intelligence of the chimpanzee has also made the chimpanzee a prime candidate for captivity and further study. Chimpanzees are used to study diseases of humans, ostensibly to help improve the lives of humans. (Although the diseases react differently with chimpanzees, biomedical researchers continue to argue their validity for research purposes.)

Not only is it important to learn more about our closest living species and find compassion to keep them from harm, all animals need to be taken into

consideration. It is important to understand that if chimpanzees are not the perfect test subjects for experiments, then those animals even further away on the genetic scale are even less appropriate. Animal experimentation is not the only way to help improve the lives of humans. It is an imperfect model, and with technological advances, the alternatives to animal experimentation are much accurate and appropriate.

CHAPTER THREE
PROCEDURES FOR THE PROJECT

Introduction

The purpose of the project was to design and develop curriculum that would educate middle level students on captive and free-living chimpanzees. The curriculum also deals with issues surrounding the use of animals in experimentation.

The curriculum named "Next of Kin" focuses on issues dealing with free-living, captive and five specific chimpanzees at Central Washington University. The curriculum addresses the endangered status and different cultures of African groups of chimpanzees along with their treatment and welfare in captive situations. The curriculum also includes a component on animal experimentation in an attempt to heighten student's awareness and to encourage them to extend their circle of compassion to all creatures.

Chapter Three contains information regarding

- Need for the project
- Development and support for the project
- Planned Implementation of the project
- Evaluation of the project

Need for the Project

The Chimpanzee and Human Communication Institute (CHCI) at Central Washington University presents Chimposiums for school age students throughout the year. Students are given a half-hour presentation reviewing the research and projects of CHCI and are introduced to issues faced by captive and free-living chimpanzees. The second half-hour is spent observing the chimpanzees (Washoe and her family) and learning about the individual chimpanzees and the issues they face in captivity.

Some of the visiting students come well prepared and have insightful questions while many others come with little or no background. The effectiveness and depth of the learning experience is therefore quite different for the two groups.

A number of teachers requested information and or lessons to help them better prepare their students for a visit to CHCI or for independent use in their classrooms. Teachers also reported they could find little or no curriculum addressing chimpanzees or animal experimentation.

The design and development of the "Next of Kin" curriculum was an attempt to respond to the expressed need of teachers along with the hope that students would become more informed and knowledgeable about chimpanzees and the ethics of experimentation.

Development and Support for the Project

Friend of Washoe (FOW) a non-profit organization at the CHCI wrote a grant proposal to the New England Anti-Vivisection Society (NEAVS). (See appendix A) In the fall of 1999, the grant was funded to develop an educational curriculum. The curriculum would not only address chimpanzees and experimentation but at the request of the grant agency to also include information on animal vivisection. The curriculum would be initially designed and developed in hard copy with a CD-ROM to follow that would include activities and information to further enhance student learning.

The writer of this project was chosen to design and develop the educational curriculum. The first undertaking was to research information related to free-living and captive chimpanzees along with animal experimentation and current humane education curricula. A visit to the headquarters of NEAVS in Boston was necessary to gather more information regarding anti-vivisection and to clarify expectations for its inclusion in the animal experimentation section of the curriculum.

Numerous resources including Humane Education Web sites on the World Wide Web were utilized in the development of the "Next of Kin" curriculum. The grant proposal also served as a guide as the writer began to organize the curriculum into units and lessons. From this outline lessons were developed that followed a theme for each unit.

Planned Implementation of the Project

In August/September of 2000, letters were mailed to eighty-five Middle/Junior schools in the State of Washington inviting them to participate in the pilot of the "Next of Kin" curriculum. The time frame being November 2000 through March 2001. (See appendix B)

The eighty-five schools were chosen because of their relative proximity to Central Washington University and or they had previously attended a school-group Chimposium at CWU. The same request was also posted on CHCI's web site and on an email list of Humane Educators. It was determined that the number of schools to be involved in the initial pilot would be ten. By the end of September 2000, nine responses from teachers interested in piloting the curriculum were received. Four electronic responses from teachers (Middle/Junior High Schools) were also received from the East Coast. Only three of the four teachers from the East Coast could be contacted and they were included in the pilot project. An adjustment was then made to include twelve rather than ten in the piloting of the curriculum.

Teachers piloting the "Next of Kin" curriculum received all the materials in November 2000, and April 2001 was established as the expected date for teachers to return feedback and evaluation of the curriculum.

After study of the evaluation and feedback of the "Next of Kin" curriculum, revisions were made and a marketable printing of the curriculum undertaken by CHCI. The curriculum will be made available to all interested teachers for use in classrooms in the fall of 2001.

Upon completion of the curriculum project and in co-operation with technical expertise a CD-ROM will also be included as part of the curriculum packet. The CD-ROM will include activities and information designed to enhance student learning experiences in conjunction with the "Next of Kin" curriculum.

Evaluation of the Curriculum

Evaluation and feedback was sought from teachers who piloted the curriculum (see appendix C) and subsequent revisions made.

After one years utilization by teachers of the revised "Next of Kin" curriculum further evaluation and feedback will be sought. The evaluation will hopefully indicate relevancy and any necessary revisions.

CHAPTER FOUR
THE PROJECT

Introduction

The purpose of the project was to design and develop curriculum that would educate middle level students on captive and free-living chimpanzees. Also, the curriculum explores issues of science and ethics surrounding the use of animals in experimentation.

The curriculum entitled "Next of Kin" focuses on issues dealing with free-living and captive chimpanzees in addition to five specific chimpanzees who live at Central Washington University. The curriculum addresses the chimpanzee's endangered status and the different cultures of free-living chimpanzees in Africa as well as the treatment and welfare of chimpanzees in captive situations. The curriculum includes a component on animal experimentation in an attempt to heighten the student's awareness and to encourage them to extend their circle of compassion to all creatures.

The "Next of Kin" curriculum is presented in the following pages of Chapter Four.

Next of Kin

A Compassionate, Interdisciplinary Science Curriculum

Grades 6-9

A Collaborative Humane Education Project of the New England Anti-Vivisection Society (NEAVS) and Friends of Washoe (FOW).

Please note: Clip art throughout chapter 4 was redacted due to copyright concerns.

INTRODUCTION

Next of Kin curriculum is a springboard off of the book entitled "Next of Kin" by Roger Fouts and Stephen Tukel Mills, with activities and lessons that take many of the concepts from the book and introduce them to students.

Sharing 98.76% of our genetic materials, chimpanzees are our next of kin. With this closeness comes a burden humans have imposed on them. Society often does not treat them as kin but more like test subjects, objects of entertainment, and citizens with no rights. It is our hope that with this curriculum students will become aware of the importance of treating our next of kin with respect and compassion.

This curriculum is written and organized to present integrated concepts focusing on free-living and captive chimpanzees as well as issues regarding animal experimentation. The activities are designed to promote *awareness*, *attitudes,* and *actions* to solve the problems that not only chimpanzees, but all animals are faced with whether living in captivity or living endangered in their natural environment.

This is the first edition of Next of Kin. Research and development of this edition began in December 1999. The pilot of the program began Fall 2000/Winter 2001. The publication of this first edition will be Fall 2001.

The Next of Kin curriculum was written and developed by Rachel Fouts-Carrico; Education Specialist, with written contributions and expertise provided by teachers, CHCI staff/ interns, curriculum developers and NEAVS staff.

The activities, written for grades 6-9, are interdisciplinary. They provide students opportunities to participate in decision making and cooperative problem solving tasks. Other activities are research and/or discussion based and provide students the opportunity to learn from others and from published information.

The curriculum is organized so students can begin to build a foundation of knowledge about chimpanzees, as well as the use of animals in science education and experimentation. Next of Kin is broken down into five major units and many subsections:

I. **Our Fellow Animals**
II. **Free-Living Chimpanzees**
III. **Captive Chimpanzees**
IV. **CHCI**
V. **A Humane Community***
(*focusing on science education and animal experimentation)

Each unit includes: a teacher information sheet; lessons; student worksheets; a glossary; a bibliography of sources used to research and develop the unit; and, an assessment.

The curriculum can be used from beginning to end or as a supplement. Our goal is that lessons can be used independently or comprehensively.

Finally, CHCI wishes to gratefully acknowledge the many contributors and supporters, and the people who will incorporate Next of Kin into their teaching.

CHCI Mission Statement

The Chimpanzee and Human Communication Institute's mission is to serve the educational, research, and service needs of Central Washington University and the public at large. The CHCI is dedicated to enhancing the education of CWU students and to playing an active role in supporting diversity within the sciences by encouraging women and other minorities to enter science. The CHCI serves as an educational and scientific resource for K-12 children in the state and the public at large. The CHCI research mission is to provide a resource for students and faculty of CWU and visiting scientists. The CHCI service mission will continue to address the needs of children with communication disorders, as well as actively working toward improving the care and well-being of captive chimpanzees. The CHCI also plays an active role in conservation efforts aimed at saving the chimpanzee, an endangered species, from extinction.

NEAVS Mission Statement

The New England Anti-Vivisection Society (NEAVS), founded in 1895, is a national non-profit organization, based in Boston, MA, site of one of the country's heaviest concentrations of animal experimentation. NEAVS' mission is to end the use of animals in unethical, inhumane and scientifically unsound experiments. NEAVS advocates for animals in laboratories, product testing, medical and veterinary schools, and public and private classrooms through educational programs, publications, legislation, and direct action campaigns. NEAVS is dedicated to the advancement of science, education, and research in ways that benefit animals and humans alike.

ESEC Mission Statement

The Ethical Science and Education Coalition (ESEC), the affiliate of NEAVS, works to ensure that students' right to a quality education is not compromised by their ethical choice to not harm animals during their educational experience. ESEC provides educators and students of all levels, parents, and other concerned citizens with current and accurate information on educationally and technologically sophisticated options to replace the detrimental use of animals in science and education. ESEC offers information on the environmental, social, and humane consequences of specimen dissection and other animal use in classrooms and in medical and veterinary training. Additionally, ESEC maintains a free loan program of non-animal alternatives, conducts training and technology workshops for educators, and counsels students and parents who have questions about the use of animals in education.

Some suggested books for you to include in your classroom library…

Next of Kin by Roger Fouts with Stephen Tukel Mills

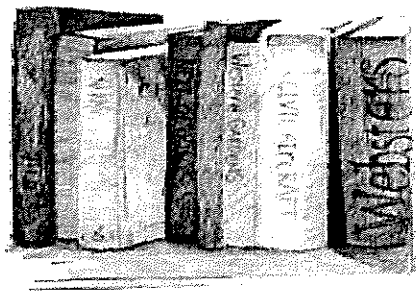
Careers With Animals by Willow Ann Sirch

Strolling With Our Kin, Speaking for and Respecting Voiceless Animals by Marc Bekoff

My Life With the Chimpanzees by Jane Goodall

Kids Can Save The Animals! by Ingrid Newkirk

Animals, Nature & Albert Schweitzer Editing and Commentary by Ann Cottrell Free



ACKNOWLEDGEMENTS

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For Marley,

So you can grow up in a world where the lives of **all beings** are held sacred.
Not just the lives of humans.

TABLE OF CONTENTS

NEXT OF KIN

MAKING DISTINCTIONS

THEME ACTIVITY:

Grade level: 6-9

Time needed: 2-3 class periods

Subject Area: Science, Math

Objectives: To help students understand Scientific Classification through research and class presentations.

Materials: 11x17 construction paper, books for research (encyclopedias), markers, crayons, colored pencils

Activity:
Introduce the students to the scale of Scientific Classification and the scientific classification for the chimpanzee.

KINGDOM	Animalia
PHYLUM	Chordata
CLASS	Mammalia
ORDER	Primates
FAMILY	Hominidae
GENUS	Pan
SPECIES	Troglodytes
SUBSPECIES	P.t. verus, Western chimpanzee
	P.t. troglodytes, Central chimpanzee
	P.t. schweinfurthii, Eastern chimpanzee

Make sure to point out how the classifications distinguish and organize animals, plants, etc.

Assignment

"To help you understand the organization and distinctions between the classifications, you will be doing some research. Each group will be given two types of classifications. Each group will need to do research to find similarities and differences between the two.

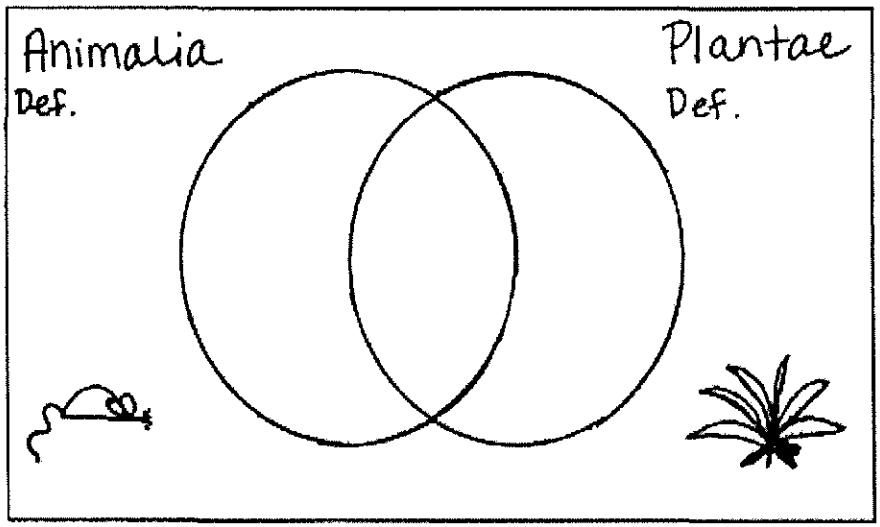
Once you have finished the research, make a Venn Diagram to display your findings.

You will also need to include an illustration and a definition of your categories on your poster. (Use the 11x17 construction paper.)

Classifications to use for research:

1) Animalia/Plantae
2) Chordata/Mollusca
3) Retilia/Mammalia
4) Primate/Hominidae
5) Acinonyx/Choloepus
6) Pan Troglodytes/Homo Sapien
7) Hominidae/Pongidae
8) Camelidae/Balaenidae
9) Cetacea/Squamata

Once students have finished their research, have them present their poster to the class.
Example:



THE ORDER OF THINGS

THEME ACTIVITY:

Grade level: 6-9

Time needed: 45 minutes

Subject Area: Science

Objectives: To raise students' awareness of the genetic relationship between chimpanzees and humans as well as other species.

Materials: "Comparisons & Order" handout; enough copies for each student

Activity:

Introduction:

"Scientists are testing the theory of species classification by learning more about their DNA structures. The scientists test the DNA of a species and compare their findings with the findings of another species. This DNA testing has been able to show us the relationships between a variety of species.

What are some other reasons why scientists are studying DNA and genetics?"

(possible answers...)
Learn more about the human genome
Genetic testing for diseases
DNA testing for criminal cases/crimes
DNA replication (cloning)
Gene therapy
Genetic treatment for diseases

"There are many fields that the science of genetics studies. Some of the results have helped humans to find a relationship between themselves and other animals."

Activity:

Give students the hand-out "Comparisons & Order." Have the students order the species pairs on their own first. Once they have finished their own list, have them get in groups of 3-4 to compile their findings and make a group list by using consensus.

Before you share the actual list, ask the class the following questions:
- -When working on your individual lists, what were some guidelines you followed to help put the pairs in order?
- -When working on your group list, what were some guidelines the group used while putting the pairs in order?
- -How similar is your individual list compared to your group list?

Share with the class the order on the Answer key along with the percentages.

- What were some surprises?
- How close were your lists to the correct answers?
- Why do you think your answers may have been so different?
- How might you use this information to learn more about different species?
- Do you think some people may use this information to hurt/harm animals? Why? Why Not? How?
- What does this genetic information tell you about all animals?
- How can humans use this information to help animals?
- Humans often separate themselves from nature; with this information are they as likely to?

Much of all animals' DNA is actually more similar than many people believe (ie: HUMAN/MOUSE). Even though the similarities may be closer than we imagined, the differences are much more obvious; the gap is larger than we know. The differences help make each animal distinguishable and unique in many ways. The similarities help to show us the connection we all have to nature.

NOTE TO TEACHER:
Like most fields of science, the study of genetics and DNA is still new. Most of the percentages are averages and some scientists believe them to be speculative. The purpose of this activity is to introduce the relationship between chimpanzees and humans and try to bridge the gap humans have put between themselves and all other animals.

COMPARISONS & ORDERS

DIRECTIONS: Refer to the list of species pairs below. After you have read through the list rearrange the list in the order you believe is accurate: from the closest genetically related to the least close. After you are finished with your individual list, wait for your teacher to group you. Once in your group, you will be combining your lists through consensus to formulate a Group List.

SPECIES PAIRS	*MY LIST* **(CLOSEST IN GENETIC RELATION)**	*MY GROUP LIST*
HORSE/ZEBRA	_____	_____
HUMAN/MOUSE	_____	_____
CHIMPANZEE/GORILLA	_____	_____
RED/WHITE-EYED VIREO	_____	_____
GRAY WOLF/DOG	_____	_____
HIPPOPATAMUS/WHALE	_____	_____
CHIMPANZEE/HUMAN	_____	_____
ORANGUTAN/HUMAN	_____	_____
WILLOW WARBLER/ CHIFFCHAFF	_____	_____
JACKAL/COYOTE	_____	_____
GRIZZLY/POLAR BEAR	_____	_____
GIBBON/CHIMPANZEE	_____	_____
HUMAN/MONKEY	_____	_____
CHIMPANZEE/BONOBO	_____	_____

(LEAST CLOSE)

ANSWER KEY

COMPARISONS & ORDERS

DIRECTIONS: Refer to the list of species pairs below. After you have read through the list rearrange the list in the order you believe is accurate: from the closest genetically related to the least close. After you are finished with your individual list, wait for your teacher to group you. Once in your group, you will be combining your lists through consensus, to formulate a Group List.

SPECIES PAIRS	*MY LIST* (CLOSEST IN GENETIC RELATION)	*MY GROUP LIST*
HORSE/ZEBRA	*HORSE/ZEBRA	99%
HUMAN/MOUSE	*GRIZZLY/POLAR BEAR	99%
CHIMPANZEE/GORILLA	*CHIMP/+BONOBO	99%
RED/WHITE-EYED VIREO	CHIMP/HUMAN	98.4%
GRAY WOLF/DOG	GRAYWOLF/DOG	98.1%
HIPPOPATAMUS/WHALE	CHIMP/GORILLA	97.7%
CHIMPANZEE/HUMAN	**WARBLER/CHIFFCHAFF	97.4%
ORANGUTAN/HUMAN	**RED/WHITE VIREO	97.1%
WILLOW WARBLER/ CHIFFCHAFF	ORANG/HUMAN	96.4%
JACKAL/COYOTE	GIBBONS/CHIMPS	95%
GRIZZLY/POLAR BEAR	*HUMANS/MONKEY	93%
GIBBON/CHIMPANZEE	*HIPPO/WHALE	93%
HUMAN/MONKEY	JACKAL/COYOTE	92%
CHIMPANZEE/BONOBO	HUMAN/MOUSE	85%

(LEAST CLOSE)

*Some of the species pairs can be interchangeable, due to the same genetic percentage (in second column).
**Bird species
+ Also referred to as Pygmy Chimpanzee. Pygmy means smaller.

CHIMP OR HUMAN?

Grade level: 6-9

Subject Area: Science

Time needed: 45 minutes

Objectives: To raise students' awareness of all the shared characteristics between chimpanzees and humans.

Materials: string, paperclips, 4x6 note cards

Activity:

Preparation-Make cards that say: CHIMP, HUMAN, BOTH
Then make cards that list the following characteristics (one card for each characteristic):

BOTH

- walk bipedally
- use tools
- nurse their young
- communicate
- solve problems
- territorial
- show emotions
- have wars
- groom themselves
- sleep in beds
- ticklish
- have arguments
- have opposable thumbs
- see colors
- use mirrors
- draw/paint
- laugh
- cry
- lose teeth at age 6
- make tools

CHIMP

- dense bones
- arms are longer than their legs
- pant hoot
- food grunt
- walk quadrapedally
- no wrist rotation
- short thumbs
- opposable toe

HUMAN

- communicate vocally
- cry emotional tears
- legs are longer than their arms
- swim
- hair is mostly on their head
- die from AIDS
- variety of eye colors

Attach a paperclip to each card: one paper clip on the top of the card, one on the bottom (either using tape or punching a hole and threading the paperclip through). Cut a piece of string 3'-4' long and attach the three cards labeled "Chimp," "Human," and "Both" on the string spaced evenly apart. Place the "Both" card in between the other two cards.

In Class-Review with students the genetic findings between chimps and humans. Inform them that they are now going to compare chimps (free-living and captive) to humans based on characteristics of both of them. Give each student, or pair of students, 1-2 cards. Give them a few moments to decide where the card goes. You may choose to have two volunteers hold the string up so the entire class can watch the progress. Once they have decided, have the students attach the card under the correct category of "Chimp, "Human," or "Both."

After all cards have been placed under a category (by hooking paperclip to paperclip), decide as a class to see if changes are needed. If the majority of the class agrees, move the card.

Have students share their observations. Any surprises?

Conclude-"Chimpanzees are very much like us. They share many of our genes: They have feelings and feel pain. They are not necessarily treated in ways that meet their needs in many forms of captivity. It is important to treat them as our sibling species, not as biomedical research projects."

Extensions (for higher grades)

- Research DNA information; find out exactly what % different we are from chimpanzees.
- Conduct behavioral research on free-living chimpanzees.
- Have students create cards based on their own research.
- Examine hunter/gatherer data (cultural anthropology), and compare information with free-living primates.

TEACHER INFORMATION ON FREE-LIVING CHIMPANZEES

Taxonomy

Chimpanzees are classified as *Pan troglodytes*. They are a member of the order Primate, the suborder Anthropoidea, and the infraorder Catarrhini. Chimpanzees are closer genetically to humans than they are to gorillas (Sibley & Ahlquist, 1984). There are at least three regional subspecies of chimpanzee: Pan troglodytes verus (western Africa), Pan troglodytes troglodytes (central Africa), and Pan troglodytes schweinfurthii (eastern Africa). Variation occurs within subspecies; however, the differences in size and other characteristics often cannot be attributed to subspecies classification (Wrangham, de Waal, & McGrew, 1994, p. 8).

Features

Chimpanzees have the same bones and muscles as humans with differences only in form, e.g., longer arms than legs, and differences in the structure of vertebral column, pelvis, leg bones, and foot as compared to humans (Futuyma, 1986). The skeletal structure of this species is adapted for quadrapedal movement and movement through the trees.

Chimpanzees have robust bodies and powerful arms (Vaughn, 1996). Because of their dense bones and muscle tissue, chimpanzees' upper body strength is 8-10 times stronger than that of humans (Rowe, 1996).

The hair of a chimpanzee is predominantly black and coarse (MacDonald, 1984). A chimpanzee's hair stands on end (pilo erect) when the chimpanzee is aroused, frightened, or aggressive (Goodall, 1986).

Chimpanzees have opposable thumbs that allow for grasping, climbing, and object manipulation (Fleagle, 1999). Chimpanzees are very dexterous and able to manipulate small objects with their fingers and lips (Goodall, 1986; Vaughn, 1996).

Their hands have small thumbs and long palms and fingers (Fleagle, 1999). Chimpanzees also have grasping feet, which means the first digit (hallux or big toe) is opposable (Fleagle, 1999).

Chimpanzees have the same dental formula as humans: 32 thinly enameled teeth (Vaughn, 1996; Wrangham, et al., 1994). Deciduous dentition (milk teeth) precede permanent dentition (adult teeth) (Fleagle, 1999).

Development

The lifespan of free-living chimpanzees can be up to 53 years (Ross, 1991) and even longer in captivity. Chimpanzees are not weaned until about five years of age. Until this time, they are almost completely dependent upon their mothers. The end of this period normally coincides with the birth of another child (Goodall, 1986).

Infant chimpanzees have pale skin, which darkens with age, and a white tail tuft, which they will lose at approximately four to five years of age (Macdonald, 1984).

Males between the ages of eight and twelve years continue to increase their independence and spend more time with adult males. These males become more aggressive and attempt to dominate females. Males between thirteen and fifteen years of age increasingly spend more time with females in *estrus* and adult males (Goodall, 1986). Males reach social maturity, which occurs somewhat later than reproductive maturity, at about sixteen to twenty years of age (Goodall, 1986).

Females between eight and ten years old continue to remain close to the mother. Swellings of the females' sex skin begin around this time (Goodall, 1986). Female genitals are located dorsally (Wrangham, et al., 1994). The pink perineal or sex skin swells with sexual receptivity (Macdonald, 1984). Menarche occurs in females at about age eleven although they remain sterile until age thirteen or fourteen. Close ties with the mother

continue through adolescence. Females exhibit regular sexual swellings throughout adulthood. Females will have about three offspring during adulthood at a rate of about one every five years (Goodall, 1986).

Posture and Movement

Chimpanzees are capable of all common human postures in addition to arboreal variations of these common positions. Chimpanzees sit, lie, *bipedal* stand, *quadrapedal* stand, and cling.

Locomotor behaviors account for approximately 10-15% of a free-living chimpanzees' activity budget (Wrangham, 1992). Locomotor behaviors include *quadrapedal* walking and running, *bipedal* walking and running, climbing, leaping, and *suspensory locomotion*.

Chimpanzee Communities and Daily Life

Chimpanzees live in groups ranging in size from 20-120 individuals (Nishida, 1968; Goodall, 1986). Chimpanzees have a dynamic fission-fusion social organization (Dolhinow and Fuentes, 1999). Upon reaching sexual maturity, females migrate to neighboring communities while males stay in their natal group.

Chimpanzees construct sleeping nests in trees close to their feeding sites by breaking and folding branches together. Other individuals may reuse these nests on subsequent nights.

Chimpanzees living in different areas have diverse cultural traditions (Wrangham, de Waal, and McGrew, 1994). These behaviors include cooperative hunting of colobine monkeys and nut cracking in West Africa (Boesch, 1994; Boesch and Boesch, 1990) and termite fishing in Tanzania (McGrew, 1994). These behaviors are passed down through generations, and some of them take up to five years to master (Boesch and Boesch, 1990).

Strong social bonds form within chimpanzee communities (Goodall, 1986). Dominance relationships are influenced by alliances, and coalitions are formed by males. Chimpanzees perform aggressive displays, which are a combination of several threat behaviors (pilo erect hair, bipedal or quadrapedal swaggering, charging, foot stomping, branch flailing, loud vocalizations, etc.). Chimpanzees have been observed to console another individual who participated in a conflict (de Waal, 1993).

Chimpanzees have a wide range of cognitive abilities. In Africa, chimpanzees use tools to acquire food items and operate in complex social structures. Free-living chimpanzees have also been observed using gestures to communicate with one another (see communication section).

Habitat

The habitat of wild chimpanzees shows their flexibility in adaptation to many different environments. Free-living chimpanzees range in a series of discontinuous populations along the equatorial belt of Africa: from the dry savannas of far west Africa, through the rain forests in central Africa, to the montane forests and dry woodland-savanna mosaics of east Africa (Fruth, Hohmann, and McGrew, 1999; Goodall, 1986). Chimpanzee habitat ranges from Guinea to Ghana through Nigeria, Cameroon, Gabon, Congo Republic, Central African Republic, Democratic Republic of Congo, Uganda, and Tanzania (Rowe, 1996). Free-living chimpanzees range long distances on the ground and while traveling arboreally. The chimpanzees at Gombe Stream Reserve, Tanzania have been observed traveling from 1-10 km each day in search of food (Goodall, 1986).

Diet

Chimpanzees in the wild spend between 43-62% of their waking hours foraging for food (Ghiglieri, 1984; Goodall, 1986; Teleki, 1981; Wrangham, 1977). Goodall (1986) estimated the number of hours spent foraging at Gombe to be approximately six to eight hours per day. An individual's body weight is positively correlated with time spent feeding, as well as negatively correlated with the amount of foliage in the diet (Kano and Mulavwa, 1984).

Feeding patterns
Chimpanzees in the wild, as well as other great apes, feed primarily in the morning and again in the late afternoon. Chimpanzees have also been observed to consume specific foods at certain times of the day, for example fruit in the morning and leaves during the afternoon (Wrangham, 1977; Kano and Mulavwa, 1984).

Types of foods consumed
Chimpanzees are primarily frugivores. Their diets are diverse and consist of meat, insects, eggs, leaves, buds, flowers, bark, seeds, and roots. They also consume non-organic matter such as soil high in minerals, sand, and rotten wood (Goodall, 1986; Wrangham, 1977). Due to the seasonal availability of many of the foods consumed, a variety of foods may be available daily, or monthly.

Many variables influence the type of food consumed. Seasonality, texture, smell, taste, shape, size, and mode of preparation (e.g. cracking hard shell vs. eating the shell) have been observed to be important in selection and consumption of food. Preferred tastes are sweet, sweet-sour, and bitter (Sabater-Pi, 1979).

Communication

Chimpanzees do not scent mark or use olfactory communication as extensively as other primates, such as monkeys (Maryanski, 1997). Chimpanzees do, however, have their own distinctive species odor.

Chimpanzee vocalizations are bound to emotions, and the production of sounds seems to accompany a concurrent emotional state (Goodall, 1986). Marler found 15 distinctive calls using a sound spectrograph of the chimpanzees at Gombe Stream Reserve, Tanzania, and Jane Goodall added seventeen more to this list (Goodall, 1986). Vocalizations can communicate important aspects or events in a chimpanzee's environment, such as an attack or the presence of food. Individual differences in both single vocalizations and the themes in the sequences of vocalizations have been recorded (Marler, 1969). Mitani and Nishida (1993) found that males traveled significantly more often before than after making the long-distance vocalization called the *pant-hoot*.

These researchers also found that males called more frequently when certain individuals were nearby compared to when these same individuals were absent. Based on these observations, Mitani and Nishida suggest that the pant-hoot is made for particular audiences in specific situations.

Physical touching is common among chimpanzees. Many contact gestures occur during greeting. These gestures may vary among individuals based upon dominance rank (Goodall, 1968). *Grooming* serves a very important social function in chimpanzees. Dialectical differences between communities have been observed in the grooming context. Perhaps the most well-known example of a difference in grooming behavior is the grooming-handclasp that has been observed in chimpanzees located in the Mahale Mountains but never observed in the chimpanzees who have been studied extensively at the Gombe Stream Research Site (McGrew & Tutin, 1978). Touching is a crucial communicative element between mothers and infants. When traveling, mothers touch their infants as a signal for the infant to cling to the mother or reposition from dorsal to ventral position. As the infant gets older, the mother or child establish physical contact simply by reaching toward the other.

The visual sense in chimpanzees as well as other apes is of critical importance in social communication. Facial expressions are a meaningful communicative tool for chimpanzees. Goodall (1986) describes eleven facial expressions and the situations in which they would likely be found. The full closed grin, for example, is often observed as a reaction to a fearful event, and when others see this expression they also react with a fear response. Chimpanzees also have many gestures that they regularly use in communication with one another. Common gestures seen across both free-living and captive groups include begging with the hand extended (for food), holding the arm extended with a pronated wrist (from a subordinate toward a more dominant individual), and bipedal swaggering (generally as part of a threatening or courtship display)(Goodall, 1986). Postural and gestural difference between chimpanzee communities have been observed (de Waal and Seres, 1997; Kortland, 1968; McGrew and Turin, 1978; Nishida, 1980). An example of a communicative gesture is the leaf-clipping display, which has been observed in the chimpanzees of the Mahale Mountains. But has not been observed in other communities (Nishida, 1979).

OUR FRIENDS IN AFRICA

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 week

Subject area: Life Sciences, Language Arts, Art

Objectives: To learn about free-living chimpanzees in their natural habitat and the cultures of different groups.

Materials: "Fact Sheets" for students, "Poster Assignment" student hand-out , supplies for poster assignment

Activity:

Introduction:
"Chimpanzees are an endangered species. Endangered species are those in serious danger of becoming extinct. Their total population is shrinking. They need protection from predators and habitat destruction, so they won't become extinct. It is important to learn about their wild habitat, their culture, and why they are endangered. With education we can try to keep them from becoming extinct." (Display the Jane Goodall quote on page15 to compliment this introduction.)

Hand out "Poster Assignment" sheet and review expectations. (Place students in seven groups; there are 7 study sites with fact sheets.)

After completion of the poster, student groups will be expected to present the poster and information to the class.

*The fact sheets can be the start of their research; some helpful websites are found on the next page.

Extensions (for higher grades)
- Use fact sheets as a way to inspire reading of primary literature.
- Find articles and journals to summarize (use bibliography as a reference).
- Add additional books, journals, or articles to the bibliography that students have found.

HELPFUL WEBSITES FOR RESEARCH

www.savethechimps.org

www.greatapeproject.org

www.awf.org/home/html

http://chimp.st-and.ac.uk/cultures/reeapes.h

www.Primates-Online.com/

www.globalforestwatch.org/english/index.htm

www.educationalplanet.com

www.asp.org/aspbook/page4.html

www.usu.edu/~mubfs/frames.html

www.primate.wisc.edu/pin/factsheets/

http://weber.ucsd.edu/~jmoore/apesites/ApeSite.html

http://weber.ucsd.edu/~jmoore/apesites/Allmisc.html

www.pri.kyoto-u.ac.jp/koudou-shinkei/shikou/chimpworld/Bossou/Bossou.html

www.indiana.edu/~primate/primates.html

http://jinrui.zool.kyoto-u.ac.jp/ChimpHome/chimpanzeeE.html

http://jinrui.zool.kyoto-u.ac.jp/others/WelcomeE.html

http://chimp.st-and.ac.uk/cultures/

"Only when we understand can we care, only when we care will we help, and only if we help will they be saved."

Jane Goodall

POSTER ASSIGNMENT

- Pick one of the 7 Fact Sheets to begin your research on free-living chimpanzees.
- Research and write down **20 facts** about the chimpanzees who you have chosen to study.
- Find out: Where are they located? What are some of the findings of the research being conducted there?

Design a Poster:

- Include a quality illustration of a chimpanzee in their natural environment.
- Place facts on the poster in a neat and organized fashion.
- Include why the chimpanzee is endangered.
- Include where your chimpanzee is located. (map optional)

KEEP IN MIND
This is how your poster will be graded.

Location of chimpanzee group is on poster (points)
(continent/region/habitat)
20 facts are listed (points)
Why the chimpanzee is endangered (points)
Illustration (points)
Neatness/spelling (points)
On Time (points)
Name of student (or group) is on poster (points)

Adapted from Jemtegaard Middle Schools: Endangered Species Project (Washougal, WA).

FACT SHEET #1

BWINDI-IMPENETRABLE FOREST
Great Ape Project

Where: Bwindi-Impenetrable National Forest, Southwestern Uganda

Research Goal: The research project's central goal is to gain a better understanding of the ecological relationship between the park's population of mountain gorillas and chimpanzees.

Bwindi: Bwindi is an African montane rainforest with a variety of species. Due to its ecological uniqueness and natural beauty, it is a protected park. Bwindi is home to a number of other primate species ranging from the black-and-white colobus monkey to nocturnal prosimians. You'll also find duiker (dye-kier), elephant, bushpig, the giant forest hog, and several small cat species. The researchers have also recorded more than 350 species of birds.

Research Project: Because chimpanzees and gorillas share a habitat, the park was found, in 1995, to be favorableto research both species. The study began in 1996, and in 1998 a research camp was constructed.

The five main questions the research addresses are:

- What is the degree of dietary overlap between Bwindi chimpanzees and gorillas?
- Is there food competition, either direct or indirect, between the two species?
- Do the two species ever use, or compete for, the same nesting sites?
- What aspects of Bwindi gorilla habitat use indicate guidelines for gorilla conservation management?
- What does chimpanzee/gorilla sympatry (two species existing in the same area without hybridization through interbreeding) in Bwindi suggest about the evolutionary ecology of ancient communities of extinct hominids?

Some of the chimpanzee findings include:

Previously unstudied, these chimpanzees provide a unique research opportunity since the chimpanzees are isolated from the populations in East Africa, and there is a potential for unique cultural traditions of tool use, hunting, and other behaviors. So far, the researchers have found tools used for honey-foraging (this is a widespread behavior found in East African chimpanzee populations studied just outside Bwindi too). It is thought that the stick tools are probed into bee nests to draw out honey and larvae. Small probes are used for the nests of the stingless bees, and larger probes are used for the nests of the aggressive African honeybee.

This chimpanzee population is not habituated to human presence and will take several years' work to accustom them to an observer's presence. Both gorilla and chimpanzee information is collected through food samples, dung samples, and nests. This information supplements the direct observation of the species.

FACT SHEET #2

BUDONGO FOREST PROJECT

Where: Budongo Forest, Western Uganda

Research Goal: The major focus of research has been on the chimpanzees in the forest, the habituation of the chimpanzee community living near the project site, as well as forestry research.

Budongo: Budongo forest is the largest mahogany forest in East Africa. These huge trees grow up to 60 meters tall with long trunks, massive crowns, and often very large spreading buttresses. The forest is home to seven species of primates, including the largest population of chimpanzees in the world. There are between 600-800 chimpanzees who depend on fruits and other foods of the forest. Budongo forest also has a diverse population of birds; 366 species have been observed.

Research Project: Many research projects have been conducted here. Some of the projects have examined:

- Chimpanzee injuries
- Comparing pant-hooting vocalizations of Budongo forest chimpanzees to those of Gombe or Kibale chimpanzees
- The use of medicinal plants by chimpanzees
- Nesting behavior of chimpanzees
- Leaf sponge drinking of chimpanzees
- Learning of feeding behavior by young chimpanzees
- Censusing the chimpanzees of Budongo forest

The listed projects, as well as numerous other studies, have taught researchers much about the behavior and culture of the chimpanzees at Budongo forest.

Some of the studies compared the behaviors of different free-living chimpanzee communities across Africa. One behavior that seems unique to this community of chimpanzees is the "leaf-inspect." This is when a chimpanzee looks at a bug by placing it either on a leaf or on the palm of their hand for visual inspection before eating or discarding it. Other observed patterns are shared by other chimpanzee communities as well. For example: "food pound onto wood" (smash food), "fly-whisk" (leafy stick used to fan flies), and "leaf napkin" (leaves used to clean body).

Studies of different chimpanzee communities have shown distinctive patterns once thought of as phenomena characteristic of only human cultures and previously unrecognized amongst non-human species.

FACT SHEET #3

GOMBE NATIONAL PARK, GOMBE STREAM RESEARCH CENTER

Where: Gombe National Park, Western Tanzania

Research Goal: Research has focused on chimpanzee behaviors in the Kakombe community and the Mitumba community (which began the habituation process in the early 1990s). There have also been longitudinal studies of several troops of baboons that began in the early 1970s, as well as shorter studies of red colobus monkeys.

Gombe: Gombe National Park was established in 1968. It is located on the eastern shore of Lake Tanganyika, 15 km north of the town of Kigoma, and is accessible only by boat. The Gombe National Park's elevation ranges from 775m above sea level at the lake to 1500m along the escarpment:; steep hills that rise from the lakeshore to the escarpment. The valleys that run from the escarpment are steep and intersect with deep ravines that drain from the ridges between valleys. The vegetation found in the area ranges from grassland to open woodland and from semi-deciduous to evergreen forest.

Research Project: There are approximately 150-160 chimpanzees that live in the 30 m^2 (32km^2) Gombe National Park. The exact number of chimpanzees in this area is unclear since no census has been conducted. Ongoing studies and analyses examine mother-infant relations, vocal communications, and botanical collections.

Not only is there continual field research, but Gombe Stream Research Center (GSRC) also takes part in conservation education. Both the research and education play vital roles in preserving free-living chimpanzees and their habitats.

Before Dr. Jane Goodall could observe chimpanzees, much time was spent habituating them to the human observers. From 1962-1965, Dr. Goodall used random provisioning to get the chimps used to the human observers.

The Gombe chimpanzees are part of a research project studying the different communities of chimpanzees in Africa. These studies have found distinct patterns of behavior in the different communities of chimpanzees. The Gombe chimpanzees are known to share 13 behavioral patterns with other chimpanzees and have three unique patterns.

Some shared patterns are: "termite-fish using non-leaf materials," "lever open" (stick used to enlarge entrance), "self-tickle" (tickle self, using objects), and "Rain dance" (slow display at the start of rain). Some unique patterns are: "leaf squash" (squash bug on leaf) and "ant-dip-wipe" (manually wipe ants off wand).

FACT SHEET #4

MAHALE MOUNTAINS WILDLIFE RESEARCH CENTRE

Where: Mahale Mountains National Park, Western Tanzania

Research Goal: To study the behaviors and social organization of two chimpanzee communities found in the north west section of the park.

Mahale Mountains: This national park is about 20 times larger than Gombe Stream National Park. The park covers an area of 623 sq. miles (1613 sq. km). The terrain is mostly rugged and hilly and is dominated by the Mahale Mountain chain that runs across the middle of the park (roughly north west to south east). The mountains get more rain than elsewhere, a difference of 1400mm to 1870mm annually. Woodland covers about three-fourths of the park, with narrow strips of riverine forest restricted to watercourses.

Research Project: Some researchers have compared the cultural differences between the chimpanzees at Gombe and those of the Mahale Mountains. Even though there was a close resemblance, there were differences as well. For example, the dietary differences were obvious. Where as the Gombe chimpanzees rely heavily on palm nuts, the Mahale chimpanzees eat no part of the palm tree. Mahale also has a much richer population of plant species compared to Gombe. The two cultures also use tools differently. Gombe chimpanzees often probe for termites but not tree-ants and vise versa for the Mahale chimpanzees. There were also social differences. The chimpanzees in Mahale, when grooming mutually, will often groom the partner with one hand while using the other to clasp the partner's hand overhead (this has not been seen in the Gombe chimpanzees).

Another project focused on whether chimpanzees use different leaves and plants for medicinal purposes. The research concluded that three species of Aspilia were ingested by chimpanzees to treat intestinal parasites. The chimpanzees would take leaves, one at a time, place them in the mouth, and swallow them whole (without chewing). Observations have also shown that young chimpanzees will closely copy these processing techniques performed by their sick mothers or those nearby. Knowledge and experience of the appropriate plants to eat and when are passed down in the form of behavioral tradition, a process which allows many to benefit from the experience of a few.

FACT SHEET #5

SEMLIKI VALLEY WILDLIFE RESERVE (SVWR)
SEMILIKI NATIONAL PARK

Where: Semliki Valley, Uganda

Research Goal: To study chimpanzee posture, movement, and food-getting practices in order to better understand why apes have their particular anatomy.

SVWR: The reserve is primarily savanna grassland. There are two major rivers that flow through the park: the Wasa and the Mugiri. The Wasa River has cut a gently sloping gorge into the plateau that surrounds it. In this area you can find flora ranging from wood-land to 25-30m tall gallery forest. The Mugiri River supports a more lush flora including 30-50m tall riverine forest. There are a number of small streams that flow into the Mugiri that also support the riverine forest and the woodlands.

Research Project: Chimpanzees were first observed in the reserve in 1993. The Semliki Chimpanzee project began in 1995, and initial research started in July 1996.

The researchers suspect that there are four communities of chimpanzees in the reserve. Of those four, one is showing progress toward becoming habituated. When a chimpanzee community becomes habituated, they are more accepting of the human observers. They may not interact with the humans, but they are less likely to move away from the human observers.

Since this is a relatively new research site, much of the research is still in progress. Little is available on the research findings. Researchers are interested in taking the information that they learn from chimpanzees to help them better understand the adaptations that allowed humans to separate from the other apes.

FACT SHEET #6

TAÏ NATIONAL PARK

Where: Taï National Park, Ivory Coast

Research Goal: To study the social and cultural behaviors, reproductive strategies, territoriality, and inter-group aggression of chimpanzees.

Tai National Park: The study area is predominantly flat with numerous streams and specific foliage. The rest of the forest is quite homogeneous. The climate is distinguished by two rainy seasons and two dry seasons. Tai Forest is found along the Ivory Coast.

Research project: The Tai chimpanzee project is the only study site of the western subspecies (Pan troglodytes verus). This community of chimpanzees has been habituated to human observers and lives within the tropical rainforest.

The chimpanzees at Tai have been studied since September, 1979. During the early studies, tool-use and hunting behavior were researched. Researchers observed primarily female chimpanzees using rocks to crack nuts. These chimpanzees would use a hammer and anvil technique. They use one rock as the base with the nut placed in the center and another as the hammer to crack the shell of the nut. The researchers also observed male chimpanzees bringing nuts to females to have cracked.

The main focus of their research is now on:

- Territoriality and inter-group aggression

  The presence of three habituated neighboring communities in Tai makes this research possible. The human researchers can observe the group dynamics between communities as well as within communities.

- Social and cultural behaviors

  Cooperation, conflict management, communication, and social learning are some topics studied presently. This research also inlcudes analysis of cultural differences between neighboring communities in which individuals are shifting between the groups. Of all the communities studied, Tai was found to have the most unique cultural traits. Along with the use of hammers and anvils to crack nuts, some other unique traits were using large leaves as a seat and picking marrow out of a bone to eat. The Tai Forest chimpanzees were observed to have 8 unique cultural traits.

-Reproductive strategies

This investigation is helping to determine the fathers of infant chimpanzees. Hair samples will be gathered non-invasively from chimpanzee night nests and analyzed in a laboratory. Previous results found that males living outside the community sired the main offspring born in the free-living chimpanzee community.

FACT SHEET #7

KIBALE NATIONAL PARK MAKERE UNIVERSITY BIOLOGICAL FIELD STATION (MUBFS)

Where: Kibale Forest, Uganda

Research Goal: To study the ecology and social structure of chimpanzees as well as chimpanzee demography in the Kibale Forest Reserve.

Kibale National Park (KNP): The area of KNP where most of the primate research is conducted is in Ngogo and Kanyawara. Ngogo is set aside as a small nature reserve. This part of the forest reserve is primarily rainforest with two hilltop enclaves of grassland ecosystem. KNP is a mid-latitude moist tropical forest with high levels of biological diversity. There are 11 different species of primates found in the park including chimpanzees and red colobus monkeys.

Research Project: As researchers observed the chimpanzees in KNP, they analyzed how the changing of seasons affected behavior in male chimpanzees. Other research observations focused on the chimpanzees' use of range and its implications for the understanding of chimpanzee social organization, the consumption of vegetation in relation to party size and social organization, and the use of leaves for medicinal purposes.

Through these observations and others, the chimpanzees at KNP were found to have many behaviors within their culture that resembled the behaviors of other groups of free-living chimpanzees. Out of the 10 behaviors that were observed, one was found to be unique; nine were found to be shared with other groups of free-living chimpanzee groups. The KNP chimpanzees share the behavior "hand-clasp" (clasps arms overhead to ask for grooming) with the Mahale and Tai Forest chimpanzees. The Kibale chimpanzees also shared the behavior of the "rain dance" (slow display at start of rain) with the chimpanzees of Tai Forest, Gombe, Mahale, and Budongo.

This research has shown the similarities between cultures of chimpanzees as well as the differences. Researchers have begun to ask why each culture may have these similarities and differences. Are the behaviors taught? Is it a learned behavior? Many researchers believe that young chimpanzees have their attention drawn to a behavior and then learn it for themselves. Researchers have observed this behavior in both free-living and captive chimpanzees.

IT'S MIME TIME

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1-2 class periods

Subject Area: Life Sciences, Drama

Objectives: To help students identify gestures and behaviors that chimpanzees use to communicate.

Materials: "Examples of Some Chimpanzee Behaviors" sheets, "Chimpanzee Facial Expressions" with explanation sheet, note cards with behavior and facial expression labels

Activity:

Read through the information on chimpanzee behavior and taxonomy.

Follow with discussion regarding distinguishing factors, and perhaps try out some of the behaviors listed.

To review the behaviors, break the class up into two teams. Have one person volunteer to act out a behavior (without speaking, or using any vocalizations--contrary to what you may have seen, chimpanzees do not use vocalizations as often as you see on TV and the movies). Once the group has guessed the correct behavior, have a new person mimic a behavior.

Extensions:

- Talk with the class about nonverbal behaviors. What they are and what they mean?
-What are some universal human nonverbal behaviors? What are cultural ones?
-Are there any similarities or differences with chimpanzees? Are there any behaviors or postures that seem very recognizable to us?

EXAMPLES OF SOME CHIMPANZEE BEHAVIORS

SCOOP GESTURE

This is a transport signal between mothers and infants. Adult males will also use this gesture to signal to other chimpanzees that it is time to leave an area. (The mother reaches back to the infant and gathers it up using the palm of her hand and fingers and pushes the infant onto her back.) This gesture probably originated as an action instead of a signal. The movement is a backward and upward movement along the side of the chimp; up and over the back. It is as if they are scooping or gathering an infant who is behind the line of their shoulder and towards their rump, onto their back.

BIPEDAL SWAGGER

The chimpanzee adopts an upright or semi-upright posture and sways, often rhythmically, from one foot to the other. They may remain in one spot to Swagger or move forward during the Swagger. The arms are normally held out from the body, and the shoulders are hunched up.

WADGE

Some parts of the chimpanzee's food are not swallowed (ex: the skin and seeds of some fruits, chewed leaves, meat, eggs, etc.). The chimp, after chewing such things, may spit them out at once or may continue to suck juices by pressing the skin, leaves, etc., between his/her lower lip and teeth, or in their mouth between their tongue and palate. Such wadges can be sucked for 20 minutes or so, but are finally spat out and discarded.

BOBBING

When bobbing, the chimpanzee stands briefly on his/her feet; his/her body only slightly raised from the horizontal position. He/she drops back onto four limbs, and, as a continuation of the movement, flexes his/her elbows until his/her chest is close to the ground. He/she then jerks his/herself back to the bipedal position prior to repeating the entire sequence several times. Usually these movements follow each other rapidly, and normally the elbows are flexed and straightened while the hands remain on the ground. Up to 10 Bobs are normal. The Bobbing individual (often the subordinate) may Bob when a high-ranking individual passes him/her or he/she may hurry towards the dominant chimpanzee to Bob.

HEAD NOD

In this pattern, the head is bobbed up and down by pivoting the neck and head, as one unit, from the top of the shoulders. It functions as an approach signal whose meaning may be modified by a combination with other gestures. Dominant individuals Head Nod toward subordinates who are hesitant to approach them after a display or threat. The Head Nod is frequently oriented toward chimpanzees in adjoining areas to get them to approach.

WRIST BEND (pronated wrist)

In this gesture, the wrist is bent and the back of the wrist is held toward the face of the recipient. The chimpanzee performing the Wrist Bend is usually seated or in a crouched bipedal stance while extending his/her wrist toward the recipient. The gesturer alternately looks down towards his/her arm and then at the recipient's face, usually with a wide-eyed expression. This gesture is found in the form of a greeting.

ARM HEADCOVER

The arms are placed across the top of the head with the hands down on either side of the head. This pattern occurs both during Play as a response to being tickled about the neck and shoulders and prior to Play as a signal of a desire to Play.

CHARGE

This is an aggressive/threatening behavior. The limbs of the chimpanzee are moving quickly and brought high off the ground. The head is tucked far down between the shoulders. If it is directed toward another individual, then eye contact with the recipient of the Charge is avoided. The chimpanzee's legs are straight during the charge, so the back is more horizontal than with normal running. Each movement is made with considerable force during a Charge; as the limbs hit the ground a slapping sound is produced. The chimpanzee's hair is almost always pilo erect (standing on end) during a charge, especially with males. Charges are not always directed toward other chimpanzees; occasionally they are directed away from another individual and serve to initiate a chase. The chimpanzee may also butt with their head.

RAKE

The Rake is a sweeping movement with straight arms along the ground. The chimpanzee normally shows the quadrapedal hunch. It usually occurs prior to a charging display. An item could be included in the Raking.

PEER

A chimpanzee holds his/her face very close to another chimpanzee's face or food being eaten. Eye gaze is directed toward the mouth or food.

Adapted from: Goodall, J. (1986). The Chimpanzees of Gombe: Patterns of behavior. Cambridge, MA: Belknap Press of Harvard University Press.

CHIMPANZEE FACIAL EXPRESSIONS

(Please use this to accompany the pictures of chimpanzee facial expressions)

HORIZONTAL POUT

Sides of the mouth are pulled back with lips still pursed and pushed forward, often while whimpering. When the lips become extremely retracted this results in the low closed grin.

RELAXED FACE

A chimpanzee will exhibit this facial expression when they appear to be relaxed (hair flat, arousal level low.) The mouth is closed and tension in the muscles of the face cannot be observed.

RELAXED FACE WITH DROOPED LIP

Same as relaxed face described above, except that the lower lip droops down.

PLAY FACE

At a low intensity the lower lip is retracted to show the lower teeth. The play face may become a full open grin during really rough play. Laughing may or may not accompany the Play Face. The Play Face may be seen in Play and positive social contexts.

POUT

The lips are in a neutral position as described for a relaxed face. The mouth is closed with the corners in a relaxed position. The upper lip may be in its normal position, but in the more extreme forms of the pout face it is pulled downward and pressed tightly against the lower lip creating numerous wrinkles across the skin above it. The lower lip is pushed out so that it protrudes beyond the upper lip. This facial display occurs without accompanying vocalizations.

SNEER

The chimpanzee's upper lip and nose are wrinkled. Sometimes it occurs in a threatening or avoidance situation.

FULL CLOSED GRIN (GRIMACE)

The full closed grin is when both upper and lower teeth are revealed and are closed or almost closed. The teeth are revealed by horizontal retraction of the upper and lower lips. Often the gums are also revealed.

FULL OPEN GRIN (GRIMACE)
The same as the FULL CLOSED GRIN; differing only because the teeth upper and lower are partly separated or widely separated.

LOW CLOSED GRIN (GRIMACE)
The low closed grin is when only lower teeth (sometimes with gums) are revealed. This may follow whimpering and precede crying screams.

COMPRESSED-LIPS FACE
The lips are pressed tightly together so that the upper lip is bunched up and protrudes beyond the point where the lips meet. The compressed-lips face is often seen during displays and attacks.

LIP FLIP
The upper lip is flipped up so the underside can be seen. The chimp then looks toward his/her lip.

HOOT FACE
This is made up of a sequence of facial expressions that accompany the pant-hoot vocalization. While making a pant hoot, the lips are trumpeted out, the eyes are wide open, and the brow is in a normal or a raised position. The mouth is closed with the corners relaxed.

Adapted from: Goodall, J. (1986). The Chimpanzees of Gombe: Patterns of behavior. Cambridge, MA: Belknap Press of Harvard University Press.

Chimpanzee Facial Expressions

Adapted from: Goodall, J. (1986). The Chimpanzees of Gombe: Patterns of behavior. Cambridge, MA: Belknap Press of Harvard University Press.

CHIMPANZEES IN DANGER

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1-2 class periods

Subject Area: Life Sciences, Math, Social Studies

Objectives: To raise student awareness regarding the endangered status of free-living chimpanzees.

Materials: "Chimpanzees in Danger" hand out, "Historical Range and Current Distribution of Chimpanzees" map hand out, atlases

Activity:

Have students read the information regarding free-living chimpanzees in Africa and their continued decline.

Review the information found in the reading with the class.

Hand out the map worksheet, refer to the key, and read through the questions with the students. Have them answer the questions by referring to information in the reading and from the map.

After students have completed the worksheet, have them share their answers from question 11. Make a list on the board with every new answer; continue brainstorming with the class.

Extensions:

Encourage students to follow through with their idea, or make a class project from one or two of the ideas.

CHIMPANZEES IN DANGER...

At the turn of the century there were approximately 2 million chimpanzees living in their natural habitat. A census conducted from 1960 to 1988 found that the population of free-living chimpanzees had dropped to approximately 200,000. In the mid to late 1990s, another population census was conducted focusing on all species from countries around the world. This report stated that in 1999 there were between 100,000 and 150,000 free-living chimpanzees left in Africa. In the last 10 to 20 years, the free-living population is estimated to have dropped by at least 50,000 to 100,000 chimpanzees.

In less than 100 years, the population was 10% of what it originally was; by 1999 the free-living chimpanzee population has (in the worst case) been cut in half from the 1988 findings, or in the best case it has been cut by 25%. What is causing this decimation of our closest living relative?

HABITAT DESTRUCTION

Humans are destroying the chimpanzees' habitat. Logging companies and agriculture are moving in to cut down large areas of the rain forest. Two types of logging, clear-felling and selective-felling, attract agriculture and commercial hunting of wildlife; no longer are chimpanzees able to live peacefully in these areas. Many chimpanzee communities survive because of forest and game reserves or national parks.

POACHING

Even in "protected" areas, chimpanzees are still in danger because of poaching. Hunters illegally shoot and butcher over 4,000 chimpanzees each year. (This is 20 times more than the number of chimpanzees living in Tanzania's Gombe Stream Reserve.) The most common poaching practice is to shoot the mother chimpanzee, killing her and if the infant survives, taking him/her to sell to an animal dealer for entertainment, zoos, or private ownership.

Captured infants are often bound with wire and starved. They are usually kept in horrible conditions. Only one in every 10 to 20 chimpanzees brought out of Africa even survive.

The bushmeat trade supports the popular poaching practice. People pay a premium to eat more great apes each year than are now kept in all the zoos and laboratories of the world. Chimpanzees are preferable to hunt because they don't stand their ground and attack like gorillas do. When one chimp is hit, the others flee; hunters can then follow after them. More and more animals are killed through the bushmeat trade due to the advent of modern firearms, improved communication systems, and transportation. This hunting is no longer for subsistence purposes only. 75% of bushmeat is taken to the large cities to sell to the middle class, tourists, and government officials.

CORRECTIVE EFFORTS

Changes are being made to stop the continued devastation of chimpanzee populations. Even though it is illegal to import free-living chimpanzees into the United States directly from Africa, it is legal to import chimpanzees from other countries to the United States. Sadly those chimpanzees originate from Africa through the black market. Many public campaigns have been organized to raise funds and awareness to stop the poaching and habitat destruction.

Unfortunately, even though Jane Goodall began to open our eyes and educate us about our next of kin since the mid-1960s, the number of chimpanzees is still rapidly declining. What can we do before it is too late?

HISTORICAL RANGE AND CURRENT DISTRIBUTION OF CHIMPANZEES

Adapted from Geza Teleki's maps found in Understanding Chimpanzees, 1988.

A) Label the African countries on the map.
(Use a separate sheet of paper if necessary.)

B) Answer the following questions from information found in the reading as well as from the map above.

1. How many countries did the historical range of chimpanzees cover? _____

2. Estimate (in kilometers) how large the range of chimpanzees in Africa was historically.

_____

3. Estimate the current distribution of chimpanzees. _____

4. Where are most of the chimpanzees found currently? _____

5. List four countries where chimpanzees lived originally; but no longer inhabit.

_____

6. What is causing the decimation of our closest living relative?

_____

7. From 1900 to 1988 what percent of the population of chimpanzees wasleft? _____

8. How many chimpanzees have been lost due to habitat destruction and poaching from the turn of the 20th century to the present day? _____

9. Has the bushmeat trade slowed down? _____ Why? _____

_____

10. What are some things being done to help stop the continued devastation of chimpanzee populations? _____

_____

11. What else can be done to save chimpanzees from extinction? _____

_____

ANSWER KEY

HISTORICAL RANGE AND CURRENT DISTRIBUTION OF CHIMPANZEES

Adapted from Geza Teleki's maps found in Understanding Chimpanzees, 1988.

A) Label the African countries on the map.

B) Answer the following questions from information found in the reading as well as from the map above.

1. How many countries did the historical range of chimpanzees cover? 24 Ivory Coast, Uganda, Rwanda, Burundi, Tanzania, Dem. Rep. of the Congo, Rep. of the Congo, Gabon, Equitorial Guinea, Cameroon, Cen. Af. Rep., Sudan, Nigeria, Benin, Togo, Ghana, Burkina Faso, Mali, Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone, Liberia

2. Estimate how large the range of chimpanzees in Africa was historically.

approx. 6,000 km across

3. Estimate the current distribution of chimpanzees. 100,000-150,000

4. Where are most of the chimpanzees found currently? Gabon or Tanzania

5. List four countries where chimpanzees lived originally but no longer inhabit.

Nigeria, Benin, Togo, Burkin Faso, Burundi, Gambia

6. What is causing the decimation of our closest living relative?

Poaching and Habitat Destruction

7. From 1900 to 1988, what percent of the population of chimpanzees was left? 10%

8. How many chimpanzees have been lost due to habitat destruction and poaching from the turn of the century to the present day? approx. 1,850,000

9. Has the bushmeat trade slowed down? No Why?

Eating bushmeat is a delicacy and it is very popular.

10. What are some things being done to help stop the continued devastation of chimpanzee populations? importation of chimpanzees is illegal; fundraising to raise

awareness to stop poaching and habitat destruction

11. What else can be done to save chimpanzees from extinction?

answers may vary

Key to map:

1. Eritrea
2. Djibouti
3. Ethiopia
4. Somalia
5. Kenya
6. Uganda
7. Rwanda
8. Burundi
9. Tanzania
10. Mozambique
11. Malawi
12. Zambia
13. Dem. Rep. of Congo
14. Angola
15. Republic of Congo
16. Gabon
17. Equitorial Guinea
18. Cameroon
19. Central African Republic
20. Sudan
21. Chad
22. Niger
23. Nigeria
24. Benin
25. Togo
26. Ghana
27. Burkina Faso
28. Mali
29. Mauritana
30. Senega
31. Gambia
32. Guinea Bissau
33. Guinea
34. Sierra Leone
35. Liberia
36. Cote D'Ivoire (Ivory Coast)

FREE LIVING CHIMPANZEES
GLOSSARY

Behavior- the manner in which a species conducts itself.

Bipedal- the act of walking on two legs.

Census- an official count taken to determine the number, age, and gender of a population.

Demography- the science of dealing with statistics of populations, including size, distribution, diseases, births, and deaths.

Dominant- occupying a commanding position.

Duiker- a small African antelope.

Escarpment- steep slope, or cliff.

Foliage- the leaves of a plant, especially growing leaves.

Foraging- to search or hunt for food.

Gestures- a movement of the hands, arms, or any part of the body to help express an idea or feeling.

Grooming- to generally take care of, clean, brush, etc. When chimpanzees groom, they are helping to clean themselves (ex: cleaning off dead skin). Grooming is also a bonding time for friends and family and helps to calm after excitement.

Habituation- the act of making used to; to become accustom–familiarize, acclimate. Occurs when an initially new experience is presented repeatedly.

Hominoid- of the form or resembling man. Classification: family.

Leaf sponging- when a leaf is used to soak up water and then placed in the mouth to drink from.

Montane- having to do with or inhabiting mountains.

Nocturnal- active in the night.

Pan troglodytes schweinfurthii- Pan (genus), troglodytes (species), schwenfurthii (subspecies). The chimpanzee that is found in eastern Africa. The characteristics of the chimpanzee found in eastern Africa are darker skinned, more narrow body, and longer hair.

Pan troglodytes troglodytes- Pan (genus), troglodytes (species), troglodytes (subspecies). The chimpanzee that is found in central Africa. The characteristics of the chimpanzee that is found in central Africa are a blend between the eastern and western subspecies.

Pan troglodytes verus- Pan (genus), troglodytes (species), verus (subspecies). This chimpanzee is found in western Africa. The characteristics of the chimpanzee that is found in western Africa are lighter skinned, shorter hair, and larger bodies.

Pant-hoot- voiced on both exhalation and inhalation; most commonly heard call of adult chimpanzee (at least to human ears). Serves to identify the caller. May end in a screaming or roaring sound. Can be used in different situations: during travel, upon arrival at a food source, in response to calls of other chimps, during social excitement, and spontaneously. They can also be part of charging displays.

Paternity- the condition of being a father; fatherhood. Paternal origin or descent.

Phenomenon- any exceptional fact or occurance.

Prosimian- a primate belonging to the more primitive of the two divisions of primates, including all early fossil primates and modern lemurs, loris, tarsiers, and tree shrews.

Quadrapedal- the act of walking on all four limbs (arms and legs).

Random provisioning- the act of supplying food at a variety of times and places with no order.

Subordinate- lower in rank.

Sympatry- the existence of different species in the same area without crossbreeding.

Taxonomy- the branch of science dealing with identification. Helps to identify characteristics that distinguish a species.

Territoriality- a form of behavior in which an animal claims an area for itself and defends it from intrusion by others.

FREE-LIVING CHIMPANZEES
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Name _____

FREE-LIVING CHIMPANZEES ASSESSMENT

Read each question carefully and answer appropriately.

1) List five of the 24 countries that were part of the original range of chimpanzees.
   a.
   b.
   c.
   d.
   e.

2) Why are chimpanzees endangered?

   _____

   _____

   _____

3) What are some things that could be done to keep free-living chimpanzees from going extinct?

   _____

   _____

   _____

4) You are an ethologist participating in a study of different groups of chimpanzees. You have found that some of their behaviors are the same, but other behaviors are specific to only one group. Why is it important to learn about these cultural differences?

   _____

   _____

   _____

How can these findings help the plight of the free-living chimpanzee?

_____

_____

_____

What impact might this information have on humans?

_____

_____

_____

5) Identify the following behaviors and facial expressions:
   a. Compressed-lips face b. Play face c. Scoop gesture
   d. Rake e. Head nod f. Hoot face

_____ The head is bobbed up and down by pivoting the neck and head as one unit from the top of the shoulder.

_____ Lips are pressed tightly together so that the upper lip is bunched up and protrudes beyond the point where the lips meet.

_____ A transport signal between mothers and infants.

_____ Lower lip is retracted to show the lower teeth. Top teeth tend to be covered.

_____ Sweeping movements with straight arms along the ground.

_____ The lips are trumpeted out, the eyes are wide open, and the brow is in a normal or a raised position.

6) What facial expressions might you see when a chimpanzee is:

Playing _____

Excited _____

Distressed _____

Displaying _____

Fear or threatened _____

Calm _____

1) relaxed face
2) sneer
3) pout
4) horizontal pout
5) full open grin
6) play face
7) full closed grin
8) compressed lips
9) relaxed with drooped lip
10) low closed grin

7) Choose one of the above facial expression and either draw or explain what it looks like.

8) Include the following terms in a paragraph (or two) sharing information about free-living chimpanzees:
(Use the back side of the page if necessary.)

territoriality	quadrapedal	grooming
leaf-sponging	foliage	foraging
hominoid	gestures	

Name _____

FREE-LIVING CHIMPANZEES
ASSESSMENT

ANSWER KEY

Read each question carefully and answer appropriately.

1) List five of the 24 countries that were part of the original range of chimpanzees.
   a.
   b.
   c.
   d.
   e.

2) Why are chimpanzees endangered?

Should include: habitat destruction, poaching, or the Bushmeat trade

3) What are some things that could be done to keep free-living chimpanzees from going extinct?

Answers may vary

4) You are an ethologist participating in a study of different groups of chimpanzees. You have found that some of their behaviors are the same, but other behaviors are specific to only one group. Why is it important to learn about these cultural differences?

Answers may vary

How can these findings help the plight of the free-living chimpanzee?

Answers should be related to previous answer.

What impact might this information have on humans?

Answers may vary

5) Identify the following behaviors and facial expressions.
   a. Compressed-lips face b. Play face c. Scoop gesture
   d. Rake e. Head nod f. Hoot face

e ____ The head is bobbed up and down by pivoting the neck and head as one unit from the top of the shoulder.

a ____ Lips are pressed tightly together so that the upper lip is bunched up and protrudes beyond the point where the lips meet.

c ____ A transport signal between mothers and infants when the mother scoops an infant onto her back.

b ____ Lower lip is retracted to show the lower teeth. Top teeth tend to be covered.

d ____ Sweeping movements with straight arms along the ground.

f ____ The lips are trumpeted out, the eyes are wide open, and the brow is in a normal or a raised position.

6) What facial expressions might you see when a chimpanzee is:

Playing	6
Excited	5,7,10
Distressed	3, 4
Displaying	8
Fear or threatened	2
Calm	1, 9

1) relaxed face
2) sneer
3) pout
4) horizontal pout
5) full open grin
6) play face
7) full closed grin
8) compressed lips
9) relaxed with drooped lip
10) low closed grin

7) Choose one of the above facial expression and either draw or explain what it looks like.

Answers may vary; refer to "Chimpanzee Facial Expressions" handouts.

8) Include the following terms in a paragraph (or two) sharing information about free-living chimpanzees.
(Use the back side of the page if necessary.)

territoriality	quadrapedal	grooming
leaf-sponging	foliage	foraging
hominoid	gestures	

Answers may vary

TEACHER INFORMATION ON: CAPTIVE CHIMPANZEES

GENETICS

Chimpanzees are 98.76% genetically identical to humans. With this genetic closeness comes similarities and differences.

Humans and chimpanzees have many similarities. Some of those similarities are:

- We both have large brains that result in increased intelligence.
- Both chimpanzees and humans frequently have single births (they will also have twins) and have a high maternal investment in their offspring.
- As primates, humans and chimpanzees both have a reliance on learned behavior.
- Both chimpanzees and humans have long childhoods.
- We both have opposable thumbs, see color, and have binocular stereoscopic vision (helps with depth perception).
- Both chimpanzees and humans are capable of communicating through language.
- Chimpanzees and humans both have complex social and cultural structures.

Even with the genetic closeness, the 1.24% can make of difference in important ways.

Some of those differences are:

- Chimpanzees are much stronger than humans, 8-10 times stronger in their arms alone (5-7 times stronger overall).
- Chimpanzees have denser bones (so they sink in water) and much tougher skin.
- Chimpanzees are not equipped physically for vocal speech; their larynx is higher, and they have a thinner tongue. Also, the majority of their vocalizations are controlled by the limbic system located in the brain, which is more emotionally rooted.
- Chimpanzees respond to some diseases like humans do. However chimpanzees can be infected with HIV, but do not develop AIDS.

CHIMPANZEES IN CAPTIVITY

Chimpanzees pay a price that is sometimes fatal because they are our closest relatives. Chimpanzees in captivity are placed in situations for human need, desire, and entertainment.

Captive chimpanzees can be found in many places: biomedical research facilities, zoos, the entertainment industry, sanctuaries, even private homes. There are approximately, 2000 chimpanzees who live in captivity in the United States; 1700 live in biomedical research facilities, and the other 300 live in zoos or sanctuaries.

ENTERTAINMENT

This form of captivity for chimpanzees is only covered briefly in the curriculum, but is still an issue of concern. Many humans find it comical to watch chimpanzees perform on TV, in circuses, and in other forms of media. They find it humorous to watch chimpanzees "act like humans." What they do not see is how the chimpanzees are treated behind the scenes.

Many of the chimpanzees seen on TV and in movies are infants (younger than 3-4 years old) and should still be with their mothers. At this age, they are easy to manipulate. As the chimpanzees

in entertainment age, humans who work with them will use physical force to get them to do what is expected and to insure the chimpanzees' undivided attention. Many adult chimpanzees in entertainment have had their teeth knocked out with crowbars or pulled to prevent major injury to their trainers from bites.

The facilities in which chimpanzees are kept consist of small cages that are often enclosed in wooden boxes for transport. Each chimpanzee cage is usually isolated from other chimpanzees. Often they will have to sit in their own excrement for long periods of time before they reach their destination.

When a chimpanzee can no longer be used in entertainment, they will often be sold to substandard zoos or to biomedical research facilities.

BIOMEDICAL RESEARCH

Chimpanzees who live in biomedical research facilities live in isolation and fear. They are subjected to treatment that is inhumane and invasive. Even though chimpanzees are an endangered species, their captive relatives are only classified as threatened. Thus, it is legal to conduct invasive tests on them and to breed them for such purposes.

Most chimpanzees who live in this restricted environment show signs of stress and deprivation. They self inflict wounds, develop stereotypies (i.e. continual rocking), become very withdrawn, and even throw feces (all are behaviors indicative of psychological pain and distress).

The cages in which the chimpanzees live are at minimum 5'x 5'x 7' in size. They may be suspended off the ground, so the chimpanzees living in the cages do not even have the opportunity to touch the ground. (The cages are suspended off the ground so it is easier for the animal technicians to clean excrement, etc.) The facilities are very sterile. Chimpanzees have little to no contact with other chimpanzees; they may see others through the cages, but rarely share cages with each other. This all happens despite their highly evolved social needs. Infant chimpanzees born to mothers in biomedical research are often taken away shortly after birth and are also used for research.

Because chimpanzees are 98.76% genetically identical to us, they are used as a prime animal model to test diseases. The 1.24% difference is a much bigger gap than researchers want people to believe. Chimpanzees are infected with diseases like Hepatitis and HIV, yet their immune system does not respond to all diseases like a human's immune system would. In essence, chimpanzees are faced with the trauma of the infection, (liver biopsies, blood drawings, frequent anesthesia) and then are incarcerated forever because they cannot be reintroduced to chimpanzee groups that are not infected.The chimpanzee's contact with human caretakers is also restricted due to their infectious status. Thus the chimpanzee's man-made disease condemns them to a life of isolation.

Chimpanzees are also repeatedly tranquilized to conduct lymph node, bone marrow, and punch liver biopsies. Often times the findings of these studies are inconclusive, imprecise, or even dangerous to extrapolate to humans.

Chimpanzees are anesthetized ("knocked-down") prior to medical procedures. There are signs to warn the chimpanzee of the up-coming anesthetization. A red flag is placed on the chimpanzee's cage to tell the technicians not to feed that chimpanzee breakfast. There are usually two doors to every barrack. From one door comes the food. From the other door come the animal technicians in surgical masks and jackets. The chimpanzee is then "knocked-down" (anesthetized with dart guns) so he/she can be taken out of his/her cage and transported to the laboratory. Even though the chimpanzee is anesthetized, he/she is still able to hear what is going on and what is being said about him/her. The process causes tremendous stress.

Many times when chimpanzees are not being used in a procedure, they are referred to by their given names. If they are being used for a medical procedure or study, they are referred to by the numbers they were assigned. This helps to set the chimpanzee apart as a *thing* instead of a *being*. Using numbers instead of names helps researchers and caretakers emotionally remove themselves from the physical, social, and psychological reality of the chimpanzees' lives.

Chimpanzees in biomedical research are rarely provided objects to enrich their lives or exercise their minds. Chimpanzees are an intelligent species. Just like humans who are deprived of their social, intellectual, and physical needs, chimpanzees exhibit severe behavioral symptoms of their stress; for example, withdrawl, self-mutilation, and aggression.

ZOOS

Zoos defend their exhibits as a form of educating the public on the endangered status of animals in their natural environment and to give the public an opportunity to see animals whose relatives are free-living.

American Zoological Association (AZA) accredited zoos also breed animals to create a captive population for the Species Survival Plan (SSP). They justify the breeding by stating that they are maintaining gene pools so that endangered species may be preserved for future generations. It is important to be aware that every SSP program produces a "surplus." This program is said to focus on "the species" and forget about "the individual." Unfortunately, most of the "surplus" animals do not remain in the communities where they were born. They often end up in other zoos circuses, roadside zoos, or Hollywood films. Surplus animals are disposed of as conveniently as possible without regard to what is best for them.

Many chimpanzees in zoos and other forms of captivity will show the following examples of behavior with more frequency: over grooming (bare skin patches on arms and legs), continual rocking, spitting, and feces throwing.

Free-living chimpanzees travel for 60% of their day and can cover as many as 10 kilometers in that time. They also take time to forage for a variety of foods, group and self-groom, play with children and friends, and take naps. Throughout the day free-living chimpanzees are faced with many challenges, such as defending their territory against strangers, crossing bodies of water, and dealing with conflicts within the group. They are always faced with the rewards of social living: grooming, playing, and sharing of food and companionship.

Chimpanzees in zoos aren't always given the opportunity to experience the situations that their free-living relatives experience. They aren't given facilities that enable them to travel distances, problem solve, or forage for their own food.

Even though some zoos are improving their facilities, chimpanzees and other animals are still caged in inhumane and lonely conditions. They may be isolated in single cages or placed in outdoor areas surrounded with cement and separated by moats with water in them. Moats can be extremely dangerous. Chimpanzees have very dense bones; because of this they are not able to float in water. If a chimpanzee falls into a moat, he/she will likely drown.

The zoos that have improved their facilities have done so by incorporating enrichment into the chimpanzees' area. The Detroit Zoo is not only improving the environments but is also committed to not import animals who were once free-living. The Detroit Zoo is trying to celebrate and save wildlife. Based on this philosophy, the zoo has chosen to adopt animals who were once raised as exotic pets and/or have been retired from entertainment. The zoo director, Dr. Ron Kagan, believes that zoos need to also embrace the ethical treatment of animals and act upon this belief. Unfortunately, not all zookeepers and administrators believe in preserving free-living species and/or providing adequate housing and enrichment for chimpanzees already in captivity.

SANCTUARIES

We would not need chimpanzee sanctuaries if our next of kin were not used in biomedical research and entertainment; sanctuaries have developed out of necessity. Many chimpanzees who were once "pets" or in entertainment find themselves in biomedical research as they approach adolescence. Chimpanzees are also intentionally bred and raised to be used in vivisection and other forms of chemical and drug testing.

Once chimpanzees are no longer used for experimentation and testing, they are still condemned to a life behind bars. They are deprived of natural light, have limited contact with other chimpan

zees, and are subjected to stressful situations. The life of a chimpanzee in biomedical research is never chimpanzee-friendly.

Thanks to animal welfare and animal rights organizations and donations from the concerned public, sanctuaries have been built for the permanent retirement of chimpanzees from biomedical research. The key word is *permanent;* not all sanctuaries are dedicated to this belief. It is important to pay attention to the board of directors for each sanctuary. If the board has members who are part of the biomedical research community, the sanctuary may not give chimpanzees a permanent retirement. Sanctuaries that do not support permanent retirement are willing to take the chimpanzees out of the sanctuaries and place them back into biomedical research facilities for further research and testing. Chimpanzees who were once used for entertainment purposes may also have a semi-permanent retirement.

Sanctuaries who support full-retirement can provide a quality of life most chimpanzees have never experienced. They can provide chimpanzees with different forms of enrichment, health-care, and a nurturing environment. They can provide a life as close to their free-living relatives as is possible in "captivity." One example of a sanctuary that is focused on the well-being and permanent retirement of chimpanzees is the Center for Captive Chimpanzee Care in Fort Pierce, Florida.

IS FREEDOM POSSIBLE?

Once people are educated on the plight of chimpanzees in captivity, they often ask why chimpanzees cannot be sent back to their natural environment.

There are many reasons that keep those chimpanzees who are in captivity captive. One reason is that the chimpanzees who have lived in captivity do not know how to live as free-living chimpanzees. It would not be practical to send them into the African jungle and expect them to do well. They are not familiar with the natural environment and all its challenges and dangers. They have been dependent on humans for their food and would not know how to fend for themselves. The resident chimpanzees of the area would not welcome them, since they are territorial and see most strangers as enemies.

Often when chimpanzees are reintroduced it ends fatally. Lucy, a chimpanzee who was raised with humans and learned to communicate through sign language, was one chimpanzee who paid with her life when sent to Africa. When she first arrived it was very stressful; she would not leave her cage and depended on her human companion for food and support. After years of rehabilitation, Lucy began foraging for food on her own and became the dominant female in her small group of chimpanzees. Unfortunately, Lucy would approach all humans who entered her area. She was unafraid of them since she had lived with humans for many years. This lack of fear was what led to her demise. One day, she approached poachers who killed, skinned, and cut off her hands and feet to sell at market. Her skeleton was found near the old campsite that Lucy and her human companion used to use.

Freedom for captive chimpanzees must be handled in a more realistic way: chimpanzees can be granted freedom from experimentation, slavery, and isolation. Chimpanzees living in captivity deserve a higher quality of life. They deserve to be able to exercise, be exposed to direct sunlight, have contact with the earth, and have companionship with other chimpanzees.

Sanctuaries designed to meet the needs of chimpanzees provide lots of vertical and horizontal space, places to have privacy from human observation, natural foliage, various forms of enrichment, and opportunities for social interaction. These sanctuaries respect not only the physical, social, and psychological needs of the chimpanzees, but also respect their dignity as beings.

BIOMEDICAL RESEARCH

HOW THEY LIVE

Grade level: 7-9

Time needed: 2-3 class periods

Subject Area: Life Sciences, Mathematics

Objectives: To increase student awareness of the conditions in which animals in biomedical research live and the role of the Animal Welfare Act.

Materials: pedometer, masking tape/string, handouts (enough for each group member) "Animal Welfare Act - History," "AWA Insight," Animal Care "The Animal Welfare Act," Excerpt from FINAL REPORT... "Intent and Language of the Animal Welfare Act," "Counter Point," "The Paper Tiger," "Title 9 - Animals and Animal Products" (Primary enclosures, Feeding, Environmental Enhancement, Cleaning, etc.), "Alternative Requests," "Enclosures Insight"

Activity:

Preparation: On the day before the activity estimate with the class approximately how many miles you think a person walks in a day. Ask a student to volunteer to carry a pedometer with them to record how far they walk during a day.
The day of the activity (before students enter) make a square on the floor (next to a wall) that is 5'x5'. Mark a place on the wall that is 7' above the square.

In Class:
"Think about the last time you were confined. Maybe you were waiting in a car for a long time or maybe you were sitting in a classroom for a long time. Did you enjoy this time? Why? Why not?

Imagine being locked in an elevator for two days. Someone brought you food and water, but you were not able to get out. How would this make you feel? What would you miss?

Keep these examples in mind as you read the following information."

Group 1: AWA History, AWA Insight
Group 2: Animal Care "The Animal Welfare Act" AND
Excerpt from FINAL REPORT..."Intent and Language of the AWA"
Group 3: Title 9: "Primary Enclosures"
Group 4: Title 9: "Feeding" AND "Environmental Enhancement"
Group 5: Title 9: "Cleaning, Sanitization..."

Group 6: "Alternative Requests" Letter AND a, b, and c – enrichment strategies
Group 7: "Alternative Requests" d, e, f, and g – enrichment strategies

Have groups 1-5 share their information with the class.

After the short presentations, review the activities that chimpanzees and other primates engage in in their natural environment:
- group grooming
- climbing and swinging through trees
- daily range
- foraging for food
- variety of food they eat
- etc

Compare with students what activities a human participates in during the day.

Ask the student who recorded his/her "mileage" to share the total with the class. Discuss the comparison between the travel of a human in a day and a free-living chimpanzee. Look at the different benefits of walking and exercise (exercise helps your muscles, keeps weight down, calms you down, releases endorphins, etc.) and correlate that with free-living primates and their exercise.

Refer to the tape outlining the size of a cage that the USDA requires for full-grown non-human great apes in research facilities. Encourage a student volunteer to stand in the 'cage".

Discuss with the class whether the size of the cage meets the needs of the primate.

-Do you think that the mental and emotional health of the primate is being compromised? Why? Why not?
-Is he/she able to move around much?
-Can he/she climb and swing very much, if at all?
-What would be the BEST place for the chimpanzee/primate?
-Is this where he/she belongs?
-Is his/her quality of life equal to that of free-living primates/chimpanzees?
-What can we do to help these captive primates?
-Is the Animal Welfare Act able to enforce the laws? (Ans: Not necessarily; the regulations are minimal and ineffective. The numbers of poor reports never changes, and punishment and enforcement are not stringent.)

Have groups 6 & 7 present their information from the "Alternative Requests" handout. Discuss issues covered. What else could be done to meet the needs of the primates?

<u>Extension:</u>

Have students write a letter to their congressional representative covering issues concerning biomedical research, captive animals, or the Animal Welfare Act.

GROUP 1

The History of the Animal Welfare Act

The first Federal law protecting animals against cruel or abusive treatment was the Twenty-Eight Hour Law of 1873. This law was intended to insure that livestock being transported to market would be rested and watered at least once every 28 hours during their journey. However, it was not until 1966, with the passage of the Laboratory Animal Welfare Act, that Federal regulations set standards for the use of animals in biomedical research. Prior to 1966, animal dealers and research facilities in the United States were not required to follow any legally mandated standards for the humane housing, husbandry, or care of their experimental animals. Although public interest in the treatment of laboratory animals was growing, opponents of Federal animal welfare legislation had always been successful in preventing these measures from becoming law. However, events surrounding the disappearance of a Dalmatian named Pepper and the response of the House Agriculture Committee would soon change history.

In July 1965, a Dalmatian named Pepper disappeared from her backyard and was later spotted by a family member in a photograph of dogs and goats being unloaded from a Pennsylvania animal dealer's truck. The family discovered that Pepper had been sold to a dog dealer in New York State. When the family confronted the dealer, they were refused entry onto the property. Fay Brisk, a long-time champion of dog dealer reform in Pennsylvania, had contacted the Animal Welfare Institute (AWI) in Washington for help in retrieving Pepper. Events led to a telephone call to Congressman Resnickí's office in the District where the dog dealer was located. However, even Mr. Resnickí's intercession failed. Angered by the dealer's refusal to admit the family, Congressman Resnick decided to introduce a bill to prevent such wrongs. Pressure from the Pennsylvania State Police led to an admission that Pepper had actually been sold to a hospital in New York City. In the end, Pepper had been used in an experiment and was euthanized. Pepper's disappearance, however, had galvanized several members of the House and Senate to introduce legislation to prevent future incidents.

Congressman Resnick's bill was introduced in the House and required that dog and cat dealers and the laboratories that purchased them be licensed and inspected by the U.S. Department of Agriculture and required to adhere to humane standards established by the Secretary of Agriculture. Similar legislation was introduced in the Senate and co-sponsored by Senator Warren Magnuson and Senator Joseph Clark. Senator Magnuson introduced legislation in 1937 that created the Cancer Institute in Bethesda. He later introduced legislation with Senator Lister Hill that created what is now the National Institutes of Health. However, in remarks made during hearings on his animal welfare legislation, Senator Magnuson stated

> "The [C]ommittee [on Commerce] opens the first of two days of hearings this morning on a question which is of very great concern to millions of Americans: The protection of the pet owner from loss of the pet through theft and the assurance that animals in the hands of dealers will be humanely treated.
>
> I would like to emphasize that the issue before us today is not the merits or demerits of animal research. We are interested in curbing petnapping, catnapping, dognapping, and protecting animals destined for research laboratories, while they are in commerce. We are not considering curbing medical research.
>
> I have always considered myself a friend of the medical researcher.... Yet, we do not think we can allow the needs of research, great as they may be, to promote either the theft of a child's pet or the growth of unscrupulous animal dealers."

From their introduction, both bills faced opposition. However, another event was about to occur that would make it harder for the legislation to fail. While hearings on the House bill were being held by Congressman W.R. Poage, Chairman, House Agriculture Committee, an article appeared in Life magazine with photographs, taken by Stan Wayman during a raid by the Maryland State Police, documenting the abuse of dogs in a dealer's facility. The resulting public outcry led opponents of the legislation to modify their stand and to attempt to seek exemptions for research facilities rather than complete defeat of the legislation. Although both the House and Senate bills were initially weakened by exemptions for laboratories, Senator Mike Monroney prepared an amendment that restored coverage of laboratory animals. Despite attempts made to defeat this amendment, newspapers throughout the country offered editorial support for the Monroney amendment. In the end, the Senate Commerce Committee bill was passed by the Senate and sent to President Johnson who signed the bill into law on August 24, 1966. The bill became Public Law 89-544.

Retrieved from the World Wide Web June 14, 2000
http://www.aphis.usda.gov/ac/awahistory

Group 1

AWA Insight

This excerpt regarding the history of the Animal Welfare Act (AWA) is but one example of how the AWA is *not* intended to help suffering animals. In the introduction we hear about Pepper, the pet Dalmation, who disappeared and was later discovered to have been sold to a dog dealer in New York. Pepper was eventually sold to a New York City hospital, used in an experiment, and then killed.

The writer(s) of "Pepper's story" never actually discuss what Pepper had to endure before being killed. Instead the author(s) chose to focus on exactly what the House of Representatives focused on: the pain and distress of Pepper's "owners." [1]

An examination of the wording of Senator Magnuson's comments (*below*) makes it clear that the argument for passing the AWA actually had very little to do with "animal rights" and a lot to do with "human rights"— in this case " pet owners":

> *The [C]ommittee [on Commerce] opens the first two days of hearings this morning on a question which is of very great concern to millions of Americans: "The protection of the pet owner from the loss of the pet through theft and the assurance that animals in the hands of dealers will be humanely treated."*

The initial impetus for the AWA was more to protect the "pet owners' property" than to protect the rights and safety of animals. The legislation mentions only that animals in the hands of dealers should be humanely treated. Since such dealers collect and/or breed dogs for experimentation, often resulting in the animals' suffering and death, the admonition to treat the animals "humanely" in practical terms serves less to spare animals pain and death and more to create the rhetoric of "humaneness." The trusting public, therefore, is given false reassurances and vacuous guarantees.

[1] Today, the term "owners" is often replaced with the correct term "guardians" since animals of any species are not humans' property.

GROUP 2

The Animal Welfare Act

The AWA requires that minimum standards of care and treatment be provided for most warm-blooded animals bred for commercial sale, used in research, transported commercially, or exhibited to the public. This includes animals exhibited in zoos, circuses, and marine mammal facilities as well as pets transported on commercial airlines. The AWA also prohibits staged dogfights, bear and raccoon baiting, and similar animal fighting ventures. The law was first passed in 1966 and amended in 1970, 1976, 1985, and 1990.

In enforcing the AWA, Animal Care (AC) conducts randomly scheduled, unannounced inspections to ensure that all regulated facilities comply with the law. If an inspection reveals deficiencies in meeting the AWA standards and regulations, the inspector instructs the facility to correct the problems within a given timeframe. If deficiencies remain uncorrected at the follow up inspection, AC documents the facility's deficiencies and considers possible legal action. Such action could include fines and/or license suspensions or revocations.

[Though difficult to obtain, the public is encouraged, under the Freedom of Information Act (FOIA) as well as local humane inspecting agencies, to find out more about the treatment of animals in labs.]

Retrieved from the World Wide Web June 14, 2000
http://www.aphis.usda.gov/ac/info.html

GROUP 2

(Excerpt from FINAL REPORT ON ENVIRONMENT ENHANCEMENT TO PROMOTE THE PSYCHOLOGICAL WELL-BEING OF NONHUMAN PRIMATES, USDA, APHIS, JULY 1999)

II. PROMOTING PSYCHOLOGICAL WELL-BEING

A. Intent and Language of the Animal Welfare Act

The Animal Welfare Act states that "The Secretary (of Agriculture) shall promulgate standards....The standards shall include minimum requirements...for a physical environment adequate to promote the psychological well-being of primates." [AWA Sec. 13 (a)(1), emphasis added.]

The Animal Welfare Act was intended to promote the psychological well-being of nonhuman primates, not just prevent abnormal behaviors from occurring. Because there were no standards for primate psychological well-being prior to 1991, no measurable comparisons can be made as to whether the use of performance-based standards has improved the welfare of the animals as intended. As previously stated, most inspectors feel the lives of primates have been improved some, but that overall not enough is being done to provide a "physical environment adequate to promote the psychological well-being of primates," especially in the area of social grooming.

The concept of psychological well-being does not lend itself to precise definition. Facilities are allowed latitude in how they meet the requirements, as long as they achieve the desired results or outcomes. Therein lies the problem, as no one has defined the results desired in terms of something that can be easily observed and recognized.

Some facilities claim their environment enhancement programs are adequate because there are no distressing behaviors or appearances of ill health with their primates. This is a short-sighted view since waiting to improve a minimally enriched environment until a primate starts showing signs of psychological distress was not the intent of the Animal Welfare Act.

The Primate Environment Enhancement Team believes the intent of the Animal Welfare Act was to provide nonhuman primates with the opportunity to express a wide range of non-injurious, species-appropriate behaviors. The team's goal with this policy is to re-direct attention to adequate environmental conditions before abnormal behaviors develop.

Group 2

Counterpoint

The excerpt on Animal Care from the APHIS Web site illustrates how vague and misleading the USDA regulations on animal care really are. The statement that "most warm-blooded animals " must be provided with "minimum standards of care" begs the questions: *which* warm-blooded animals? Why include *some* warm-blooded animals and not others? Why not include *cold-blooded* animals?

For years, rats, mice, and birds—who compose up to 95% of animals used in experimentation-have not been included under even the minimal "protections" provided for other warm—blooded animals such as rabbits, dogs, and chimpanzees. Why make such an arbitrary distinction between like groups? Why draw an imaginary line between species and declare that the AWA will "protect" one side, but not the other?

There is no reasonable, defensible, scientific, or ethical answer to such questions. Instead, resistance to "protecting" rats, mice, and birds appears to be grounded solely in concerns over how *profits* will be affected if institutions are required to care for all animals in "their care." Further, the government's cost and efforts to inspect all laboratories containing all species of living, feeling animals will be greater. Such resistance is deaf to humane arguments. Not until recently has the USDA even recognized challenges to their exclusion of mice, rats, and birds from the AWA.

An excerpt from the Final Report on Environmental Enhancement to Promote the Psychological Well-Being of Nonhuman Primates, USDA, APHIS, from July 1999, discusses the intent and language of the AWA, stating that "the standards shall include *minimum* requirements [emphasis added]...for a physical environment adequate to promote the psychological well-being of primates." While the authors note that "The Animal Welfare Act was intended to promote the psychological well-being of nonhuman primates, not just prevent abnormal behaviors from occurring," they also point out that "the concept of psychological well-being does not lend itself to precise definition... therein lies the problem, as no one has defined the results desired in terms of something that can be easily observed and recognized."

Because there is no clearly defined standard of psychological well-being, facilities are able to sidestep AWA regulations by providing minimal, inadequate enrichment and stimulation for the animals. For example, availability of a plastic tube or an old tire to push around—a common practice in today's laboratories'—is hardly environmental enrichment. The USDA owes it to the animals supposedly under its "protection" to add clear and specific guidelines to ensure compliance with reasonable standards of physical and emotional care.

GROUP 2

United States Regulations of the Use of Animals in Research Facilities—The Paper Tiger

In the United States, the Animal Welfare Act (AWA) and Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals are the two main regulations governing the use of animals in laboratories. However, even with the supposed "protections" afforded by the AWA and PHS Policy, millions of animals suffer and die in unnecessary, counterproductive research. AWA and PHS regulations for animals in labs are limit ed in their scope and fraught with loopholes that continue to allow for both physical and psychological cruelty and suffering.

The AWA

Congress passed the AWA in 1966 and amended the law in 1970, 1976, 1985 and 1990. The AWA is the only federal law in the US that regulates the treatment of animals in research, exhibition, transport, and by dealers.

The United States Department of Agriculture (USDA) is charged with implementing the AWA's regulations. The AWA covers dogs, cats, nonhuman primates (including chimpanzees, baboons, and monkeys), guinea pigs, hamsters, rabbits, and other warm-blooded animals. It excludes all cold-blooded animals, horses, and farmed animals used as food or fiber. Rats and mice (who make up 90-95% of all animals used in research) as well as birds were not covered by the AWA until 2000 when the USDA agreed in an out-of-court settlement to mandate inclusion of rats, mice, and birds in labs under AWA regulations. Opponents of the settlement, however, inserted a rider in the 2001 Agriculture Appropriations bill that blocked the USDA from implementing the settlement for a year.

The AWA requires all animal research facilities either with animals covered by their regulations or facilities receiving federal funds to establish an Institutional Animal Care and Use Committee (IACUC—pronounced "I-uh-cook") with members appointed by each facility's Chief Executive Officer (CEO). The IACUC must consist of no less than three members; if it is NIH funded, there must be at least five members including a veterinarian and one person not affiliated in any way with the facility.

The IACUC must inspect these facilities at least twice a year, review research protocols, and file an inspection report with the CEO. Since the IACUC is appointed by the CEO, research facilities are essentially self-regulated. Even the unaffiliated member is chosen by the animal facility. Also the unaffiliated member can be outvoted since most committees allow a majority vote and not a unanimous vote for approval.

Animal research facilities that house regulated animals must also be inspected yearly by the USDA's Animal Plant Health Inspection Service (APHIS) Animal Care inspectors. **In 1999 there were only 65 USDA/APHIS Animal Care inspectors to inspect more than 1,200 animal research facilities across the nation.** These same 65 inspectors are also charged with regular inspections of all USDA animal dealers, exhibitors, handlers, and carriers—some 5,000 additional facilities.

While it is impossible to determine the precise number of animals in US laboratories since mice, rats, and birds (comprising approximately 90%-95% of animals in labs) are not currently covered in AWA reports, conservative estimates indicate that between 25 - 40 million animals are used in US laboratories.

The 1985 AWA amendment called for the exercise of dogs and psychological well-being of primates. The National Association for Biomedical Research, a group representing animal researchers, opposed it. In 1993, U.S. Federal District Court found that the USDA had failed to implement the 1985 law. [1] Today more research facilities are abiding by the rules to exercise dogs and to provide some 'enrichment' for primates. However, if investigators show 'scientific necessity, they may be exempt from even the minimal provisions for psycho-social well-being.

AWA regulations call for 'adequate' veterinary care, including the use of anesthetics, analgesics (painkillers), and tranquilizers. However, if it is deemed 'scientifically necessary' anesthetics, analgesics, and tranquilizers can be withheld. More than 100,000 animals in 1999 were reported as used in painful or distressful research with no pain relief. However, estimates suggest that the number of animals actually subjected to pain and distress is significantly higher.

The AWA also calls for investigators to provide proof of having considered 'alternatives' to painful procedures. However, alternatives do not necessarily have to eliminate the use of animals. Rather, it is sufficient for investigators to consider the three R's—replacement of animals, refinement of non-animal methods, and reduction of the number of animals used. The AWA established the Animal Welfare Information Center (AWIC) to assist investigators in searching for 'alternatives' to experiments that might cause pain and distress.

The AWA prohibits multiple survival surgeries (surgeries in which the animal will recover from one experimental surgery and be subjected later to more surgery). However, once again, if it is deemed 'scientifically necessary,' experimenters can perform repeated surgeries on animals.

The PHS Policy

On behalf of the federal Public Health Service, the National Institutes of Health's Office of Laboratory Animal Welfare (OLAW) has responsibility for the administration and coordination of the PHS Policy on *Humane Care and Use of Laboratory Animals*. The PHS Policy applies to the use of live, vertebrate animals in any activity supported or conducted by the Public Health Service. The PHS Policy is very similar to the Animal Welfare Act and both require IACUCs at animal research facilities.

All scientists funded by the U.S. Public Health Service, which includes funding by the National Institutes of Health, are required to adhere to the *Guide for the Care and Use of Laboratory Animals* written by the Institute of Laboratory Animal Resources (ILAR) Commission on Life Sciences, National Research Council. In a comment about the most recent version, printed in 1996, Dr. Thomas Wolfe, program director of ILAR states, "The guide is deliberately written in general terms so recommendations can be applied in diverse situations. It affirms the conviction that *all who care for or use animals in research, teaching, or testing must assume responsibility for their well-being* [emphasis added]." In other words, the fox is guarding the hen house.

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[1] **F. Barbara Orlans, *In the Name of Science* (New York: Oxford University Press, 1993), 56.**

The Guide for the Care and Use of Laboratory Animals provides little, if any, protection to animals. For example, it states, "Animals should be fed palatable, noncontaminated, and nutritionally adequate food daily or according to their particular requirement unless *the protocol in which they are being used requires otherwise.*"

The Guide further states, "There is no minimal frequency of changing bedding, but it typically varies from daily to weekly. In some instances, frequent bedding changes are contraindicated...when research objectives do not permit changing the bedding."

Conclusion

The trusting public believes that animals in laboratories are protected by the AWA and PHS Policy. However, the minimal protections offered by the AWA and PHS provide no real safety or relief to the millions of animals in labs and offer only a false sense of security to the caring public. Rather, so-called "scientific necessity" remains in place for the continued unbridled use of animals in all manners imaginable in experimental protocol.

NEAVS, May 2001

GROUP 3

9 CFR Ch. I (1–1–00 Edition)
§ 3.80 Primary enclosures.

Primary enclosures for nonhuman primates must meet the following minimum requirements:
(a) General requirements. (1) Primary enclosures must be designed and constructed of suitable materials so that they are structurally sound for the species of nonhuman primates contained in them. They must be kept in good repair.
(2) Primary enclosures must be constructed and maintained so that they:
(i) Have no sharp points or edges that could injure the nonhuman primates;
(ii) Protect the nonhuman primates from injury;
(iii) Contain the nonhuman primates securely and prevent accidental opening of the enclosure, including opening by the animal;
(iv) Keep other unwanted animals from entering the enclosure or having physical contact with the nonhuman primates;
(v) Enable the nonhuman primates to remain dry and clean;
(vi) Provide shelter and protection from extreme temperatures and weather conditions that may be uncomfortable or hazardous to the species of nonhuman primate contained;
(vii) Provide sufficient shade to shelter all the nonhuman primates housed in the primary enclosure at one time;
(viii) Provide the nonhuman primates with easy and convenient access to clean food and water;
(ix) Enable all surfaces in contact with nonhuman primates to be readily cleaned and sanitized in accordance with § 3.84(b)(3) of this subpart, or replaced when worn or soiled;
(x) Have floors that are constructed in a manner that protects the nonhuman primates from injuring themselves; and
(xi) Provide sufficient space for the nonhuman primates to make normal postural adjustments with freedom of movement.
(b) Minimum space requirements. Primary enclosures must meet the minimum space requirements provided in this subpart. These minimum space requirements must be met even if perches, ledges, swings, or other suspended fixtures are placed in the enclosure.
Low perches and ledges that do not allow the space underneath them to be comfortably occupied by the animal will be counted as part of the floor space.
(1) Prior to February 15, 1994:
(i) Primary enclosures must be constructed and maintained so as to provide sufficient space to allow each nonhuman primate to make normal postural adjustments with adequate freedom of movement; and
(ii) Each nonhuman primate housed in a primary enclosure must be pro-vided with a minimum floor space equal to an area at least three times the area occupied by the primate when standing on four feet.
(2) On and after February 15, 1994:
(i) The minimum space that must be provided to each nonhuman primate, whether housed individually or with other nonhuman primates, will be determined by the typical weight of animals of its species, except for brachiating species and great apes \3\ and will be calculated by using the following table: \4\
(3) The different species of nonhuman primates are divided into six weight groups for determining minimum space requirements, except that all brachiating species of any weight are grouped together since they require additional space to engage in species-typical behavior. The grouping provided is based upon the typical weight for various species and not on changes associated with obesity, aging, or pregnancy. These conditions will not be considered in determining a nonhuman primate's weight group unless the animal is obviously unable to make normal postural adjustments and movements within the primary enclosure. Different species of prosimians vary in weight and should be grouped with their appropriate weight group.
They have not been included in the weight table since different species typically fall into different weight groups. Infants and juveniles of certain species are substantially lower in weight than adults of those species and require the minimum space requirements of lighter weight species, unless the animal is obviously unable to make normal postural adjustments and movements within the primary enclosure.
(4) Examples of the kinds of nonhuman primates typically included in each age
group are:
Group 1—marmosets, tamarins, and infants (less than 6 months of age) of various spe-cies.
Group 2—capuchins, squirrel monkeys and similar size species, and juveniles (6 months to 3 years of age) of various species.
Group 3—macaques and African species.
Group 4—male macaques and large African species.
Group 5—baboons and nonbrachiating species larger than 33.0 lbs. (15 kg.).
Group 6—great apes over 55.0 lbs. (25 kg.), except as provided in paragraph (b)(2)(ii) of this section, and brachiating species.

Group	Weight		Floor area		animal Height	
	lbs.	(kg.)	ft.\2\	(m\2\)	in.	(cm.)
1...	under 2.2	(under 1)	1.6	(0.15)	20	(50.8)
2...	2.2-6.6	(1-3)	3.0	(0.28)	30	(76.2)
3...	6.6-22.0	(3-10)	4.3	(0.40)	30	(76.2)
4...	22.0-33.0	(10-15)	6.0	(0.56)	32	(81.28)
5...	33.0-55.0	(15-25)	8.0	(0.74)	36	(91.44)
6...	Over 55.0	(over 25)	25.1	(2.33)	84	(213.36)

(ii) Dealers, exhibitors, and research facilities, including Federal research facilities, must provide great apes weighing over 110 lbs. (50 kg) an additional volume of space in excess of that required for Group 6 animals as set forth in paragraph (b)(2)(i) of this section, to allow for normal postural adjustments.

(iii) In the case of research facilities, any exemption from these standards must be required by a research proposal or in the judgment of the attending veterinarian and must be approved by the Committee. In the case of dealers and exhibitors, any exemption from these standards must be required in the judgment of the attending veterinarian and approved by the Administrator.

(iv) When more than one nonhuman primate is housed in a primary enclosure, the minimum space requirement for the enclosure is the sum of the minimum floor area space required for each individual nonhuman primate in the table in paragraph (b)(2)(i) of this section, and the minimum height requirement for the largest nonhuman primate housed in the enclosure. Provided however, that mothers with infants less than 6 months of age may be maintained together in primary enclosures that meet the floor area space and height requirements of the mother.

(c) Innovative primary enclosures not precisely meeting the floor area and height requirements provided in paragraphs

(b)(1) and (b)(2) of this section, but that do provide nonhuman primates with a sufficient volume of space and the opportunity to express species-typical behavior, may be used at re-search facilities when approved by the Committee, and by dealers and exhibitors when approved by the Administrator.

(Approved by the Office of Management and Budget under control number 0579–0093)

§ 3.81 Environment enhancement to promote psychological well-being.

Dealers, exhibitors, and research facilities must develop, document, and follow an appropriate plan for environment enhancement adequate to promote the psychological well-being of nonhuman primates. The plan must be in accordance with the currently accepted professional standards as cited in appropriate professional journals or reference guides, and as directed by the attending veterinarian. This plan must be made available to APHIS upon request, and, in the case of research facilities, to officials of any pertinent funding agency. The plan, at a min-mum, must address each of the following:

(a) Social grouping. The environment enhancement plan must include specific provisions to address the social needs of nonhuman primates of species known to exist in social groups in nature.

Such specific provisions must be in accordance with currently accepted professional standards, as cited in appropriate professional journals or reference guides, and as directed by the attending veterinarian. The plan may provide for the following exceptions:

(1) If a nonhuman primate exhibits vicious or overly aggressive behavior, or is debilitated as a result of age or other conditions (e.g., arthritis), it should be housed separately;

(2) Nonhuman primates that have or are suspected of having a contagious disease must be isolated from healthy animals in the colony as directed by the attending veterinarian. When an entire group or room of nonhuman primates is known to have or believed to be exposed to an infectious agent, the group may be kept intact during the process of diagnosis, treatment, and control.

(3) Nonhuman primates may not be housed with other species of primates or animals unless they are compatible, do not prevent access to food, water, or shelter by individual animals and are not known to be hazardous to the health and well-being of each other. Compatibility of nonhuman primates must be determined in accordance with generally accepted professional practices and actual observations, as directed by the attending veterinarian, to ensure that the nonhuman primates are in fact compatible. Individually housed nonhuman primates must be able to see and hear nonhuman primates of their own or compatible species unless the attending veterinarian determines that it would endanger their health, safety, or well-being.

(b) Environmental enrichment. The physical environment in the primary enclosures must be enriched by providing means of expressing noninjurious species-typical activities. Species differences should be considered when determining the type or methods of enrichment.

Examples of environmental enrichments include providing perches, swings, mirrors, and other increased cage complexities; providing objects to manipulate; varied food items; using foraging or task-oriented feeding methods; and providing interaction with the care giver or other familiar and knowledgeable person consistent with personnel safety precautions.

(c) Special considerations. Certain nonhuman primates must be provided special attention regarding enhancement of their environment, based on the needs of the individual species and in accordance with the instructions of the attending veterinarian. Nonhuman primates requiring special attention are the following:

(1) Infants and young juveniles;

(2) Those that show signs of being in psychological distress through behavior or appearance;

(3) Those used in research for which the Committee-approved protocol requires restricted activity;

(4) Individually housed nonhuman primates that are unable to see and hear nonhuman primates of their own or compatible species; and

(5) Great apes weighing over 110 lbs. (50 kg). Dealers, exhibitors, and research facilities must include in the environment enhancement plan special provisions for great apes weighing over

110 lbs. (50 kg), including additional opportunities to express species-typical behavior.

(d) Restraint devices. Nonhuman primates must not be maintained in restraint devices unless required for health reasons as determined by the at-tending veterinarian or by a research proposal approved by the Committee at research facilities. Maintenance under such restraint must be for the shortest period possible. In instances where long-term (more than 12 hours) restraint is required, the nonhuman primate must be provided the opportunity daily for unrestrained activity for at least one continuous hour during the period of restraint, unless continuous restraint is required by the research proposal approved by the Committee at research facilities.

(e) Exemptions. (1) The attending veterinarian may exempt an individual nonhuman primate from participation in the environment enhancement plan because of its health or condition, or in consideration of its well-being. The basis of the exemption must be recorded by the attending veterinarian for each exempted nonhuman primate. Unless the basis for the exemption is a permanent condition, the exemption must be reviewed at least every 30 days by the attending veterinarian.

(2) For a research facility, the Committee may exempt an individual nonhuman primate from participation in some or all of the otherwise required environment enhancement plans for scientific reasons set forth in the research proposal. The basis of the exemption shall be documented in the approved proposal and must be reviewed at appropriate intervals as determined by the Committee, but not less than annually.
(3) Records of any exemptions must be maintained by the dealer, exhibitor, or research facility and must be made available to USDA officials or officials of any pertinent funding Federal agency upon request.
(Approved by the Office of Management and Budget under control number 0579–0093)

ANIMAL HEALTH AND HUSBANDRY STANDARDS
§ 3.82 Feeding.

(a) The diet for nonhuman primates must be appropriate for the species, size, age, and condition of the animal, and for the conditions in which the nonhuman primate is maintained, ac-cording to generally accepted professional and husbandry practices and nutritional standards. The food must be clean, wholesome, and palatable to the animals. It must be of sufficient quantity and have sufficient nutritive value to maintain a healthful condition and weight range of the animal and to meet its normal daily nutritional requirements.
(b) Nonhuman primates must be fed at least once each day except as otherwise might be required to provide adequate veterinary care. Infant and juvenile nonhuman primates must be fed as often as necessary in accordance with generally accepted professional and husbandry practices and nutritional standards, based upon the animals' age and condition.
(c) Food and food receptacles, if used, must be readily accessible to all the nonhuman primates being fed. If members of dominant nonhuman primate or other species are fed together with other nonhuman primates, multiple feeding sites must be provided. The animals must be observed to determine that all receive a sufficient quantity of food.
(d) Food and food receptacles, if used, must be located so as to minimize any risk of contamination by excreta and pests. Food receptacles must be kept clean and must be sanitized in accordance with the procedures listed in

§ 3.84 Cleaning, sanitization, housekeeping, and pest control.

(a) Cleaning of primary enclosures. Excreta and food waste must be removed from inside each indoor primary enclosure daily and from underneath them as often as necessary to prevent an excessive accumulation of feces and food waste, to prevent the nonhuman primates from becoming soiled, and to re-duce disease hazards, insects, pests, and odors. Dirt floors, floors with absorbent bedding, and planted areas in primary enclosures must be spot-cleaned with sufficient frequency to ensure all animals the freedom to avoid contact with excreta, or as often as necessary to reduce disease hazards, insects, pests, and odors. When steam or water is used to clean the primary enclosure, whether by hosing, flushing, or other methods, nonhuman primates must be removed, unless the enclosure is large enough to ensure the animals will not be harmed, wetted, or distressed in the process. Perches, bars, and shelves must be kept clean and re-placed when worn. If the species of the nonhuman primates housed in the primary enclosure engages in scent marking, hard surfaces in the primary enclosure must be spot-cleaned daily.

(b) Sanitization of primary enclosures and food and water receptacles.

(1) A used primary enclosure must be sanitized in accordance with this section before it can be used to house an-other nonhuman primate or group of nonhuman primates.

(2) Indoor primary enclosures must be sanitized at least once every 2 weeks and as often as necessary to prevent an excessive accumulation of dirt, debris, waste, food waste, excreta, or disease hazard, using one of the methods pre-scribed in paragraph (b)(3) of this section. However, if the species of nonhuman primates housed in the primary enclosure engages in scent marking, the primary enclosure must be sanitized at regular intervals determined in accordance with generally accepted professional and husbandry practices.

(3) Hard surfaces of primary enclosures and food and water receptacles must be sanitized using one of the following methods:

(i) Live steam under pressure;

(ii) Washing with hot water (at least 180 °F (82.2 °C)) and soap or detergent, such as in a mechanical cage washer;

(iii) Washing all soiled surfaces with appropriate deter-gent solutions or disinfectants, or by using a combination detergent/disinfectant product that accomplishes the same purpose, with a thorough cleaning of the surfaces to re-move organic material, so as to remove all organic material and mineral build-up, and to provide sanitization followed by a clean water rinse.

(4) Primary enclosures containing material that cannot be sanitized using the methods provided in paragraph (b)(3) of this section, such as sand, gravel, dirt, absor-bent bedding, grass, or planted areas, must be sanitized by removing the contaminated material as necessary to prevent odors, diseases, pests, insects, and vermin infestation.

(c) Housekeeping for premises. Premises where housing facilities are located, including buildings and surround-ing grounds, must be kept clean and in good repair in order to protect the nonhuman primates from injury, to facilitate the husbandry practices required in this subpart, and to reduce or eliminate breeding and living areas for rodents, pests, and vermin. Premises must be kept free of accumulations of trash, junk, waste, and discarded matter. Weeds, grass, and bushes must be controlled so as to facilitate cleaning of the premises and pest control.

(d) Pest control. An effective program for control of insects, external parasites affecting nonhuman primates, and birds and mammals that are pests, must be estab-lished and maintained so as to promote the health and well-being of the animals and re-duce contamination by pests in animal areas.

Group 3

Enclosures Insight

3.80 (a)(1) "Primary enclosures must be designed and constructed of suitable materials so that they are structurally sound for the species of nonhuman primates contained in them."

Leaving such discretion to laboratories does not ensure the best standards for "enclosures" which are, after all, the animals' "homes." Charts listing species and a survey of materials and designs used in other facilities that have proven to be safe and effective must be provided and adhered to for more universal standards of compliance.

Further, species-specific requirements must be integrated into such designs. For example, orangutans should be able to fully stretch their arms; cats must be able to sit comfortably on high platforms; and animals who prefer to "den" should be allowed closed space. All such designs should meet express standards of construction and safety.

3.80(a)(2)(v) "Enable the nonhuman primates to remain dry and clean." **3.80(a)(2)(ix)** "Enable all surfaces in contact with nonhuman primates to be readily cleaned and sanitized in accordance with **3.84(b)(3)** of this subject, or replaced when worn or soiled." **3.80(a)(2)(x)** "Have floors that are constructed in a manner that protects the nonhuman primates from injuring themselves."

These regulations are often ignored—in whole or in part-in many biomedical facilities. Often chimpanzees held captive in such research facilities, for example, live in hanging 5x5x7 ft. cages with bars instead of solid floors below their feet. Such cage design is for the convenience of the facility in that feces drop to the plastic sheets under the cage instead of onto solid cage flooring, making cleaning much easier. However, this design creates extremely uncomfortable living conditions for the caged chimpanzees. Without any solid floors to walk on, their feet can actually become disfigured.

Truly humaneconsideration requires cages big enough for the occupants to move to one side while a technician washes out any excrement without injuring or wetting the confined animals comfortable walking surfaces and consideration of the captive animals' best interests and not just that of the care technicians.

3.80(a)(2)(vii) "Provide sufficient shade to shelter all the nonhuman primates housed in the primary enclosure at one time."

Improper protection from the elements—both heat and cold—has been known to cause animal deaths in research facilities.. The need to provide sunlight and fresh air is usually a major problem. Many chimpanzees and other animals in captivity at research facilities rarely see the light of day. This can lead to health problems. Additionally, the absence of natural light and fresh air is psychologically oppressive and contributes to the captive animals' overall discomfort, maladaptive behaviors, and suffering.

In fact, animals in captivity are known to strain in one posture for long periods of time in order to see and feel what limited fresh air or sunlight may come in from a window or open a door.

3.80(b)(1)(ii) "Each nonhuman primate housed in a primary enclosure must be provided with a minimum floor space equal to an area at least three times that area occupied by the primate when standing on four feet." **3.80(b)(2)(l)** "The minimum space...will be determined by the typical weight of animals of its species, except for brachiating species and great apes." **3.80(b)(2)(ii)** "Dealers, exhibitors, and research facilities, including Federal research facilities, must provide great apes weighing over 110 lbs. (50kg) an additional vol ume of space in excess of that required for [great apes over 55 lbs. (25kg)]...to allow for normal postural adjustments." **3.80(b)(iii)** "In the case of research facilities, any exemption from these standards must be required by a research proposal or in the judgement of the attending veterinarian and must be approved by the [Animal Care and Use] Committee."

Regulations such as these set the stage for the mistreatment of captive primates across the nation. Regulations state that primates over 55 lbs., which includes almost all adult great apes, should be allotted 25.1 sq.ft. and 84 in. of cage space; this translates to approximately a 5 x 5 x 7 ft. enclosure. When apes are forced to live in confined spaces that tend to become very overweight, this is obviously due to a lack of exercise and the inability to move around; they cannot behave like normal animals.

The regulations note that "great apes weighing over 110 lbs. [should be provided] an additional volume of space." Virtually every adult male chimpanzee in captivity weighs more than 110 lbs., and captive adult male orangutans and all adult gorillas weigh closer to, and in most cases more than, 210 lbs. Obviously, a 5 x 5 x 7 ft. cage is restrictively small for primates of such size. Translated, the regulations allow a large football player a space roughly equivalent to a mini-van in which to live his entire life.

Although the regulations call for "add[ing] additional volume," they do not set a standard for such increases. Further, the added space is to "allow for normal postural movement" only, which is a far cry from promoting real physical and psychological well-being through ample space, fresh air, sunlight, and natural stimulation versus concrete, confinement, and steel. Captive male orangutans, for example, members of a brachiating species, with 7'+ armspans, may suffer terribly both physically and emotionally from not being able to spread their arms and expand their chests.

Enclosures for animals used in experimentation and testing are often sub-standard, profit-driven, and the equivalent of calling a 'closet' an adequate space within which to confine a human for life. The mere reality of confinement—day in and day out—constitutes cruelty; a fact the USDA and biomedical researchers will not allow themselves to concede.

ALTERNATIVE REQUESTS

DOCKET NO. 98-121-1,
REGULATORY ANALYSIS AND DEVELOPMENT
PPD, APHIS,

September 8, 1999

To Whom It May Concern:

Thank you for inviting public comment on the **Animal Welfare: Draft Policy on Environmental Enhancement for Nonhuman Primates.**

I would like to congratulate your organization in recognizing the importance of a primate being able to express noninjurious species-typical activities, such as brachiating, hanging, leaping, running, etc. while in a captive situation. I was especially pleased with your recognition of the importance of the infant being cared for by the mother until the infant reaches "...an age that approximates the age of infant independence in nature, except when necessary for the health and well-being of the infant or dam" (B. Social Need of Infants, p. 38148). This will avoid the cognitive, physical, and social distress and harm that typically results in early mother-infant separation. Another important aspect of this regulation is that it is easily enforced since the age of infant independence in nature is established for the most common primate species held in captivity.

This brings me to the second point I wish to make. As was noted in your Final Report on Environment Enhancement to Promote the Psychological Well-Being of Nonhuman Primates (July 15, 1999) "Many of the opinions expressed by Animal Care employees in the 1996 survey centered around a lack of clarity and specificity in the standards and a perceived lack of enforceability" (p.2). With regard to determining what is psychological well-being, it is noted later in the Report that "...no one has defined the results desired in terms of something that can be easily observed and recognized" (p.7). This problem still exists in your present regulations because it relies on vague and undefined (therefore unenforceable) PERFORMANCE STANDARDS.

However, this problem can be easily remedied by defining the PERFORMANCE STANDARDS as an environment that will allow the expression of a set of common noninjurious species typical activities. For example, an easily quantifiable measure would be the necessary linear distance required for a typical member of a species to maintain a sustained run for a reasonable length of time. The same quantifiable regulations can be applied to other species-typical behaviors such as brachiating, leaping, grooming, playing, hiding, etc. The USDA could set the minimum reasonable length of time for such a behavior as running. It would be easy to determine the average running speed for a species, and then determine how far they would travel in that time. The ability to run this distance could then be a requirement for housing of that particular species. As a result you would maintain the very important PERFORMANCE STANDARDS, but they would serve to determine quantifiable ENGINEERING STANDARDS. In other words, the ability to PERFORM species-typical behaviors would be the determinant for the necessary ENGINEERING STANDARDS.

Sincerely yours,

Roger S. Fouts

10. Enrichment Strategies Recommended:

a) **Social Grouping:** Due to the dynamic nature of chimpanzee societies, the recommended group composition should provide maximum opportunity for species-typical social interactions such as grooming, interactive locomotor play, mother-infant bonding, and infant development (see section 3). While Goodall (1986) proposed that sex is a significant factor in shaping grouping patterns, it should be noted that breeding is **not** beneficial to individuals born into captive conditions as they now exist, and the use of birth control measures are highly recommended. Size of chimpanzee groups should in part be determined by amount of usable enclosure space, however chimpanzees should never be housed individually. Also, aggression and wounding are major concerns for the maintenance of chimpanzees in captivity, and the degree of previous social experience may largely determine the ideal group composition (Alford *et al.*, 1995).

b) **Social Needs of Infants:** Infant chimpanzees are completely dependent on their mothers throughout a lengthy developmental stage. Goodall (1986) notes that chimpanzees between five and seven years of age continue to associate closely with their mother even though they do not rely on her for milk or transport. Social maturity and the ability to safely interact with adult members of a chimpanzee community is greatly enhanced with a continuation of maternal influence into young adulthood. Furthermore, the importance of play with conspecifics at infancy, adolescence, and adulthood strengthens awareness of both social and environmental parameters.

c) **Structure and Substrate:** Captive environments must allow for species-typical resting and locomotion. Sufficient space to reach a full run is necessary for both physical and social well-being. Resting opportunities should include elevated perches that can accommodate social sleeping patterns. Climbing structures, platforms, poles, and other implemented structures should be both of sound design and strive to increase the opportunity for species-typical behaviors. Fire hoses and nylon webbing are both comfortable and dynamic features which increase useable space. Free-living chimpanzees nest and forage in trees as high as 25 m. Vertical space should be maximized; hanging fire hoses (often donated from local fire stations) are inexpensive and provide for species-typical locomotion in the upper reaches of enclosure space. Automobile tires are also effective as permanent structural enrichment as well as temporary object enrichment. Tires may be bolted together and hung from caging, climbing structures, or enclosure walls. Tires may even be cut and weaved into a resting place similar to nylon cargo nets. Food forages are a vital part of any enrich ment program. Adding cedar shavings, hay, and bark chips to the enclosure is an effective way to enhance the complexity of foraging opportunities.

d) **Foraging Opportunities:** Free-living chimpanzees spend a majority of their day (43-62%) traveling and foraging (Ghiglieri, 1984; Goodall, 1986; Teleki, 1981; Wrangham, 1977). In a captive situation, these two vital behaviors are severely limited. By designing forage opportunities which maximize travel, search, procurement, and processing, caregivers are able to provide an environment which stimulates higher frequencies and duration of species-typical foraging behaviors. Food items spread throughout the enclosure and substrate maximizes travel and searching behaviors. Some examples are spreading small amounts of peanut butter high up on clean walls and climbing structures, or scattering raisins or nuts throughout the cedar shavings or hay on the floor of the enclosure. Food items that must be processed before consumption increase the amount of time spent foraging. Some examples of food items which require large amounts of pre-consumption processing are husks or corn, coconuts, hard-boiled eggs, whole melons, and unshelled nuts. Free-living chimpanzees also make and use tools to obtain certain elements of their diet. Foraging tasks that incorporate the need for tools to acquire the food item promote species-typical behaviors. Chimpanzees can use sticks to remove raisins form holes drilled into a wooden board or block. Another enrichment strategy which increases procurement time is to place buckets or cups with liquids or food items such as chocolate syrup, mustard, or honey outside of the enclosure (about a meter away from the caging). The chimpanzees may be given long branches or straws, which they may modify in order to obtain the food items. Food puzzle enrichment coupled with a constant variety in daily meals provides a well-rounded dietary enrichment program.

e) **Manipulanda:** Free-living chimpanzees have been observed using several different objects within a variety of contexts such as feeding, nesting, threat, and play. The vast majority of object use stems from the complex and diverse natural surroundings. In contrast, captive enclosures are often designed for human convenience and lack the complexity and diversity of their natural habitat. This creates a need for object supplementation in the form of implemented enrichment. The following is a list of objects that captive chimpanzees can safely manipulate:

-bags
-balloons
-brushes
-burlap sacks
-cardboard boxes
-chalk
-clothes
-colored pencils
-coloring books
-combs
-construction paper
-crayons (non-toxic)
-dolls
-emery boards
-hats
-hoses
-junk mail
-keys
-magazines
-paintbrushes
-perfumed clothes
-plastic mirrors
-plastic masks
-posters
-rolls of paper
-rubber bands
-sheets
-shoes
-stuffed animals
-sunglasses
-tablecloths
-toothbrushes
-toys
-water pistols

No glass
No electronics
No toxins
No small parts

A healthy assortment of these objects on a daily basis adds complexity to the captive environment. Many times, these objects become incorporated in social, as well as solitary behavioral contexts.

f) **Sensory Stimulation:** Sensory stimulation is an important way to facilitate species-typical behaviors in captive chimpanzees. Visual enhancements such as mirrors, windows, and skylights are all beneficial. Skylights are also effective in supplying needed amounts of direct sunlight; however, access to outdoor facilities is optimal and highly encouraged. Outdoor enclosures provide much more naturalistic sights, sounds, and smells. The ability to monitor and view the activities of the caregivers (cleaning, meal preparation, etc.) adds stimulation. Variety in meals and food enrichment is the best way to stimulate the sense of taste. Audio playbacks of conspecific vocalizations and music are enriching auditory stimuli. The human use of chimpanzee vocalizations is a great form of enrichment because it serves to maintain natural behaviors as well as strengthen the bond between caregivers and chimpanzees.

g) **Novelty and Control:** While it is important to form an enrichment program, it is also important to avoid making the program routine and monotonous. An enrichment program creates a dynamic captive environment by supplying a large variety of object, food, social, and structural enrichment. A regular daily rotation of object enrichment provides new and exciting stimuli to promote psychological well-being. Stereotyped behaviors may be reduced by providing the opportunity for object manipulation (Line, 1987). Object use increases as a function of novelty and amount (Paquette and Prescott, 1988). Frequency of object use declines after one day of use and chimpanzees have been observed using multiple objects at one time (Waters et al., 1999). Also, a variety of food items (meals and treats) serve as enrichment by increasing the diversity in the diet and limiting the monotony of the daily routine. Offering the chimpanzees choices in their diet adds an element of control. Structural enrichment, such as cargo nets and fire hoses, may also be rearranged to modify the chimpanzees' surroundings.

A LIFE INSIDE?

THEME ACTIVITY:

Grade level: 7-9

Time needed: 1-2 class periods

Subject Areas: Science, Language, Reading

Objectives: To increase understanding regarding the issues and experiences of chimpanzees with biomedical research.

Materials:"Next of Kin" excerpts with questions following

Activity:

Assign the class to three different groups. Have each group read the designated excerpt and answer the questions following the excerpt.

Once each group is finished reading and has completed the questions, they need to put together a short presentation for the class highlighting the information they read. They need to include 1-2 quotes from the excerpt.

After the presentation, the group should have 2-3 discussion questions to ask the class to check for understanding. (Depending on the level of the class, the discussion section may need to be facilitated by the teacher.)

(Alternatives)

If reading ability is low, choose an excerpt or two to read aloud to the class and review questions in more of a discussion format.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

THE SEARCH FOR SANCTUARY
MONKEY BUSINESS

After Debbi and I watched the video made by the True Friends, we read a report that came with it, prepared by another group, People for the Ethical Treatment of Animals. The report [in 1987] said the laboratory was

"Giver her the apple." The vet pointed to an apple that had been placed on the lab table, presumably for our benefit. Barbie ate the apple robotically, showing no interest or pleasure.

"See, she's fine," the vet said. "She didn't scream at all."

Questions

1. What facts that were disclosed about SEMA in the written report? _____

2. Why do you think the monkeys developed such extreme symptoms in Harlow's "pit of despair"?

3. How did Jane Goodall describe the conditions at SEMA in her affidavit?

4. What surprised Dr. Fouts about SEMA's outward appearance? _____

_____

_____

5. Describe the conditions inside SEMA. _____

_____

_____

6. Was Barbie's behavior of not responding better or worse than if she was screaming in terror? _____

   Explain. _____

   _____

7. Write a letter to a biomedical research laboratory regarding animals. Ask who they are, and about their animals' well-being. Tell them what you know about animals' "needs," and suggest ways to improve the animals' lives. Ask what is being done to eliminate the use of animals in biomedical research.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

THE SEARCH FOR SANCTUARY
SOMETHING TO TALK ABOUT

I was preparing to leave for Africa when I got a phone call from Chris O'Sullivan, one of my graduate students in Oklahoma. Chris was one of the researchers who had shown that Nim was capable of signing socially and spontaneously after he returned to the Institute.

As I looked at Ally's picture I traveled back thirteen years to the first day I met the antic one-year-old who made the sign of the cross on his chest. The words his foster mother had used on the happy occasion of Ally's baptism came back to me now with a darker meaning: "Why hasn't my baby a right to be saved, like anybody else?"

Questions

1. What information did Chris receive that upset her enough to call Dr. Fouts?

_____

_____

2. Describe the new home at LEMSIP for the chimpanzees. _____

_____

_____

3. Was the facility at LEMSIP set up for the good of the chimpanzees? _____

   Explain. _____

   _____

4. What concerned Dr. Fouts about the public outrage? _____

   _____

   _____

5. What finally happened with Nim? _____

   _____

   _____

6. What finally happened with Ally? _____

   _____

   _____

   _____

7. Ally was "cross-fostered" and raised like a human child. He experienced a great depression when he was moved away from his human mother and into a facility with other chimpanzees. With the help of Washoe and Dr. Fouts, he overcame his depression. Then he was faced with another life changing move (actually two moves). Write a journal entry as if you are Ally. What might have been his feelings during the moves; what might he think of these new places?

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

THE SEARCH FOR SANCTUARY
HOME AT LAST

In early 1995 I got a call from Dean Irwin, a producer of 20/20, the ABC news magazine. While planning a show about the morality of conducting biomedical experiments on chimpanzees, he had learned about Booee and my other former chimpanzee students at LEMSIP, the biomedical lab owned by New York University. He asked me if I would be willing to visit the lab and be reunited with Booee in front of television cameras.

Please note: Text on this page was redacted due to copyright concerns.

A few months later, Debbi and I went to see Booee in his new home. He was so happy to see us. We spent the morning grooming, playing, and signing. When it was time for us to leave, Booee wasn't upset. He stood at his enclosure and calmly said GOOD-BYE.

Questions

1. Why had Dr. Fouts avoided LEMSIP? _____

2. Why did Dr. Fouts decide to accept the invitation now? _____

3. Before Dr. Fouts arrived at LEMSIP, what did he hope would happen? _____

4. Why was Booee in a "hot unit"? _____

5. What happened when it was time for Dr. Fouts to leave LEMSIP? _____

6. A chimpanzee's life at LEMSIP was limited to few interactions. In each of the barracks there were two doors: one door was for the humans entering to feed the chimpanzees and the other door was used when the humans were going to anesthetize a chimpanzee for experiments. On the day a chimpanzee was going to be anesthetized, he/she wouldn't receive any food. The food would come in first, and if a chimpanzee didn't receive any, it was his/her day for testing.

   Describe a day in the life of two chimpanzees at LEMSIP. What are his/her feelings when one sees his/her friend not getting food, and then being "knocked down"? How does he/she feel about not getting to see the outdoors, or feel the sun? What does he/she do all day alone in his/her 5x5x7 foot cell?

An excerpt from “Next of Kin” written by Roger Fouts with Stephen Tukel Mills

THE SEARCH FOR SANCTUARY ANSWER KEY

MONKEY BUSINESS

"Give her the apple." The vet pointed to an apple that had been placed on the lab table, presumably for our benefit. Barbie ate the apple robotically, showing no interest or pleasure.

"See, she's fine," the vet said. "She didn't scream at all."

Questions

1. What facts were disclosed about SEMA in the written report? Conducted AIDS & Hepatitis research that was paid for with $1.5 mill. of taxpayers dollars from NIH. documentation of negligence and deaths in the labs, and violated animal care regulations re: cage size, feeding, veterinary care etc...

2. Why do you think the monkeys developed such extreme symptoms in Harlow's "pit of despair?"
extreme isolation, lack of light, no socialization or companionship, separation from their mothers

3. How did Jane Goodall describe the conditions at Sema in her affidavit?
psychologically damaging, totally unacceptable

4. What surprised Fouts about Sema's outward appearance? It looked ordinary, one-story suburban office building, curtains down, next door to a bank

5. Describe the conditions inside Sema. No different than video: squirrel monkeys running in circles, monkeys banging their heads against the bars, pairs of infant chimpanzees crammed into 22x22 in. cages, young chimpanzees sealed in isolettes 20x30in. deep x 40in. high

6. Was Barbie's behavior better than if she was screaming in terror? no

Explain. Jane Goodal described it as the "two-thousand-mile stare" her spirit was gone

7. Write a letter to a biomedical research laboratory regarding. Ask who they are, and aobut their animals' well-being. Tell them what you know about what animals' "need," and suggest ways to improve the animals' lives. Ask what is being done to eliminate the use of animals in biomedical research.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

THE SEARCH FOR SANCTUARY ANSWER KEY
SOMETHING TO TALK ABOUT

I was preparing to leave for Africa when I got a phone call from Chris O'Sullivan, one of my graduate students in Oklahoma. Chris was one of the researchers who had shown that Nim was capable of signing socially and spontaneously after he returned to the Institute.

As I looked at Ally's picture I traveled back thirteen years to the first day I met the antic one-year-old who made the sign of the cross on his chest. The words his foster mother had used on the happy occasion of Ally's baptism came back to me now with a darker meaning: "Why hasn't my baby a right to be saved, like anybody else?"

Questions

1. What information did Chris receive that upset her enough to call Fouts?

Lemmon was selling his entire chimpanzee colony, including Nim, to the Laboratory for Experimental Medicine and Surgery in Primates (LEMSIP) in New York.

2. Describe the new home at LEMSIP for the chimpanzees.

each chimpanzee was in solitary cages, hanging from the ceiling so feces would drop through the cage, chimps had no contact with eachother, they could see eachother with no access to outdoors or any natural light.

3. Was the facility at LEMSIP set up for the good of the chimpanzees? No

   Explain. The facility was set up for the ease of blood taking by the human workers.

4. What concerned Fouts about the public outrage?
   That it was only about the famous signing chimpanzees and not about the other chimpanzees in the laboratory.

5. What finally happened with Nim?
   He went to live at Cleveland Amory's Black Beauty Ranch - similar to a sanctuary.

6. What finally happened with Ally?
   He was shipped to White Sands Research Center in New Mexico - a private lab.
   Presumably, since the lab never acknowledged recieving a chimpanzee named Ally.

7. Ally was cross-fostered and raised like a human child. He experienced a great depression when he was moved away from his human mother and into a facility with other chimpanzees. With Washoe's help and Dr. Foutses, he overcame his depression. Now he is faced with another life changing move (actually two moves). Write a journal entry as if you are Ally. What might be his feelings during the moves; what might he think of these new places?

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

THE SEARCH FOR SANCTUARY ANSWER KEY

HOME AT LAST

In early 1995 I got a call from Dean Irwin, a producer of 20/20, the ABC news magazine. While planning a show about the morality of conducting biomedical experiments on chimpanzees, he had learned about Booee and my other former chimpanzee students at LEMSIP, the biomedical lab owned by New York University. He asked me if I would be willing to visit the lab and be reunited with Booee in front of television cameras.

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A few months later, Debbi and I went to see Booee in his new home. He was so happy to see us. We spent the morning grooming, playing, and signing. When it was time for us to leave, Booee wasn't upset. He stood at his enclosure and calmly said GOOD-BYE.

Questions

1. Why had Fouts avoided LEMSIP? Because Booee and his friends had been transferred there, it was too hard since he couldn't rescue them.

2. Why did Fouts decide to accept the invitation now? The visit with 20/20 filming would make good television and inform viewers about the facility, maybe it would improve conditions for Booee and others.

3. Before Fouts arrived at LEMSIP, what did he hope would happen? That Booee would not remember him.

4. Why was Booee in a "hot unit?" He had been infected with Hepatitis

5. What happened when it was time for Fouts to leave? Booee's grin turned to a grimace and his body sank. He moved to the back of his cage.

6. A chimpanzee's life at LEMSIP was limited to few interactions. In each barrack there were two doors; one door was for the humans entering to feed the chimpanzees and the other door was used when the humans were going to anesthetize a chimpanzee for continued testing. On the day a chimpanzee was going to be anesthetized, they wouldn't receive any food. The food would come in first, and if a chimpanzee didn't receive any, it was their day for testing.

   Describe a day in the life of two chimpanzees at LEMSIP. What are their feelings when one sees their friend not getting food, and then being taken down? How do they feel not getting to see the outdoors, or feel the sun? What do they do all day in their 5x5x7 foot cell?

DIARY OF A CHIMPANZEE

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 class period

Subject Area: Life Sciences, Language arts, Art

Objectives: To encourage student understanding of animals in captivity and those being used for medical research. To help students gain awareness regarding the desolation and fear that an animal experiences in biomedical research facilities.

Materials: Paper, pens/pencils
Art extension materials: construction paper, paper, crayons/markers, pens/pencils

Activity:

Teacher- "As a class we have looked at how free-living chimpanzees and how captive chimpanzees live, and how chimpanzees are used in biomedical research. It is important to remember that chimps are genetically 98.76% identical to us. These animals depend on social support and nurturing from their families. They react in ways that show us that they experience the same emotions as we do.

Imagine that you are a chimpanzee in a biomedical research facility. (Equate this to a human being incarcerated in a prison.) What are some things you may see? Feel? Experience?"

Assignment:

Write a journal for a week as if you were this chimpanzee in a biomedical research facility. Share with us your daily activities, thoughts, feelings, etc. You may also include drawings as a journal entry with captions to explain them.

Extension:
- Have students share journal entries with small groups and then share some with the class.
- Have the class combine their diary entries to make a book. (Design a cover and bind the diary entries.)
- Have students research and bring in information (articles, books, real-life ac counts, etc.) to share with the class.

Possible Discussion Questions:

How accurate do you think the stories are?

What type of writing is this journal? (fiction, non-fiction,...)

Do you think this chimpanzee is happy where he/she is?

How did you (as the chimpanzee) happen to end up at this research facility?

Do you think that animals should be kept in facilities like this?

What was something that made you sad as you heard the stories read aloud?

What was something that made you angry?

What can we do to help animals in research facilities?

ZOOS

ARE THEY CHIMPANZEE FRIENDLY?

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 class period

Subject Area: Life Sciences

Objectives: To raise student awareness regarding the appropriateness of facilities for chimpanzees in zoos.

Materials: Paper, pencil

Activity:

As a class, share some of the structures students have seen chimpanzees at different zoos, whether they have seen them on TV or visited them. What did the "chimpanzee house" look like?
(Possible answers)
Surrounded by a moat with water
Open air with grass and climbing structures
Open air with cement and cement boulders
In small cages with cement floors
Glass windows, with trees, grass, and logs
A small space with ten chimpanzees
Open air surrounded by a deep steep moat without water
On a flat island with no vertical space

Have students review what they know about chimpanzees in their natural environment. How far can they travel in a day? Where do they live? What do they do all day?

How do these zoo structures compare to a habitat in their natural environment?
(Possible answers: They are outside, they have grass and trees, they can climb)

How do these zoo structures differ from the wild? Are their needs being met? Can they travel as far as they want? What do they have to enrich their lives and give them things to keep their minds busy?
(Possible answers: the ones in cages are isolated, there are too many chimpanzees in such a small area, they could fall down the moat and get hurt, (Chimpanzees can't swim, their bones are too dense and they sink. So, if they fall in a moat with water, they will drown).)

Assignment:
"It is not a good idea to take chimpanzees from captivity and try to reintroduce them into a natural environment. Chimpanzees who were raised in captivity do not know how to survive in an environment they are not familiar with. So, it is our job to at least give them the quality of life they deserve during their confinement."

Have students design a blueprint of a great facility that is more chimpanzee-friendly than those they have seen at zoos. Include structures for the chimpanzees to climb, ample space for them to roam, places where they can get away from the human spectators or from inclement weather, and opportunities for them to forage for their food.

Extension:
A) You could start this lesson by visiting a zoo and having students answer the previous list of questions. Then take the information, combine it with past knowledge of different zoos, and continue with above discussions and assignments.

B) Have students send their drawings and suggestions to different zookeepers in charge of chimpanzees. Have them write a letter that explains their drawing and the improvements they would like to see. You could even have the drawings sent to the local paper as a way of educating the community.

TO ZOO, OR NOT TO ZOO?

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 class period

Subject Area: Life Sciences

Objectives: To increase student awareness about the conditions that chimpanzees deal with when living in captivity.

Materials: Paper, pencil, supplies to support research

Activity:

Have students conduct research regarding free-living chimpanzees and chimpanzees who are in zoos.

Have them answer the following questions for both groups of chimpanzees:

- What are the daily activities of the chimpanzees?
- Do they have any opportunities to travel? Explain.
- How far are they able to travel each day?
- What does their diet consist of?
- How much variety is there in their diet?
- Does their diet change seasonally? Explain.
- How difficult is it for them to obtain food?
- What challenges may face them daily?
- What are their patterns of behavior?

After students have researched and answered the previous questions, have the class brainstorm a list on the board focusing on the SIMILARITIES and DIFFERENCES among the chimpanzees in their natural environment and those living in zoos. Compare and contrast their environment, behavior, mobility, etc.

Once the students have listed the similarities and differences, make a list of Pros/Cons for those free-living chimpanzees and a list of Pros/Cons for those chimpanzees who live in zoos.

Wrap-up Questions:

- Why do you think chimpanzees are in zoos?
- Do you think chimpanzees have the same quality of life in zoos as their relatives that live in their natural environment?
- How can we help to improve the situation of those chimpanzees living in zoos?
- If chimpanzees had the choice to be born and live in their natural environment or in a zoo, where do you think they'd choose to live? Why?
- Do you think there are zoos that are trying to meet the needs of their chimpanzees? Why? Why not?
  (examples of zoos with good facilities for chimpanzees: Dallas Zoo, Sacramento Zoo, LA Zoo, Detroit Zoological Park)
- (referring to the pros/cons list) What do these lists show you? What information did they give you to help you formulate your opinions on the lives of chimpanzees in zoos.

FYI...
Here are some helpful web sites for information and links to different zoos:

www.aza.org
www.zoos.com
www.zooweb.net

SANCTUARIES

TELL ME MORE
AN INTERVIEW WITH A CHIMPANZEE SANCTUARY CAREGIVER

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 class period

Subject Area: Life Sciences,Language Arts

Objectives: To introduce students to the rationale behind sanctuaries, and to educate students on the lives of chimpanzees before they are retired to a sanctuary.

Materials: An Interview with a Sanctuary Caregiver

Activity:

Assign one student to read the interview questions to the class. Have different students read the responses.

After the class has listened to or completed the reading of the interview, follow up with some questions.

- What does "sanctuary" mean?
- How/why do you think sanctuaries were established?
- How are sanctuaries different than zoos?
- What do you think is the overall message the sanctuary caregiver is conveying?
- How do you think you would feel if you had to live much of your life in a biomedical research facility?
- Do you think the chimpanzees at the sanctuary ever experienced compassion in their lives? Where? Where were places that they didn't experience compassion?
- In what ways have their lives improved since they have moved to this sanctuary?
- In what ways have the chimpanzees been permanently damaged psychologically? Physically?
- What do you think might be a difficult part of the job for a sanctuary caregiver?

Extension:
After reading the interview, have students write a press release including information they gained from the interview.

Do research on different sanctuaries in the world; identify those that support the permanent retirement of chimpanzees.

Adopt a sanctuary and help raise funds to help with the operations of the facility.

Collect donations and send items to the sanctuary to support their enrichment program.

An Interview with a Sanctuary Caregiver

Q: Where do the chimps come from that live at your sanctuary?

Q: What are some personal stories of some of the chimps before they came here to your sanctuary?

Q: Are the chimps still showing those behaviors now that they are in the sanctuary?

Q: Why are sanctuaries important for chimpanzees?

Q: Chimpanzees are native to Africa; why can't we send them back there?

Q: You said that Maggie was originally raised as a pet. I've heard friends of mine talk about wanting a chimpanzee as a "pet"(companion animal).Why shouldn't they be able to have one?

Q: I've read that chimpanzees are an endangered species. Why isn't it illegal to experiment on them?

Q: Do all sanctuaries support the permanent retirement of chimpanzees as you do?

Q: How do sanctuaries receive their funding?

Q: Your sanctuary is in the United States. Are there any others anywhere else?

Q: What is your hope for the future?

Thank you for your time and information. Your comments have left us with much to think about.

This information was adapted from the Fauna Foundation web site: www.faunafoundation.org.
The stories and names of the three chimpanzees are fictional, but the information is based on fact.

A NEW HOME

THEME ACTIVITY:

Grade level: 6-9

Time needed: 2-3 class periods

Subject Area: Life Sciences, Language Arts, Art

Objectives: To help students learn about facilities that are chimpanzee-friendly. To gain an understanding of the needs of chimpanzees. To design a habitat useful and chimpanzee-centered habitat.

Materials: Paper, pens/pencils, construction paper, paper, crayons/markers, pens/pencils

Activity:

10 chimpanzees have been released to your organization's care from a biomedical research facility. You have been asked to retire them to a safe, positive, and chimpanzee-friendly environment. Your job is to design a sanctuary for these 10 chimpanzees that will keep them safe, provide food and shelter, and give them opportunities for exercise. These chimps have been infected with Hepatitis A, B, and C, so other chimpanzees will not be introduced into these groups once they have moved in.

FIRST: Research/review information on free-living chimpanzees. What do they eat? How far do they range? In what ecosystem(s) do they live?

SECOND: Research chimpanzees in captivity. Compare and contrast different facilities set up for chimpanzees. What do they offer for meals? How do they enrich their lives? How do they provide exercise?

(Please keep in mind that since chimpanzees are very strong, humans will not be in direct contact with them.)

Take both pieces of research information to help design the perfect sanctuary for these 10 chimpanzees. Please remember that these chimps have never lived in their natural environment; some behaviors may be instinctual, but others may not. How will humans facilitate the chimpanzees' gaining of independence in the sanctuary?

You will be expected to have a design drawn for your sanctuary as well as a brochure that explains the area and answers these questions:

- Where will the facility be? (This could be anywhere in the U.S.)
- Is the facility secure?
- Will the weather be something of a concern?
- How will health needs of the chimpanzees be met?
- What is the goal of this facility?
- How large is the facility?
- How will the needs of the chimpanzees be met through the facility: enrichment, movement, exercise, meals, and socialization?
- How will the facility continue with funding so it can continue taking care of the chimpanzees throughout their captive life?

As part of the facility, you will need caregivers. Write a job description of what that person will have to do and what kind of person they will have to be.

Useful web sites for sanctuary information:

www.faunafoundation.org
www.savethechimps.org
www.1family.org
www.personhood.org
www.chimfunshi.org.za/
www.prime-apes.org
www.janegoodall.org/inst/inst_sanct_need.html
www.greatapeproject.org/
www.primates-online.com/africa.html
www.nwf.org/nwf/intlwild/chimps.html
www.enviroweb.org/gap/newsletters/BtG2P5.html

(Refer to the lesson "Our Friends in Africa" for web sites on free-living chimpanzees.)

CAPTIVE CHIMPANZEES
GLOSSARY

Affidavit- a statement that is written down and sworn to be true.

Amnesty- a general pardon; a forgetting or intentional overlooking.

Artificially inseminated- to introduce semen into the cervix of a female by technical means in order to get the female pregnant.

Besiege- to crowd around, surround.

Biomedical research- the study and application of the principals of the natural sciences, especially biology and physiology, to clinical medicine.

Brachiating- to move by swinging from branch to branch with the arms.

Bushmeat- the trade where animals from the African forests are sold as a delicacy at markets and restaurants. The hunting includes all animals, protected and endangered.

Chide- to find fault with; blame; scold; reproach; to find fault; reprimand environment.

Clinical environment- a sterile environment devoid of any character or decorations.

Conspecific- of the same species.

Credence- to believe or give credit to something.

Cross-fostering- When a child of one species is raised by an adult of another species.

Deem- to think, believe, or consider; to form or have an opinion.

Diverge- to move in different directions from the same point; branch off.

Enclosure- a thing that encloses; a wall, fence, or cage.

Enforceability- being able to enforce.

Enrichment- to make rich or richer, to decorate. Includes food and food puzzles, structural, visual.

Excreta- waste matter discharged from the body, such as urine or sweat.

Feces- waste matter discharged from the large intestines and anus.

Grooming- to generally take care of, to clean, brush, etc. When chimpanzees groom, they are helping to clean themselves (ex: cleaning off dead skin). Grooming is also a bonding time for friends and family, and helps to calm after excitement.

Guileless- honest, frank, straightforward, sincere, candid.

Hepatitis- a contagious viral disease characterized by inflammation of the liver, fever, and usually jaundice.

Hot unit- areas of a biomedical research facility where chimpanzees are housed who have been infected with a communicable disease.

Husbandry- careful management.

Inclement- not merciful or kindly; severe; harsh.

Internment- confinement within the limits of a country or place.

Intrusion- the act of intruding; coming unasked and unwanted.

Isolettes- a small cage; isolating human infants or nonhuman animals.

Locomotion- the act or power of moving from place to place.

Locomotor- capable of locomotion.

Maternal- of or like a mother; motherly.

Monotony- lack of variety.

Mundane- dull, routine.

Neurophysiological- having to do with the physiological functions of the nervous system, and having to do with the normal or healthy functioning of an organism.

Nonhuman primate- any primate that is not classified as human.

Noninjurious- activities that do not cause injury or harm.

Palatable- agreeable to the taste; pleasing.

Postural- of or having to do with posture; the position of the body; way of holding the body.

Precocious- early development.

Procurement- to have received or obtained.

Prosimian- primate belonging to the more primitive of the three divisions of primates (ape, monkey, prosimian), including all early fossil primates and modern lemurs, loris, tarsiers, and tree shrews.

Psychological- of the mind.

Quantifiable- that can be counted or measured.

Receptacles- a container or place used to put things in to keep them conveniently stored.

Remedied- to put right; make right; cure.

Schizophrenia- a form of psychosis where poor or non-existant reality testing causes the patient to dissociate him/herself from his/her environment and deteriorate in character and personality.

Sedated- to treat or calm with sedatives–lessening nervousness, pain, or excitement; lowering functional activity; calmative.

Species-typical behavior- behavior that is typical of a specific species.

Spontaneously- doing something without planning beforehand.

Stereotypies- excessive repetition or lack of variation in movements.

Substrate- a basis or foundation; ground, trees, bushes, grass, cement, etc.

Transacted- to attend to; carry on; manage; do.

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Name_____

CAPTIVE CHIMPANZEES
ASSESSMENT

Read each question carefully and answer appropriately.

1) List four types of captivity in which chimpanzees can be found.
   a.
   b.
   c.
   d.

2) Compare and contrast two of the areas listed above. (Think about the facilities, quality of life, the chimpanzee-friendliness, etc.)

_____	_____

3) Describe (in your own words) and/or draw a facility that is chimpanzee-friendly.

4) On a separate sheet of paper write a letter making suggesting to the USDA regarding the improvement of facilities and care for chimpanzees in biomedical research.

5) Explain why the Animal Welfare Act was developed.

_____

_____

_____

_____

6) Explain the difference between a sanctuary that permanently retires their chimpanzees and one that doesn't.

_____

_____

_____

_____

_____

_____

7) Match the terms to the appropriate definition.

a. isolettes	d. stereotypies
b. mundane	e. enrichment
c. hot unit	f. grooming

_____ Excessive repetition or lack of variation in movements.

_____ An area of a biomedical research facility where chimpanzees are housed who have been infected with a communicable disease.

_____ To make rich or richer; to decorate; to enhance. Includes food, food puzzles, structures, and visual stimulation.

_____ A small cage; isolating human infants or nonhuman animals.

_____ To generally take care of; to clean, brush, etc. Can also be a bonding time for friends and family; helps to calm after excitement.

_____ Dull or routine.

8) Explain when the need for sanctuaries would no longer be necessary.

9) Write two paragraphs. One supporting zoos, and one not supporting zoos. (Use extra paper if necessary.)

10) Place a star next to items on the list below that are chimpanzee-friendly.

isolettes	stuffed animals	climbing structures
caves	cement floors	cages suspended above ground
trees & grass	edible plants	sharp objects
clothes	rusted caging	batteries (or things with them)
no windows	motes	hair brushes
natural light	inedible plants	food forages
plastic toys	stuffed animals	magazines

Name _____

CAPTIVE CHIMPANZEES ASSESSMENT

Read each question carefully and answer appropriately.

1) List four areas types of captivity in which chimpanzees can be found.
   a. Zoos
   b. Sanctuaries
   c. Biomedical Research
   d. Circuses (entertainment)

2) Compare and contrast two of the areas listed above. (Think about the facilities, quality of life, the chimpanzee-friendliness, etc.)

Similarities of Zoos and Circuses	Differences of...
This will be dependant on which facilities they choose...	

3) Describe (in your own words) and/or draw a facility that is chimpanzee-friendly.

This drawing should include: climbing structures, grasses, places for chimpanzees to get out of inclement weather, no cages (or at least none that are obviously confining), items of enrichment, ...

4) On a separate sheet of paper write a letter making suggesting to the USDA regarding the improvement of facilities for chimpanzees in biomedical research.

Answers may vary

5) Explain why the Animal Welfare Act was developed.

To increase the minimum standards of care and treatment for warm-blooded animals bred for commercial sale, used in animal research, transported commercially, or exhibited to the public. It also includes prohibiting staged dogfights, bear and raccoon baiting, and similar animal fighting ventures.

6) Explain the difference between a sanctuary that permanently retires their chimpanzees and one that doesn't.

The difference between a sanctuary that permanently retires chimpanzees and one that doesn't is that a chimpanzee that may be placed in a sanctuary but is later pulled out to be used for more research is not in permanent retirement. A chimpanzee that is living in a sanctuary for the rest of their life without being involved in invasive research is in a sanctuary that believes in permanent retirement.

7) Match the terms to the appropriate definition.

a. isolettes
b. mundane
c. hot unit
d. stereotypies
e. enrichment
f. grooming

d ____ Excessive repetition or lack of variation in movements.

c ____ An area of a biomedical research facility where chimpanzees are housed who have been infected with a communicable disease.

e ____ To make rich or richer; to decorate; to enhance. Includes food, food puzzles, structures, and visual.

a ____ A small cage; isolating human infants or nonhuman animals.

r To generally take care of; to clean, brush, etc. Can also be a bonding time for friends and family, and helps to calm after excitement.

b Dull or routine.

8) Explain when the need for sanctuaries would no longer be necessary.

When chimpanzees are no longer being used in biomedical research and past research chimps have passed away from old age.

(Answer may also include: when no chimpanzees are held in captivity)

9) Write two paragraphs. One supporting zoos, and one not supporting zoos. (Use extra paper if necessary.)

Answers may vary

10) Place a star next to items on the list below that are chimpanzee-friendly.

isolettes	*stuffed animals	*climbing structures
*caves	cement floors	cages suspended off ground
*trees & grass	*edible plants	sharp objects
*clothes	rusted caging	batteries (or things with them)
no windows	motes	*hair brushes
*natural light	inedible plants	*food forages
*plastic toys	*magazines	

TEACHER INFORMATION ON: CHCI

PHILOSOPHY:

The Chimpanzee and Human Communication Institute (CHCI) cares for a unique and special family of five chimpanzees who have acquired the signs of American Sign Language and use those signs in conversations with each other and with their human companions. The chimpanzees' accomplishments have helped the scientific community to better understand ourselves as well as our place and role in nature. This has been achieved by taking the chimpanzees on their terms as much as possible; the CHCI gives the chimpanzees' needs priority. We have found that quality empirical research can and must be humane in the treatment of the animals. This entails developing ways to improve the living conditions for captive animals that meet their physical needs as well as their psychological needs.

The freedom to move about and enjoy our world is something we all take for granted. Many people have worked for years to gain the support and funds needed to provide these chimpanzees with an environment which allows them to run, climb, and enjoy the sunshine as free-living chimpanzees do. In addition, the chimpanzees now live in a much more intellectually interesting environment that has problems to solve and is surrounded by a constantly changing scene to observe. The facility they have lived in since 1993 is quite a change from their previous home; a 300 square foot lab on the third floor of the psychology building. The chimpanzees are enjoying every inch of their new environment and, as a result, are healthier and more content here.

In addition to improving life for these five chimpanzees, the facility also serves to educate our students. Each year between 40 and 50 students take advantage of the opportunity to become active members of this project as research interns. They learn academic skills such as scientific research, grant writing, and animal care by actually doing rather than just observing and by becoming participants in the CHCI research projects. The new facility also serves the students of Central Washington University, the state, and the public by offering classes and educational workshops.

Even as we watch these chimpanzees run and play and sign with their companions, we must not forget that other chimpanzees are not so fortunate. In Africa, chimpanzees are still illegally captured by poachers to sell to illegal exporters. In research labs, they are being given HIV and other human diseases. Also, there are very young chimpanzees being used in the entertainment industry, in which their training commonly involves physical and mental abuse.

Through our nonprofit organization Friends of Washoe (FOW), we work diligently to raise funds and awareness to ensure the safety of these five chimpanzees. We have also worked, and continue to work, to improve captive conditions for less fortunate chimpanzees around the world. FOW was a proponent of granting endangered species status to chimpanzees in Africa which they now have.. Some enrichment techniques, which were developed for the chimpanzees at the CHCI, are now making life a little more interesting for chimpanzees in research labs around the country. However, there is still much to be done. In the words of Jane Goodall:

"Only when we understand can we care,
only when we care will we help,
and only if we help will they be saved."

BRIEF HISTORY:

Four of the chimpanzees, Washoe, Moja, Tatu, and Dar, were cross-fostered, or raised like deaf human children. Cross-fostering is when the adults of one species raise the offspring of another species. In this case, chimps were raised in a human environment. They used a high chair for meals, played with dolls, drew pictures, took naps, and even learned to use the POTTY.

Washoe, Moja, Tatu, and Dar were immersed in American Sign Language (ASL), and they learned to communicate by using signs in their daily interactions. For instance, Washoe signed about when it was TIME to EAT, WHO was coming

over to PLAY, and whether she wanted to eat BANANAS or APPLES.

Washoe (sign=index finger of "W" flicks ear) is the matriarch of this family and was the first chimpanzee to learn a human language. She was named for Washoe county Nevada where she lived with Drs. Allen and Beatrix Gardner until age of five.

Washoe was born in Africa, around September of 1965. She was the only one of the five chimpanzees at the CHCI to have been born in Africa. Her capture probably consisted of a hunter killing her mother and then taking her to market to be sold to a dealer. After she was brought here for the Air Force, Drs. Allen and Beatrix Gardner adopted her for their research.

Moja (sign=fingertips of "M" drawn across palm) is the second eldest. Moja's name means "one" in Swahili. She was the first of the Gardners' second research project. Moja was born on November 18, 1972 at LEMSIP (Laboratory for Experimental Medicine and Surgery in Primates) in Tuxedo, New York.

Moja is the chimpanzee at CHCI who is most likely to dress herself in clothes and frequently uses mirrors to groom or just to gaze at herself.

Tatu (sign=knuckles of "T" tap shoulder) is the youngest female. Her name means "three" in Swahili. She was also part of the second research project. Tatu was born on December 30, 1974 at the Institute for Primate Studies at the University of Oklahoma in Norman, Oklahoma.

Tatu often signs BLACK. We think it is her favorite color, and the sign also seems to be used when she is referring to anything she really likes.

Dar (sign=index finger of "D" flicks ear) is the eldest male. He is named for Dar es Salaam, the capital of Tanzania. Dar was born on August 2, 1976 at Holloman Air Force Base in Alamagordo, New Mexico.

Dar's father was the largest chimpanzee in captivity. Dar himself is just over five feet tall and weighs over 150 lbs. Dar is a fairly mellow guy, but when he displays he shows his strength and size.

Loulis (sign=thumb of"L" taps tip of the nose) is the youngest of the family and is Washoe's adopted son. Loulis was named for two of his caregivers, Louise and Lisa, at Yerkes Regional Primate Center in Atlanta, Georgia where he was born. Loulis was born on May 10, 1978.

Loulis was not cross-fostered. As Washoe's adopted son, he acquired his signs from Washoe and the three other chimpanzees. He was the first non-human to learn a human language from other non-humans. Thus, Loulis observed the other chimpanzees using the signs of ASL around him, like CHASE and TICKLE during play interactions. Washoe would mold his hand into signs like MORE for more food.

By observing and researching how Washoe and her family learn and use the signs of ASL, we have gained a better understanding of the patterns of language development that bridge species barriers. In addition to our use of language, we have also seen that our emotions and social bonds are very similar to chimpanzees.

SAME OR DIFFERENT?:

Chimpanzees are 98.76% identical to us genetically. Chimpanzees are actually closer to humans genetically than to gorillas.

Chimpanzee behavior is a lot like our own. But just as there are differences between human cultures, there are physical, cultural, and behavioral differences that exist between our two species as well.

Chimpanzees are much stronger than humans; 5-7 times as strong in overall strength. Their bones are denser, and their skin is tougher than ours. The density of their bones is one reason why chimpanzees stay away from water; they are not buoyant and they sink. Chimpanzees are also more agile. They spend much of their day in trees and require greater balance and agility than humans.

The natural gesturing of free-living chimpanzees has great implications for communication research. Because chimpanzees have little voluntary control of their vocalizations, attempts to teach them a vocal language were not successful. ASL is a gestural language, and gesturing is a natural chimpanzee behavior. Washoe and the other chimpanzees here were easily able to modify an already present behavior and form ASL signs to communicate with their foster family members.

The chimpanzees at CHCI use and understand ASL. We can ask, and they can tell us what they want to do, what they feel and what they like. The sign language research conducted here has opened a window into chimpanzees' lives and mentality. We have found that chimpanzees are capable of acquiring a language; passing that language on to the next generation; and using it when talking to each other, to themselves, and to humans.

RESEARCH AT CHCI:

The CHCI, in addition to being a sanctuary for these chimpanzees and an educational facility, is also a non-invasive research facility. There are at least 30 research projects going on at any given time.

In the past, research centered around the chimpanzees acquiring a human language and passing that language on to the next generation, as well as examing conversations between chimpanzees while humans were not present (via remote video recording).

Currently, one research project examines natural gestures of chimpanzees. We are classifying non-ASL gestures that we have observed in these chimpanzees and compare them to the gestures observed in free-living chimpanzee populations using many hours of videotape recorded interactions.

Here at the CHCI, we have classified over 160 communicative behaviors used by these chimpanzees. We can tell the difference between a scratch, a natural gesture, and a sign because each sign has its own place, hand shape, and movement.

Another research project involves the post conflict interactions of the chimpanzees. Like any human family, this family of chimpanzees has been observed to have conflicts. This research is trying to determine if and how reconciliation occurs, and whether they use reassurance or discipline during and/or after conflicts.

In addition to behavioral research, we are also interested finding ways to make the lives of captive animals more interesting. We are systematically studying how the chimpanzees at CHCI use their space, in terms of structures, and how they use the objects that we provide them on a daily basis. The results from these studies will add to our knowledge of how to more effectively design facilities for captive animals, as well as the types of objects that provide them the most enrichment.

Even though we are at a University, and are conducting on-going research, everything that is done is on the chimpanzees' terms. We do not force them to do anything if they don't want to. We respect the rights and interests of these five unique individuals.

Chimpanzee Name Pronunciations:

Washoe
(Wah'show)

Loulis
(Loo'lis)

Moja
(Mo'zha)

Dar
(Där)

Tatu
(Tah'too)

BUILDING A FOUNDATION

THEME ACTIVITY:

Grade level: 7-9

Time needed: 1-2 class periods

Subject Areas: Science, Language, Reading

Objectives: To increase understanding of cross fostering, chimpanzee language studies, Washoe's language acquisition, and how chimps and humans are classified.

Materials: "Next of Kin" excerpts with questions following.

Activity:

Assign the class to four different groups. Have each group read the designated excerpt and answer the questions following the excerpt.

Once each group is finished reading and has completed the questions, have them prepare a short presentation for the class in story format. As part of their presentation, they should include 2-3 quotes from the excerpt as references.

After the presentation, the group should have 2-3 discussion questions to ask the class to check for understanding. (Depending on the level of the class, the discussion section may need to be facilitated by the teacher.)

(Alternatives)

If reading ability is low, choose an excerpt or two to read aloud to the class and review questions in a discussion format.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR

BABY IN THE FAMILY

Inspired by the Kelloggs' approach, several families raised chimpanzees in their homes, and the apes became remarkably childlike in their development and abilities. They could eat with a fork and knife, brush their teeth, use a wrench, leaf through magazines, paint with fingers or brushes, even drive the family car—all quite spontaneously and in the proper context of their social life. But there was one behavior universal to human children that these home-reared chimpanzees never developed: language.

Like most great ideas this one was not new; in fact it was at least three hundred years old. In his diary entry of August 24, 1661, Samuel Pepys, the renowned chronicler of life in seventeenth-century London, described a strange creature that had just arrived by ship from Africa:

> It is a great baboon, but so much like man in most things that...I do believe it already understands much English; and I am of the mind it might be taught to speak or make signs.

Questions

1. Why was the study terminated with Gua? _____

   _____

2. Was it easy to understand Viki's spoken communication? _____

   Explain. _____

   _____

3. Why is the following statement "simply bad science"?
   "...that humans stand above and apart from the apes because of our unique and innate capacity for language."

4. What is a better way to explain the findings from previous chimpanzee language studies? _____

5. You have applied for a grant to conduct a study teaching chimpanzees sign language. Write a letter to the organization that is considering granting you the money explaining why teaching sign language to a chimpanzee is possible.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR
BABY IN THE FAMILY

By the time I met Washoe in September 1967 she had been living with the Gardners a little more than one year and had learned about two dozen signs. Washoe was now making steady and dramatic progress, unlike Gua and Viki who had faltered due to their foster parents' insistence on vocal speech. For the first time in a cross-fostering study, a baby chimpanzee's language was developing stage for stage like a human child's, right along with her abilities to use cups, forks, and the potty.

I realized that a lot of what I'd taken to be characteristic chimpanzee behavior was simply Washoe's personality. Like all chimpanzees, like all animals for that matter, she was one of a kind.

Questions

1. When Dr. Fouts started working with Washoe, how many signs did she already know?

   _____

2. How was Washoe's language developing? _____

3. What FUNNY prank did Washoe pull on Dr. Fouts? _____

   _____

4. How often did Washoe play pranks on Dr. Fouts? _____

5. Dr. Fouts was panicked that Washoe was going to die why was this? _____

   What happened? _____

   _____

6. Was Washoe's behavior typical for a young chimpanzee? _____

   Explain. _____

   _____

7. If you were Dr. Fouts when Washoe drank the Mr. Clean, what would you have done?

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR
OUT OF AFRICA

In 1699, England's best-known anatomist, Edward Tyson, performed the first dissection of a chimpanzee and revealed an anatomy that resembled "Man in many of its Parts, more than any Ape-kind, or any other Animal in the World." Tyson was especially troubled by the creature's brain and laryngeal region. They

Again, this grouping by resemblance upheld the old Greek notion of human uniqueness. When I was in college in the early 1960s I was taught in anthropology class that humans had parted company with apes at least twenty million years ago. That not only gave us enough time to become hairless, stubby armed, and bipedal, but it also gave our ancestors plenty of time to develop "the special human attribute" of thought, language, and culture.

Questions

1. What false statement did Tyson formulate that helps biomedical researchers justify their testing on chimpanzees? _____

   _____

2. Anthromorpha means: _____

3. Homo sapien means: _____

4. Since humans were classified as "Homo sapiens," did this separate humans from other primates? _____

   Explain. _____

   _____

   _____

5. Why did people think Darwin was taking his theory too far? _____

_____

6. Pick one belief mentioned in this excerpt and defend it in a letter to someone opposing the belief.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR

SIGNS OF INTELLIGENT LIFE

Descartes and Darwin collided in Project Washoe. If Descartes was correct, then Washoe didn't have a thought in her head and would be unable to name a single object. If Darwin was correct, then Washoe was already thinking and would be able to express her thoughts by manipulating ASL signs like tools.

In the second and third year of Project Washoe I would wake up every morning and listen to my two-year-old son, Josh, talk to an imaginary friend he called "Ga-caa." Josh didn't like it when I interrupted or even eavesdropped on these talks. So I'd leave for work, where I'd find Washoe sitting on her bed signing to her favorite doll. If she caught me peeking through the doorway she would stop mid-sign. As soon as I turned away she would pick up the "conversation" where she had left off. It was episodes like these—Washoe's childlike and private experimentation with language—that most effectively proved that she hadn't been trained.

Questions

1. What was Washoe doing in the tree that day that "left Harré shaken"? _____

2. What did Washoe do that deaf human children also do? (Give five examples)

3. What were some behaviors Washoe exhibited that proved she hadn't been trained? (Give four examples)

4. Explain how a language study like this can change a person's view of the world.

5. Write a media release describing the findings and arguments about Project Washoe.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR ANSWER KEY

BABY IN THE FAMILY

Inspired by the Kelloggs' approach, several families raised chimpanzees in their homes, and the apes became remarkably childlike in their development and abilities. They could eat with a fork and knife, brush their teeth, use a wrench, leaf through magazines, paint with fingers or brushes, even drive the family car—all quite spontaneously and in the proper context of their social life. But there was one behavior universal to human children that these home-reared chimpanzees never developed: language.

Like most great ideas this one was not new; in fact it was at least three hundred years old. In his diary entry of August 24, 1661, Samuel Pepys, the renowned chronicler of life in seventeenth-century London, described a strange creature that had just arrived by ship from Africa:

> It is a great baboon, but so much like man in most things that...I do believe it already understands much English; and I am of the mind it might be taught to speak or make signs.

Questions

1. Why was the study terminated with Gua? There son Donald was picking up more chimpanzee vocalizations.

2. Was it easy to understand Viki's spoken communication? It was very difficult

   Explain. The words were primarily voiceless, with a heavy chimp accent

3. Why is the following statement "simply bad science"?
   "...that humans stand above and apart from the apes because of our unique and innate capacity for language."
   It can be proven that apes have the capacity for language by teaching one or more apes to use language - but a "null hypothesis" that apes do not have the capacity for language cannot be proven.

4. What is a better way to explain the findings from previous chimpanzee language studies? The scientists had assumed that chimpanzees should use vocal speech because that is what most humans use.

5. You have applied for a grant to conduct a study teaching chimpanzees sign language. Write a letter to the organization that is considering granting you the money explaining why teaching sign language to a chimpanzee is possible.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR ANSWER KEY

BABY IN THE FAMILY

By the time I met Washoe in September 1967 she had been living with the Gardners a little more than one year and had learned about two dozen signs. Washoe was now making steady and dramatic progress, unlike Gua and Viki who had faltered due to their foster parents' insistence on vocal speech. For the first time in a cross-fostering study, a baby chimpanzee's language was developing stage for stage like a human child's, right along with her abilities to use cups, forks, and the potty.

I realized that a lot of what I'd taken to be characteristic chimpanzee behavior was simply Washoe's personality. Like all chimpanzees, like all animals for that matter, she was on of a kind.

Questions

1. When Fouts started working with Washoe, how many signs did she already know? two dozen

2. How was Washoe's language developing? stage for stage like a human child's

3. What FUNNY prank did Washoe pull on Fouts? When Washoe was getting a piggyback ride, Washoe signed FUNNY, because she urinated on Fouts' back.

4. How often did Washoe play pranks on Fouts? Practically daily

5. Fouts was panicked that Washoe was going to die. Why was this? drank Mr. Clean

   What happened? After stressing, and thinking of ways to have Washoe vomit it up, Fouts reads the label and sees no antidotes, in the end Washoe had diarrhea.

6. Was Washoe's behavior typical for a young chimpanzee? No

   Explain. No two are alike, just like with human iunvenile. Some are shy and solitary while others are even-tempered adn always good-natured, and others may be desperate for approval.

7. If you were Fouts when Washoe drank the Mr. Clean, what would you have done?

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR

OUT OF AFRICA

ANSWER KEY

In 1699, England's best-known anatomist, Edward Tyson, performed the first dissection of a chimpanzee and revealed an anatomy that resembled "Man in many of its Parts, more than any Ape-kind, or any other Animal in the World." Tyson was especially troubled by the creature's brain and laryngeal region. They looked

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Questions

1. What false statement did Tyson formulate that help biomedical researchers justify their testing on chimpanzees? That a chimpanzee is a mindless ape, with a human brain but not a single thought in it, with an apparatus for language but not a thing to communicate

2. Anthromorpha means: resembling man

3. Homo sapien means: wise man

4. Since humans were classified as "Homo sapiens," did this separate humans from other primates? yes

   Explain. Humans were considered utterly unique by Carolus Linnaeus, there was no physical similarity between humans and other primates.

5. Why did people think Darwin was taking his theory too far? Because his connections meant that we were not as special and unique, that the chimpanzee was not a distant cousin.

6. Pick one belief mentioned in this excerpt and defend it in a letter to someone opposing the belief.

An excerpt from "Next of Kin" written by Roger Fouts with Stephen Tukel Mills

A FAMILY AFFAIR ANSWER KEY

SIGNS OF INTELLIGENT LIFE

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Questions

1. What was Washoe doing in the tree that day that "left Harré shaken"? Washoe was lounging in the tree, leafing through pages of a magazine and signing to herself

2. What did Washoe do that deaf human children also do? (Give five examples)
   - signed QUIET to herself as she sneaked into a forbidden room
   - she would announce the arrival of people from the top of her tree
   - she would sit on her bed and talk to her dolls spread out around her
   - she used her newfound words on anything and anyone
   - she would sign to strangers long after it was evident they didn't understand

3. What were some behaviors Washoe exhibited that proved she hadn't been trained? (Give four examples)
   - she would sign to her dolls
   - sign from thirty-foot trees
   - private experimentation with language
   - she had woven language into the daily flow of her life quite spontaneously

4. Explain how a language study like this can change a person's view of the world.
   It shows that humans are not as unique as they claim to be and that other animals are also capable of acquiring a language.

5. Write a media release describing the findings and arguments about Project Washoe.

IT'S ALL GREEK TO ME!

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1-2 class periods

Subject Areas: Science, Language

Objectives: To learn about what prevents chimps from talking and how sign language is so applicable to their culture. To introduce students to some signs that are used by the chimpanzees at CHCI.

Materials:"Chimpanzee Language" handout, Sign Language sheets

Activity:

Read the handout in class. To check for comprehension, ask the following discussion questions:

- What is one difference specified between chimpanzees and humans?
  (chimpanzees can't speak vocally)
- Why were Vicki's words hard to understand?
  (she had a heavy chimp accent: guttural, voiceless sounds)
- How do chimps and humans express their emotions vocally?
  (food bark for chimps, saying "ouch" when hurt)
- What were some observations that lead researchers to believe that sign language would be more applicable for chimpanzees?
  (gestured naturally in the wild, natural behaviors of chimpanzees complimented sign language)
- What is an example of signs that were put together to represent something?
  (Bird-meat/turkey, berry-paper/fruit leather, water-bird/swan, and cry-hot-food/radish)

Review some signs in the Sign Language sheets. Have students practice them as a class and then in partners.

Have students try a sign in front of a small group and have students identify what word is being signed.

<u>Extension:</u>

Learn more sign language through sign language instructional books! Have student's practice carrying on conversations in sign language.

Chimpanzees and Language

Chimpanzees are 98.76% genetically identical to us. With this genetic closeness comes similarities and differences. One difference is that chimpanzees are not able to speak vocally. Attempts were made to teach chimpanzees a spoken language; these were largely unsuccessful. One example of a study that had limited success is one that involved a chimpanzee named Vicki. She was raised by human psychologists Keith and Cathy Hayes in the 1950s. She acquired a limited vocal vocabulary of four words: *mama, papa, cup, and up.* These words were hard to understand with her heavy chimpanzee accent. It has also been found that chimpanzees have a relatively thin tongue and a higher larynx; these physical attributes make vowel pronunciation difficult.

Many chimpanzee vocalizations are emotional. Just as a human would respond when someone steps on their toe, so too do chimpanzees. When a person steps on your toe, you don't think to yourself "hmm, my toe is being stepped on. That hurts. I should yell," it's much more spontaneous than that: you yell! Chimpanzee and human involuntary vocalizations are controlled by the limbic system in the brain. Chimpanzees may food bark when they see food they really like or alarm call when they are scared.

Another reason that it is unlikely for a chimpanzee to learn a vocal language is that chimpanzees tend to be very quiet. Many people have reported passing a tree in the jungle and later realizing that it was filled with chimpanzees silently grooming or eating!

In the 1920s Robert Yerkes (a pioneer of chimpanzee behavioral research) recognized that, though chimpanzees could understand what he said, they never imitated his sounds. He found that they would reproduce the actions that they saw, but not what they heard from humans. Researchers of free-living chimpanzees have also found that chimpanzees communicate often with gestures. When requesting to groom, they may raise an arm over head. Mothers may make a scooping gesture with their arm behind their back when it is time for their baby to climb on their back to leave.

With these and other observations, the use of sign language seemed to compliment the nature of chimpanzees. The chimpanzees have acquired many signs, they have even made signs of their own to communicate with their human companions. Chimpanzees who communicate through sign language have also creatively combined signs to identify things, for example: BIRD-MEAT (turkey), BERRY-PAPER (fruit leather), WATER-BIRD (swan), and CRY-HURT-FOOD (radish).

Just like there are different accents in the United States (depending on where you live) there are also accents among chimpanzees. Not only do chimpanzees and hu

mans have different accents, but also different words can be used for the same Just like there are different accents in the United States (depending on where you live) there are also accents among chimpanzees. Not only do chimpanzees and humans have different accents, but also different words can be used for the same thing. Humans from different areas of the United States understand that "soda," "pop," and "coke" mean the same thing. Chimpanzees have different accents as well as different uses of words. Chimpanzees sign BIRD in the inverted form (fingers pinching up). Washoe signs FRUIT for apple (more generic). The ASL sign CHASE does not make contact, however, the chimpanzees have turned it into a contact sign by hitting the fist on the wrist.

Humphries, T., Padden, C., O'Rourke, T., (1980). A Basic Course in American Sign Language. Silver Spring, MD: T.J. Publishers, Inc.

Humphries, T., Padden, C., O'Rourke, T., (1980). A Basic Course in American Sign Language. Silver Spring, MD: T.J. Publishers, Inc.

GET TO KNOW ME!

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 class period

Subject Areas: Life Sciences, Language Arts, Reading

Objectives: To learn more about the chimpanzees at CHCI. To compare the similarities of our species. To apply what students have learned by setting up a day designed especially for a specific chimp.

Materials: Chimp Letters handout

Activity:

(Please note: the letters are not written by the chimpanzees, but by human companions. The information and style of each letter relates to each chimpanzee's personality and preferences.)

As a class, or in small groups, read the letters aloud. Once letters have been read, ask the students the following questions:

What are some interesting facts you have learned about the chimpanzees at CHCI?
Do you have anything in common with them?
Do they like things that you like?
Do they like things you don't like?
What is one thing that surprised you as you read the letters?
Are all the chimpanzees the same?
Do they have different personalities?
What were some clues that helped you to see their different personalities?

Assignment:

After the class discussion, have students chose a chimpanzee to plan a day for. Imagine that it is the chimpanzee's birthday and the humans at CHCI want some help planning a special day for them. Have the students come up with enrichment ideas (what things could be in their home to play with), plan a special meal with the foods that the chimpanzee likes, and plan games that could be played (keeping in mind that the humans will not be in the cages with the chimpanzees).

Hello friends,

I'd like to introduce myself. My name is Washoe Pan Satyrus. I was named after Washoe County, Nevada, where I spent my early childhood. The name Washoe is also a Native American word from the Washoe family meaning "people," and Pan Satyrus is the old scientific classification used for chimpanzees. Unfortunately, I'm not sure where I was born; somewhere in West Africa in late 1965.

I lived a short time in the my natural environment with my biological chimpanzee family. At the time it was still legal for hunters to capture free-living chimpanzees; now it is illegal. So, my mother was killed by poachers and I was sold to the U.S. Air Force who took me to the United States. I don't remember much of this time, but I don't think my trip to the United States was a very nice one.

Once I was in the United States I was adopted by Drs. Allen and Beatrix Gardner. Since I don't know exactly when I was born, we celebrate my birthday on the day I was adopted: June 21, 1966. I had a lot of fun living with the Gardners. I lived in my own trailer; I had toys to play with and friends who would spend lots of time with me. As I learned sign language, I was able to communicate with my human friends. This, I've been told, was a very special thing, since I was the first chimpanzee to acquire a human language. This is also where I met Roger Fouts. I remember the first day I met him. He was walking toward the playground where I was playing. He looked sad, so I ran over, jumped in his arms and gave him a hug. Both Dr. Allen Gardner and Roger were surprised by this. I guess my hug was the reason why Roger began to spend a lot of time with me. From that day on we were close friends. Roger would come and spend days with me, playing and signing. We would do all sorts of things together. I liked teasing Roger and would often hide my toys from him and drink and eat things that were not always good for a young chimpanzee.

When I was five years old I moved to Oklahoma with Roger and his wife Debbi Fouts. I missed the rest of my human family, but was glad to have the Foutses. Here I met new humans as well as chimpanzees. These were the first chimpanzees that I remember meeting. At first I didn't like the other chimpanzees, but soon they became my good friends. I had a baby in 1979 when I was 10 years old. His name was Sequoyah. Sequoyah died when he was only three months old. He had cut himself on the cage we were living in and developed an infection. He also got sick from pneumonia. I was very sad when he died. Roger was worried about me. I was so sad I even stopped eating and signing. When he brought Loulis, my now adopted son, into my life, I was very happy to see him even though I knew he was not my own real son. Unfortunately, Loulis was scared of me at first. Loulis wouldn't come to me until I signed HUG very loudly and woke him in the middle of the night; this scared him into my arms. We've been an adopted family ever since.

I have met so many people throughout my life, so I take awhile to become a friend. I've never been one to make human friends quickly, but those friends I have are true friends, and I will always look out for them. I try to take each friend on his or her own terms; when there is a dispute, I try to be fair.

I am now the mother of a family of four chimpanzees. Whenever there is an argument, they come to me for reassurance or help. I am the dominant chimp in my family, which means sometimes I need to settle arguments between the others. We also have fun together; we play and groom during the day. I'm especially happy when I can go outside. If I can't go outside because it's too cold, I also enjoy looking through magazines and catalogs (especially shoe catalogs!). Sometimes I'll sign about the pictures I see with friends. Other things I enjoy doing with my human friends are brushing my teeth, painting, drinking coffee, having tea parties, and playing tag and shoe-tickle through the window.

Some of my favorite foods are: onions with oatmeal (yum!), pumpkin pudding, split pea soup, eggplant, cranberry sauce, gum, tea, and coffee. Do you like any of these foods?

I hope you've enjoyed my letter and that you've learned something about my life.

Sincerely,

Washoe

Greetings new friends!

I was happy to hear that you wanted to learn about my life, so I thought I would write you a letter!

My name is Moja Lemsip. Moja means "one" in Swahili. Do you know where the language Swahili is spoken? I was given the name "Moja" because I was the first chimpanzee of the Gardner's second cross-fostering/sign language project. (Cross-fostering means that I was raised like a deaf human child.) My last name comes from the name of the laboratory where I was born on November 18, 1972. LEMSIP stands for: Laboratory for Experimental Medicine and Surgery in Primates. LEMSIP is in Tuxedo, New York.

I lived with the Gardner's until I was seven years old. While living with the Gardners, I learned sign language while I played with my human friends and later with my younger chimp friends. We lived on a ranch with horses, ducks, cows, a stream, and woods. Dar and Tatu were also there during this time; we would play together and sign together. Tatu and I loved to run and scare the horses away!

When I was seven, I moved to Oklahoma to live with Washoe and Loulis. At first this was hard because we didn't know each other. I was nervous, scared, and I missed my family. A year later we moved to Ellensburg. I like to be in a familiar place with people I know, so moving was hard (if you've ever moved, you know how this feels!). In 1993, when I was 20 years old, we moved into a new home at Central Washington University in Ellensburg and I was very happy! This was the first time we had been outside in years! I explored the outdoor area a lot, and I also began to feel more confident!

I love looking at myself in the mirror! I also enjoy dressing up in clothes, especially if they are red (that's my favorite color)! When I go outside I love to climb, swing, and run! I also enjoy playing peek-a-boo and love velcro! I like to watch my human friends peel the velcro apart, and I listen to the noise it makes. I am also interested in what my human friends wear (glasses, barrettes, clothes, watches, and shoes).

I'm not much of a food person, but I do enjoying eating onions (as if they were apples), sandwiches, and farina (it's kind of like cream of wheat). I also love brushing my teeth with two toothbrushes at the same time (before and after meals)!

I hope we have a chance to meet sometime!

Your friend,

Moja

Hello All,

Let me introduce myself. My name is Oklahoma Tatu. I was born at the Institute for Primate Studies at the University of Oklahoma in Norman, Oklahoma. So, my first name came from my birthplace (obviously). My last name, Tatu, means "three" in Swahili. Swahili is an African language spoken in East Africa.

I was born on December 30, 1975. Soon after I was born I moved to Reno, Nevada to live with the Gardners. There I was learning sign language as I grew up with Moja (my big sister) and Dar (my little brother). Moja moved a few years later to live with Washoe and Loulis. (Dar and I didn't come to live with them until we were about five years old.)

I like things that are practical and useful. I also don't mind helping my human friends, especially if there are treats given in return for my help. My human friends say I am a beautiful signer, and I do enjoy conversing with them. I especially enjoy signing about all my favorite foods: milk, yogurt, cheese, ice cream, meat (particularly bird meat-turkey), cereal, carrots, and coffee. I like to know what's going on in the kitchen when my human friends are making my dinner. I know when it's TIME to eat, go OUT, and when it's time for bedtime BLANKETS. I also remind my friends when it is time for Halloween, Thanksgiving, and Christmas. I like to remind my human friends when those celebrations are supposed to happen so they don't forget the presents! I also love masks and all things BLACK. For my birthday, my human friends all dressed in BLACK. It was a very good day! Happy Birthday to me!

I love to go outside! I was so happy to move into our new area with the grass and sunshine! I try to stay outside as much as possible, rain or shine! I'm always ready for the challenge of a good food puzzle, to swing on hoses and tires, and to play tickle or chase. I also like make-up, hair clips, and to look at catalogs (especially Hickory Farms -yum! All those cheeses, meats, and crackers!). I also enjoy eating whole onions, apples, berries, and ice.

Spending time with my chimp family is also important to me. I enjoy grooming with the and signing with the other chimps. If you come to visit our home, you may find Moja and me grooming and staying out of the way of the rowdy boys. It's almost time for lunch, so I'd better go!

Yours truly,

Tatu

What's Up?

Hey, my name is Dar es Salaam. I'm named after the capital of Tanzania (in Africa). Jane Goodall lives in Dar es Salaam, Tanzania when she is not observing chimpanzees in the Gombe Stream Reserve in Tanzania.

I was born at Holloman Air Force Base in Alamagordo, New Mexico on August 2, 1976. My mom and dad were part of the Air Force's testing program. My dad was the largest chimpanzee in captivity. I'm told that I'm big like my dad and that I get my floppy ears from my mom.

I didn't know my biological family very long. The Gardners adopted me when I was a newborn baby and raised me like I was a deaf human until 1981. I had fun there; I was with my adopted sisters Tatu and Moja. Moja would try to scare me when I lived in Reno by jumping on top of my trailer. In 1981, Tatu and I moved to Ellensburg, WA to live with Washoe, Loulis, and Moja. I remembered how Moja used to tease me, so at first I didn't want to have anything to do with her. I also missed my old family, but now I have a new family. We get along like most families do, with occasional arguments, but we also have fun together.

When I was little I loved rough tickling games and hiding from my friends, but now I like to spend my time just hanging out or looking at books or magazines. My human friends like to call me "Mr. Mellow Fellow." Not much bothers me. Sometimes I get in an argument with my younger brother Loulis, but it doesn't last long, and most of the time he's my best friend.

While my family enjoys the outdoors, I only like being outside when it's not too cold, too hot, or too windy. When I'm feeling playful, I like to play chase, tickle, and blind man's bluff with my chimpanzee family and my human friends. Sometimes if a hat or a pair of shoes is in our home, I like to put them on. It's hard to find shoes that fit me, since I wear a size 12. I also like tools and mechanical things, and I really like to take things apart to see how they work. I also love dinosaur toys! I especially like to play tickle with them!

My favorite foods are bananas (I really like the peels!), plain bread, noodles, and soda pop. During celebrations (like birthdays and holidays) I go straight to the plastic pop bottles and fruit drinks!

I hope you've learned something new about me. I'm tired now; I think I'll go take a nap.

Dar

Hey!

My name is Loulis Yerkes. I was named after two of my friends who worked in the laboratory where I was born. Their names were Louise and Lisa. I was born at Yerkes Regional Primate Center in Atlanta, Georgia, on May 10, 1978. I don't remember much about Yerkes since I left there at 10 months old when my mom Washoe adopted me.

In my adopted family I have two older sisters and one older brother. I'm especially close to my brother Dar.

They say I'm pretty special, since I learned how to use ASL (American Sign Language) from the rest of my chimpanzee family. I actually learned 55 signs from my family!

I have lived in laboratories for the majority of my life. When we moved into our new home, I was actually a little scared to touch grass! I stayed on the cement area for a while until I thought it was safe!

I really enjoy spending time with my family and my human friends. I especially like to play chase, toe tickle, and tug of war. I also have fun looking in mirrors and playing with hats and masks.

What's your favorite food? I like granola bars, plain rice, green apples, and koolaid-flavored ice. But I'd much rather just spend time with my family and friends instead of eating.

I hope we can meet sometime and play a game of chase!

Bye!

Loulis

CHIMPANZEE DOMINOES

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1-2 class periods

Subject Area: Science

Objectives: To help students recognize the chimpanzees at CHCI. To increase student understanding of the individual differences in chimpanzees.

Materials: sets of domino cards for groups of two

Activity:

Preparation-Students should have already learned something about the chimpanzees at CHCI through "Get to Know Me."

Before the activity make copies and laminate the dominoes. There should be enough sets for each pair of students. Also, copy the enlarged pictures for the class review at the end.

In Class-Once students are paired off, inform them that they are playing dominoes. They are to match the correct picture of each of the five chimpanzees at CHCI. After they have matched the card, they should also identify the chimpanzee by name (Washoe, Moja, Dar, Tatu, Loulis). When the class has completed the domino game, review the faces and cards with the class.

*Please note that some of the pictures will be from a variety of camera angles. This is to increase the challenge of identification. The larger cards have the names identified on the backside for teacher reference.

After you have reviewed the pictures with the students, ask the class "what were some of the distinguishing characteristics that helped you decide who was in the picture?" Relate the same technique to identifying friends, family, companion animals, etc. Continue by asking the students if there are other ways you can identify someone (walk, voice, laugh or, etc.)

Conclusion: All beings are identifiable once you get to know their distinguishing features or traits. It is important to remember that, like humans, you can also identify chimpanzees and other animals not only by their physical characteristics, but also by their personalities.

CHIMPANZEE CHARACTERISTICS

DAR

DAR
Lighter Brown Hair
Very muscular and defined
Freckles on his face and ears
BIG ears (sometimes floppy)
Protruding brow ridge
Protruding jaw (like a tennis ball is in his mouth)
Bird chest (chest points out)
Broken toe which sticks straight out on one foot
May be missing hair on his arms from over grooming
Very long hands and fingers

LOULIS

LOULIS
Short and stocky (miniature weight-lifter)
Robust, wide chest
Longer hair
Broader legs
Freckles on his face
Two distinct ridges on his head
Sitting posture is usually with legs spread far apart (macho sitting style)
Calluses on his wrists from backhand thumping

WASHOE

WASHOE
Big girl
Big tummy
Big bottom (well endowed)
White beard
Sitting posture is slightly slumped with usually one elbow bent and resting on leg
There is a piece missing on one of her ears
Broad shoulders
Straight lips

TATU

TATU
Smallest chimp at CHCI
Slumped posture, always hunched (C-shaped)
Tiny shoulders
Lighter face
Straight face
White beard
Bald on top of her head
Usually missing hair on her arms from over grooming
Lighter hands

MOJA

MOJA
Darker hair
Darker face
Darker hands
Pursed lips
Black lips
Hair sticks up on the back of her head (bedhead)
Longer hair
Stiff posture, not curved (*I*-shaped)
Stiff legged when moving
Arms are usually straight as well
Smaller than Washoe but larger than Tatu
Has a belly

1

2

3

4

5

6

7

8

9

10

11

12

13

14

DOMINO I.D.
(LEFT TO RIGHT)

1) **Tatu, Dar**
(Tatu onledge with mask, Dar outside climbing)
2) **Washoe, Tatu**
(Washoe left arm raised, Tatu walking quadrapedally on ledge outside)
3) **Loulis, Moja**
(Loulis sitting outside, Moja with tire behind her)
4) **Moja, Washoe**
(Moja looking at camera, Washoe outside)
5) **Loulis, Tatu**
(Loulis, Tatu with back toward camera -pointing)
6) **Dar, Loulis**
(Dar sitting on ledge with arms crossed, Loulis on tire pant-hooting)
7) **Dar, Tatu**
(Dar drinking from bottle, Tatu outside on treat mound)
8) **Moja, Loulis**
(Moja palying "peek-a-boo", Loulis looking off to left)
9) **Dar, Washoe**
(Dar outside looking down, Washoe outside bending down, hand to mouth)
10) **Moja, Dar**
(Moja walking on fire hose, Dar looking to the right)
11) **Washoe, Moja**
(Washoe-face shot, Moja outside lying down)
12) **Tatu, Dar**
(Tatu outside on ledge, Dar-face shot)
13) **Tatu, Moja**
(Tatu outside in tube, Moja sitting on grass)
14) **Washoe, Dar**
(Washoe inside lying down, Dar inside on climbing structure)

HOME IS WHERE THE STUFF IS

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1-2 class periods

Subject Area: Language Arts, Science

Objectives: To increase student awareness of the plight of captive chimpanzees and the importance of giving them a quality life.

Materials: "CHCI Forms of Enrichment" handout, "Scenarios" (cut up individually), "How Can I Help" (optional)

Activity:

Introduction:

"Chimpanzees in captivity (including the five at CHCI) were not given a choice whether they wanted to live their lives in the confines of an enclosure. Humans made the decision to bring them into captivity for entertainment and scientific research. Compared to the life of their kin in their natural environment, chimpanzees in captivity live a very boring life. Chimpanzees are very social and intelligent; they have the ability to solve problems in their environment and have a complex social structure.

In their natural environment, chimpanzees can travel as many as 10 kilometers (approx. 7 miles) a day! Even in the nicest sanctuary, chimpanzees in captivity are not able to get sufficient exercise. Chimpanzees in their natural environment are also exposed to many different challenges and situations during the day and have to problem-solve in order to survive. Most chimpanzees who live in captivity are not exposed to situations that challenge them to utilize their critical thinking abilities.

At CHCI that is not the case. CHCI believes that it is important to give the chimpanzees as much variety in their lives as possible. To do this, we use many forms of enrichment to provide them opportunities for problem-solving, to give them things to sign about, and to help them stay healthy physically and mentally. These five chimpanzees did not choose to live in captivity, and it is the responsibility of all the staff, volunteers, and student interns to enrich their lives and give them the highest possible quality of life."

Activity:

Review the handout covering the forms of enrichment with the class.

At CHCI they have different forms of enrichment: permanent, semi-permanent, object, social, food, thematic, and unintentional.

Permanent: the structures found in the chimpanzee areas (platforms, climbing structures, ledges, caging walls, etc.)

Semi-permanent: items that are removable but remain in the enclosure for several months or years usually because of their size, weight, etc. (tractor tires, cargo nets)

Object (non-permanent): these items are placed in the chimpanzee areas daily and cleaned after they leave the area (magazines, clothes, shoes, toys, etc.).

Social: interactions with human friends and visitors through the windows or with staff, student interns, and long time friends through the caging. Social interactions through the caging never include a human putting fingers or any other part of their body through the bars (for safety) (play chase, pee-a-boo, sign to one another, play tickle, offer grooming products, share a book, etc.).

Food (food puzzles): A means of food dispersal that requires tool use and critical thinking skills to obtain the food (treat mound, popcorn forage, hanging fruit out of reach that requires a stick to obtain, etc.)

Thematic Enrichment: CHCI celebrates all holidays and each chimpanzee's birthday and has theme days every week with the non-permanent forms of enrichment. The windows are decorated for the holidays, crepe paper and balloons are hung up, and the chimpanzees receive wrapped presents and special food treats (red day, musical toys day, beach day, etc.).

Unintentional: This is enrichment that is not planned by the humans at CHCI. The chimps enjoy watching the university students walk to class, the cars driving by, ROTC practicing their drills, and other goings on outside.

After reviewing the forms of enrichment, give each student a scenario to read. Their job is to decide what form of enrichment is being used (there can be more than one). Once each student has decided on which form of enrichment is being described, ask each student to read their scenario aloud. Ask the class to give their opinion of the form of enrichment. Did the group agree?

Follow-up questions:

- What might be items you WOULD NOT give the chimpanzees? Why? (metal, batteries, sharp items, toxic, nails, etc.)
- How do the permanent and semi-permanent objects at CHCI resemble parts of a rainforest? (give examples) (canopy, nests, termite mounds, trees, etc.)

- How does enrichment add to quality of life?
- What kinds of enrichment do you have in your classroom? Bedroom? Etc.
- What might be the result of offering no or little enrichment to the chimpanzees?

Extension:

Refer to the "How Can I Help" flyer and collect enrichment items to send to the chimpanzees.

Send CHCI Theme day ideas by snail mail or by email! Chimplab@cwu.edu
CWU/CHCI 400 E. 8th Ellensburg, WA 98926-7573

CHCI FORMS OF ENRICHMENT

Permanent: the structures found in the chimpanzee areas (platforms, climbing structures, ledges, caging walls, etc.).

Semi-permanent: items that are removable but remain in the enclosure for several months or years usually because of their size, weight, etc. (tractor tires, cargo nets)

Object (non-permanent): these items are placed in the chimpanzee areas daily and cleaned after they leave an area (magazines, clothes, shoes, toys, etc.).

Social: interactions with human friends and visitors through the windows or with staff, student interns, and long time friends through the caging. Social interactions through the caging never include a human putting fingers or any other part of their body through the bars (for safety) (play chase, peek a boo, sign to one another, play tickle, offer grooming products, share a book, etc.).

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Unintentional: This is enrichment that is not planned by the humans at CHCI. The chimps enjoy watching the university students walk to class, the cars driving by, ROTC practicing their drills, and other goings on outside.

SCENARIOS

1 It's Tatu's birthday. All the student interns are dressed in black (her favorite color) in celebration of this day. This is an example of _____ enrichment.	2 The Mega-Fun Plex II is being constructed in the West room of the indoor area. This is an example of _____ enrichment.
3 A fire engine speeds by with their lights and sirens going. Dar climbs to the top of the outdoor area to watch. This is an example of _____ enrichment.	4 For Christmas, stockings and presents are placed in the indoor area on in the morning. This is an example of _____ enrichment.
5 A ziploc baggy is secured 10 feet up on a wall with food inside. This is an example of _____ enrichment.	6 Sara (a student intern) is offering Moja lipstick, make-up, and a mirror. This is an example of _____ enrichment.
7 There are birds nesting in the eaves of the outdoor enclosure. This is an example of _____ enrichment.	8 Student interns have put yogurt in the food tubes of the cement treat mound in the outdoor area. This is an example of _____ enrichment.

SCENARIOS

9 A group of visitors are attending an educational Chimposium; the group is sitting in the observation area. This is an example of _____ enrichment.	10 A student intern is brushing Washoe's back through the caging with a brush. This is an example of _____ enrichment.
11 Moja watches as food is being prepared for the chimpanzee's lunch. This is an example of _____ enrichment.	12 Tatu carries a shirt into a cargo net to take a nap. This is an example of _____ enrichment.
13 Washoe moves a tractor tire closer to the window to watch a Chimposium lecture in the classroom. This is an example of _____ enrichment.	14 Tatu uses a hose to "fish" berries out of the garden through the fencing. This is an example of _____ enrichment.
15 Ryan (a student intern) wears a mask while he plays chase with Tatu. This is an example of _____ enrichment.	16 Interns place garbage bags full of shredded paper in the outdoor enclosure. Dar rips a bag open, takes two big armfuls of paper as pillows, and lies down. This is an example of _____ enrichment.

SCENARIOS

17 The windows in the viewing area are decorated with 4-leaf clovers for St. Patrick's Day. This is an example of _____ enrichment.	18 Tatu and Moja are grooming while sitting on the cement terraces. This is an example of_____ enrichment.
19 Dar swings on a fire hose while displaying. This is an example of _____ enrichment.	20 Interns place big plastic bags of popcorn on top of the night cage area for a forage. This is an example of_____ enrichment.
21 The chimpanzees are given turkey, stuffing, and pumpkin pie for their Thanksgiving dinner. This is an example of_____ enrichment.	22 Moja takes a nap in the sun on a large spool while covered up with a sheet. This is an example of_____ enrichment.
23 Tatu uses a large branch to get a bag of food that is out of reach. This is an example of_____ enrichment.	24 Loulis presses his lips up against the window for a kiss from a friend. This is an example of_____ enrichment.

SCENARIOS

25 It's Lilac Day! Lilacs are strewn over the floor in the indoor enclosure. Washoe eats a few while lounging on the Mega Fun-Plex I. This is an example of_____ enrichment	26 Moja puts a sweater on before she goes outside to play in the snow. This is an example of_____ enrichment.
27 Tatu brings piles of snow inside from the outside enclosure. This is an example of_____ enrichment.	28 Interns sign and sing "Happy Birthday" to Dar on his birthday. This is an example of_____ enrichment.
29 Washoe signs SHOE to a human friend in the observation area. This is an example of_____ enrichment.	30 Tatu signs about the vegetables in the garden with Nick (student intern). This is an example of_____ enrichment.
31 Dar and Loulis play chase along the caging in the outdoor area. This is an example of_____ enrichment.	32 Tatu sits on a tractor tire during Christmas as she goes through the contents of a stocking. This is an example of_____ enrichment.

SCENARIO ANSWERS

1. Social/Thematic
2. Permanent/Unintentional
3. Unintentional/Permanent
4. Object/Thematic
5. Food Puzzle/Object (possibly because of ziploc)
6. Social/Object
7. Unintentional
8. Permanent/Object/Food Puzzle
9. Social
10. Object/Social
11. Unintentional
12. Semi-Permanent/Object
13. Semi-Permanent/Unintentional
14. Object/Food Puzzle
15. Social/Object
16. Object
17. Thematic
18. Permanent
19. Semi-Permanent
20. Food Puzzle/Object
21. Thematic/Food
22. Semi-Permanent/Object
23. Semi-Permanent/Food Puzzle
24. Social
25. Permanent/Food Puzzle
26. Unintentional/Object
27. Unintentional
28. Thematic/Social
29. Social
30. Social/Food
31. Permanent
32. Semi-Permanent/Object/Thematic

HOW CAN I HELP?

Since the chimpanzees did not ask to live in captivity, we try to keep their lives full of enrichment as possible. There are activities that go on daily to keep variety in their day to day lives.

CHCI's enrichment group would love to hear any enrichment ideas that you may have and/or receive your care package for the chimpanzees. Whether it is a special holiday or just time to clean out the closets and pantries, your loved ones at CHCI will be grateful for your special gift. Below is a list of enrichment items that are favorites of the chimpanzees.

Thank you for caring!

Balloons
Blankets
Brushes
Bubbles
Candy
Chalk
Colored pencils
Construction paper
Crayons
Dolls
Emery boards
Finger paint
Food coloring
Hats
Holiday decorations
Inflatable toys
Laundry baskets
Lotion
Magazines
Make-up (new)
Masks
Non-toxic paints
Paintbrushes
Party plates & cups
Picture books
Plastic kitchen utensils
Plastic mirrors
Play cleaning supplies: brooms, mops and scrub brushes
Play-Doh
Play plastic tools
Play pots and pans
Posters
Purses
Raisins
Shoes
Sheets
Spices
String
Stuffed animals
Sunglasses or glasses w/plastic lenses
Tablecloths
Tablespoons
Tissue packs
Toothbrushes (new)
Toothpaste
Toys
Velcro

**Please remember: No glass, No batteries, No electronics, No toxins, and No small parts.

Send your care packages to:

Washoe and Family
c/o CWU-CHCI
400 E. 8th Ave.
Ellensburg, WA 98926-7573

CHCI
GLOSSARY

Antidotes- a medicine that counter acts the harmful effect of a poison; remedy.

American Sign Language- a system of communication by manual gestures used by the deaf in North America.

Anatomical resemblance- physical likeness; similar appearance.

Anatomist- a person who studies anatomy; dissects or analyzes.

Childish diction- in the early stages of language development, children use immature versions of the language of the adults around them. As they age, this becomes less frequent and more adult language is used.

Contracting- draws together; make narrow; make smaller.

Cross-fostering- when the offspring of one species is raised by the adult(s) of another species.

Dissection- the act of cutting apart an animal or plant, or any part of an animal or plant, in order to examine or study the structure.

Dominant- most powerful or influential; occupying a commanding position.

Empirical research- based on experiment and observation; organized scientific investigation to solve problems, test hypothesis, or to hunt for facts or truth about a subject.

Enrichment- to make rich or richer; to decorate. Includes food and food puzzles, structural, visual.

Food puzzle- a solvable puzzle in place to encourage critical thinking and problem solving using food.

Gesturing- a movement of the hands, arms, or any part of body to help express an idea or feeling.

Groom- to generally take care of, to clean, brush, etc. When chimpanzees groom, they are helping to clean themselves (ex: cleaning off dead skin). Grooming is also a bonding time for friends and family and helps to calm after excitement.

Interactions- to have contact visually, auditorally, or physically in play or otherwise. To interact with someone with communication.

Involuntary vocalizations- vocalizations that are made without thinking or are spontaneous.

Laryngeal region- upper end of the windpipe where vocal chords are found.

Limbic system- the area of the brain that is believed to control various emotional patterns of behavior. Many of these emotional responses tend to be a reaction from a stimulus and not premeditated.

Matriarch- female who is the ruler of a family.

Non-invasive research- organized scientific investigation to solve problems, or test hypothesis. This investigation is conducted in ways that do not influence or harm the research subject in any way; research is conducted primarily through observation.

Paradigm- a pattern, one that is worthy of imitation or duplication.

Place, Configuration, Movement- in American Sign Language, how a sign is described. P-where the sign is placed on the body. C-the shape of the hand. M-where and how the hand moves.

Primate- any of the continuum of mammals including human beings, apes, monkeys, or lemurs.

Reconciliation- bringing agreement together again in friendship.

Sanctuary- a place of refuge or protection.

Sign Reliability- if a sign is reliable, it is part of the chimpanzee's vocabulary. For a sign to be reliable, it has to be observed by three different observers for fifteen consecutive days, and it may not be prompted.

Taxonomist- One who studies taxonomy, a branch of science dealing with classification.

CHCI
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Name _____

CHCI ASSESSMENT

Read each question carefully and answer appropriately.

1) Identify the SEVEN forms of enrichment and give an example of each.

	FORM	EXAMPLE
a.		
b.		
c.		
d.		
e.		
f.		
g.		

2) List the names of the five chimpanzees at CHCI and give three characteristics that distinguish each chimpanzee from the other.

1.
   a.
   b.
   c.

2.
   a.
   b.
   c.

3.
   a.
   b.
   c.

4.
   a.
   b.
   c.

5.
   a.
   b.
   c.

3) Sign language is well-suited for chimpanzees because…

_____

_____

_____

_____

4) Match the following signs with the english word.

CRY-HURT-FOOD	Turkey
SWEET-TREE	Duck/swan
BIRD-MEAT	Radish
BERRY-PAPER	Christmas tree
WATER-BIRD	Fruit leather

5) In the box below, design and label a form of <u>PERMANENT ENRICHMENT.</u>

6)Define: cross-fostering.

_____

_____

_____

How did cross-fostering affect Washoe and her family?

_____

_____

_____

_____

7) A student-intern has placed some hanging fruit just out of reach through the caging. Tatu uses a stick to get to the food. This is an example of a(n):_____ enrichment.

8) Look at the pictures and words below. Under the name of each chimpanzee (on the next page) write what is their favorite of the following objects and words (it could fall under more than one chimpanzee)

OATMEAL & ONIONS

RED THINGS

PLAY CHASE

ANYTHING BLACK

VELCRO

GRANOLA BARS

WASHOE **MOJA** **DAR** **TATU** **LOULIS**

9) Draw a picture of a room with different forms of enrichment. (Be sure to have at least one from each category of enrichment.)

Identify the items and their form of enrichment:

10) Define: gesturing.

Give an example of a gesture (chimpanzee or human).

11) Explain why it is important to provide enrichment for captive animals.

12) Explain what the five chimpanzees at CHCI have taught us.

13) Why is it important to protect our sibling species?

14) Include the following terms in a statement sharing what you learned during the CHCI unit.

American Sign language	Involuntary vocalizations
Childish diction	Matriarch
Enrichment	Non-invasive research
Limbic system	Taxonomy

15) Give three reasons why chimpanzees are not equipped for vocal speech.

a.
b.
c.

Name _____

CHCI ASSESSMENT

Read each question carefully and answer appropriately.

1) Identify the SEVEN forms of enrichment and give an example of each.

FORM		EXAMPLE
a.	Permanent	platforms, climbing structures, lodges, caging, walls, ...
b.	Semi-Permanent	tractor tires, cargo nets, fire hoses, ...
c.	Object (non-perm.)	magazines, clothes, shoes, toys, ...
d.	Social	visitors & friends. Interactions with them
e.	Food (food puzzles)	treat mound, popcorn forage, ...
f.	Thematic	red days, holidays, beach days, ...
g.	Unintentional	sirens, cars, students walking by, ...

2) List the names of the five chimpanzees at CHCI and give three characteristics that distinguish each chimpanzee from the other.

1. Dar
   a. muscular
   b. long hands and fingers
   c. bird chest

2. Washoe
   a. big girl
   b. straight lips
   c. broad shoulders

3. Moja
   a. darker hair
   b. darker face
   c. stiff posture

4. Loulis
   a. short and stocky
   b. freckles on face
   c. two distinct ridges on head

5. Tatu
   a. smallest chimp
   b. lighter face
   c. bald on top of head

*refer to "Chimpanzee Characteristics" for other possible answers.

3) Sign language is well-suited for chimpanzees because…

They gesture naturally, primarily quiet animals, are not physically capable of verbal speech because of thinner tongue, higher larynx (which make pronunciation of vowels difficult) and vocalizations are mostly emotional responses.

4) Match the following signs with the english word.

CRY-HURT-FOOD	Turkey
SWEET-TREE	Duck/swan
BIRD-MEAT	Radish
BERRY-PAPER	Christmas tree
WATER-BIRD	Fruit leather

5) In the box below, design and label a form of <u>PERMANENT ENRICHMENT.</u>

Should be some sort of platform, climbing structure, ledge, caging, or wall in enclosure or something similar to these items.

6)Define: cross-fostering.

When the offspring of one species is raised by the adults of another species.

How did cross-fostering effect Washoe and her family?

They were raised like deaf human children, they have learned how to use toilets, brush their teeth, play with dolls -- they have lived with many things that we also live with.

7) A student-intern has placed some hanging fruit just out of reach through the caging. Tatu uses a stick to get to the food. This is an example of a(n): Food puzzle enrichment.

8) Look at the pictures and words below. Under the name of each chimpanzee (on the next page) write what is their favorite of the following objects and words (it could fall under more than one chimpanzee).

OATMEAL & ONIONS

RED THINGS

PLAY CHASE

ANYTHING BLACK

GRANOLA BARS

VELCRO

WASHOE	MOJA	DAR	TATU	LOULIS
shoes	clothes	play chase	black things	hats
coffee	sandwiches	bananas	masks	apples
oatmeal & onions	mirrors	bread	ice cream	play chase
	red things	hats	cheese	granola bars
	velcro	shoes	coffee	mirrors
	mirrors			

9) Draw a picture of a room with different forms of enrichment. (Be sure to have at least one from each category of enrichment.)

Identify the items and their form of enrichment:

10) Define: gesturing.

A movement of the hands, arms, or any body part to help express an idea or feeling.

Give an example of a gesture (chimpanzee or human).

Answers may vary

11) Explain why it is important to provide enrichment for captive animals.

Should include the difference between living a captive or free life, boredom...

12) Explain what the five chimpanzees at CHCI have taught us.

Chimpanzees are capable of language, have shown us more similarities between chimps and humans, (can include other findings as well – teacher discretion).

13) Why is it important to protect our sibling species?

Answers may vary

14) Include the following terms in a statement sharing what you learned during the CHCI unit.

American Sign language	Involuntary vocalizations
Childish diction	Matriarch
Enrichment	Non-invasive research
Limbic system	Taxonomy

15) Give three reasons why chimpanzees are not equipped for vocal speech.

a. higher larynx
b. thinner tongue
c. vocalizations primarily controlled by emotions (limbic system)

TEACHER INFORMATION ON: ANIMAL EXPERIMENTATION

INTRODUCTION:

"There is in all of us, a force for good—the spark of compassion. Unfortunately, where animals are concerned, not all of us have had the spark ignited.... But of one thing I am certain—that once a person has had this spark ignited, it will burn forever." Cleveland Amory, New England Anti-Vivisection Society (NEAVS) Pres. 87-98

In this final section of the curriculum, the lessons focus on vivisection. Vivisection is defined as the cutting up of living animals for scientific experimentation/animal research. Vivisection is justified as acceptable for the good of humans. It is our hope that by the end of this section the views of many students will be opened to consider the ways in which vivisection is scientifically and humanely unjustifiable.

VIVISECTION:

Vivisection is the invasive use of animals for experimentation. This experimentation includes drugging, shocking, starving, burning, irradiating, injecting, poisoning, blinding, and killing animals. Vivisection is prevalent in laboratories that test products and cosmetics on animals, in laboratories that conduct biomedical experimentation, and in educational facilities. Each year an estimated 20-60 million animals in the U.S. suffer and are killed in research. As of January, 2001, official records do not include information an rats, mice, and birds. These animals represent 90% of all animals used in laboratories.

PRODUCT AND COSMETIC TESTING

Many people believe that testing products and cosmetics on animals will help predict the human safety of the product. This is more myth than fact. Many of the tests are poor or unreliable predictors of a product's safety for human use. Many products, although found to be irritants to animals, are marketed nevertheless.

Even though this testing does not <u>really</u> protect consumers, millions of animals continue to experience the pain, trauma, and death associated with the tests. Animals are forced to consume large amounts of household product or have chemicals poored into their eyes or onto their scraped skin. The Draize Eye Irritancy Test is used to measure the harmful effects of chemicals found in household products and cosmetics by observing the damage they cause to the eyes and skin of conscious animals. During the Draize test, the animal (a rabbit) will often have their eyes held open permanently with metal clips. They are also prevented from scratching or removing the toxic substance by being immobilized in a holding device. At the end of the test, the animal is killed to ascertain the effects. The LD-50 test (Lethal Dose 50 percent) measures the amount of a substance that is required to kill 50% of the test group of animals. Results are inconclusive since they vary widely between species and cannot accurately be extrapolated to humans.

Many companies have stopped testing products on animals; some because of public pressure and others because of the unreliability of tests. Animal welfare organizations attempt to keep the public informed of companies that do and do not test on animals. Two organizations that have information you can access are the New England Anti-Vivisection Society (NEAVS) www.neavs.org and the Coalition for Consumer Information on Cosmetics (CCIC) www.leapingbunny.org. The CCIC, of which the New England Anti-Vivisection is a founding member, is a highly effective and respected coalition dedicated to promoting the Corporate Standard of Compassion for Animals. The Standard is a consumer's best assurance that companies, laboratories, and suppliers do not test household, personal care, and cosmetic products on animals in any phase of product development.

Informing and educating consumers about the importance of non-animal product and consumer testing and ensuring that consumers have 'cruelty-free choices' helps humans and animals alike. Today, thanks to the work of CCIC, NEAVS, and other like-minded organizations, increasing numbers of companies are replacing animal tests with non-animal testing methods. As a result, consumers worldwide are able to find non-animal-tested products in drug stores, supermarkets, department stores, salons, specialty shops, natural food stores, and online.

The work of the CCIC ensures that an internationally-recognized non-animal testing standard applies to a vast range of products including nail polish, floor polish, lipsticks, laundry detergents, ink, correction fluid, glue, and even toys.

BIOMEDICAL RESEARCH

Biomedical research has been used in our society for more than 100 years. It is believed that non-human animals are able to provide us with information that will help to prevent and treat human illnesses. The animal model is however an inadquate, limited, and often erroneous model.

Researchers that support vivisection attempt to point out the medical breakthroughs that they claim resulted exclusively from animal research, such as polio vaccine, cancer chemotherapy, and coronary bypass surgery. They are, however, exaggerated claims. For example, the invention of the polio vaccine was actually delayed because of misleading results from animal tests (Greek, 2000).
Pro-vivisectors try to minimize or even deny the many strides that have been made without the use of animals. A few examples of this include: *in drugs*: penicillin, digitalis, and nitrite, and quinine; *in anesthetics*: chloroform, ether, nitrous oxide gas; and *in surgical procedures*: for cardiac aneurysms, appendicitis, bladder and gall stones, brain tumors, and cataracts (www.curedisease.com).

Examples of how animal testing has actually impeded human health include

- Penicillin was deemed unsafe at first because it killed guinea pigs, cats, and deactivated the blood systems of rabbits. It wasn't known to be effective until 10 years later when the developer used it on a human patient who was near death (Greek & Greek, 2000)
- Health warnings were delayed regarding the link between cancer and smoking because the species being used in inhalation of cigarette smoke tests were not getting cancer (e.g., dogs) (www.curedisease.com).
- "Seldane (terfenaldine), an allergy drug, was tested extensively on animals. Although it did not cure allergies, it had no ill effect. It caused life-threatening heartbeat abnormalities in humans. Taking it with grapefruit juice increased blood levels thus raising the risk of dysrhythmia. Seldane is no longer on the market "(Greek & Greek, 2000).
- "Linomide (roquinimex), tablets for the treatment of multiple sclerosis, went to clinical trial based on experiments on animals. Pharmacia and Upjohn discontinued these tests after several patients suffered heart attacks" (Greek & Greek, 2000).

Public Health studies have found that at least 50% of the deaths in the United States are caused by lifestyle. An insubstantial amount of money from the National Institute of Health's budget is allocated to educating the public in the prevention of illness (www.navs.org, 2000). Further, epidemiological and clinical studies receive inadequate funding compared to animal-based studies. Over $5 billion a year of tax revenue is spent on animal research.

The genetic relationship between animals and humans makes the animal data inconsistent; however, testing continues. Animal experimentation is not the most humane or scientifically effective way to prevent, understand, or develop treatments for human illness. If it is neither the best, safest, nor only way, why does it continue at such a high cost totaxpayers and animals? 1) For product testing it safeguards the industry against legal responsibility and 2) animal research is highly profitable for individuals and the instiutions in which it is used. There are many organizations that depend on biomedical research dollars to stay in business, for example hospitals and universities. Further, companies that supply equipment, animals, or want to put a new drug on the market depend on animal research and are heavily vested in continuing the exaggerated myth of its efficacy and promised cures.

There are alternatives to biomedical research (explained in detail later) that are based on an ethical imperitive, as well as scientific and technological advancements. Other methodologies are more reliable in our fight to cure human disease and are more promising and humane. If the myths surrounding animal experimentation were dispelled, these techniques would gather strength and increase funding.

EDUCATION

Education uses vivisection in many different ways: *dissection, science fair experiments, and veterinary and medical training*. (This section will focus on dissection and science fair experiments.)

Dissection (the cutting up of preserved specimens) was introduced in the 1920's (www.pcrm.org, 2000) as a learning tool for the study of anatomy, physiology, and the theory of evolution. Today, thanks to technology, there are many more practical teaching methods available. Yet classroom dissection continues.

The business of dissection is lucrative. Millions of animals each year are killed and sold to be dissected for educational purposes. Some of the animals are collected from their natural environment (though frogs, for example, are actually in an environmental crisis) while others are raised to be used specifically for dissection. Still others are stolen from streets of foreign countries only to make their way to US suppliers.

Dissection is a powerful tool because it teaches students to become desensitized to the dismemberment and callous use of animals in the name of science. Students learn that the lives of animals are expendable and insignificant.

There are parents, students, and teachers who are speaking out against this unnecessary use of animals in education. Some teachers do give options to conscientious objectors by making alternatives available at the student's request. These numbers are growing as people become educated about the more ethical, applicable, and educationally sound techniques now available.

Many schools also engage students in the concept of *Science Fairs*. Here students are able to showcase their talents and gain knowledge through the experience of using the scientific process.

Unfortunately, many schools and districts do not have rules against using animals (dead or alive) in their projects. There are actually rules with one science fair organization that allow high school students to use invasive techniques while studying an animal.

Some states have taken an active role and have enacted laws that prohibit harmful projects on animals. Students have received awards for projects that used non-invasive techniques while studying an animal. Furthermore, some teachers and schools prohibit the use of living animals in any way for classroom demonstrations.

ALTERNATIVES:

There are alternatives to the educational, scientific, and biomedical use of animals that are humane, applicable, realistic, and appropriate. Some of these alternatives have been available for quite a while. They yield accurate and helpful results but have been underfunded. The powerful pro-vivisection lobby continues to target and support the harmful use of animals in undergraduate, elementary, and secondary education. Alternatives have arisen from both scientific and technical advances, to a large extent because of computers and sophisticated technology.

EPIDEMIOLOGICAL STUDIES

Epidemiologists study the health and disease characteristics of a population of people. Epidemiological studies established a link between heart disease and high cholesterol and between smoking and lung cancer. They also identified AIDS in the 1970s.

Epidemiologists can be considered health detectives. They interview people about their health, habits, and environment. Then they look for correlations in the data, the disease, and accompanying risk factors.

One example, found in Ray and Jean Greeks' book Sacred Cows and Golden Geese (2000) focused on the residents in Framingham, Massachusetts. "For purposes of assessing heart disease risk factors in humans, scientists began looking at lifestyles in [the residents] beginning in 1948. The study proved ground breaking. It established beyond doubt the relationship between CAD [coronary artery disease] and hypertension, smoking, and high fat diets. The Framingham experience still constitutes one of the most significant epiphanies in medicine. Among other watershed discoveries, it would lead to the identification of HDL (high density lipoproteins) as good cholesterol and LDL (low density lipoproteins as bad" (Greek & Greek, 2000).

CLINICAL STUDIES

Clinical studies involve medically supervising human subjects who are given drugs and other medical procedures, for example, drugs that lower cholesterol, treat AIDS and HIV, treat childhood leukemia, and treat children with ADHD. In general, clinical studies analyze naturally occuring diseases in humans and the effects of certain interventions.

Clinical research observes and investigates the patients as they use the drug/treatment or a placebo. There are strict ethical guidelines that are used to protect the human subjects. The study of *clinical pharmacology* helps determine the appropriate dosage for humans, whether the drug will be safe and effective, and what beneficial or harmful side effects may occur. Well-run clinical trials provide human data for human use.

POST-MARKETING DRUG SURVEILLANCE

Even if the FDA (Food and Drug Administration) has allowed a drug on the market after animal tests found no conclusive risks or problems, there are still possibilities that the drug will have an adverse affect on humans. Post-Marketing Drug Surveillance helps to keep track of the drug and what side effects or problems may be occurring with humans.

It is the only accurate source of information on human use of a drug. Detailed and comprehensive records of the negative side effects of a drug as well as any unforeseen unfavorable aplastic anemia and fetal alcohol syndrome are kept.

TISSUE AND CELL CULTURE

Cells or tissue cultures can be obtained from human volunteers, surgical operations, biopsies, and post-mortem specimens. These can then be cultured in the laboratory and used for in vitro studies. In vitro (literally, "within glass") research refers to experimentation performed outside a living organism and within, for example, a non-living medium such as a test tube or petri dish. In vitro research is the opposite of in vivo research, that is, experiments performed within a living organism such as a rat, mouse, or monkey.

In vitro research is sometimes referred to as "non-animal research" (although it is important to note that some in vitro research uses animal cells). One example of in vitro research is cell culture in which individual living cells are maintained in a "test tube" environment and used for experimentation.

The late Bjorn Ekwell, MD, PhD, long-time Director of the Cytotoxicology Laboratory in Uppsala, Sweden (CTLU), and an internationally known pioneer in vitro research, developed an in vitro cell culture alternative to the dreaded in vivo LD-50 toxicity tests.

Dr. Ekwall reported that the in vitro (non-animal) tests developed by his group are 75% accurate in predicting human lethal toxicity while the in vivo LD-50 tests on rats and mice were estimated to be only 60% accurate.

The National Cancer Institute has changed from screening possible anti-cancer drugs on mice to testing on human cancer cell lines. This is a much less expensive, more humane, and more reliable method that yields information that is directly applicable to humans. Many AIDS drugs are also being screened in vitro. These studies can help to determine whether the drug can block the virus' ability to kill human T-cells. Researchers in Germany are using diseased human hearts to evaluate drug therapies.

NON-INVASIVE IMAGING TECHNIQUES

Biotechnology can inform doctors how the human body works and can monitor the progress of a disease and how the patients respond to therapy. The techniques used here are the CAT (Computer Axial Tomography), MRI (Magnetic Resonance Imaging), PET (Positron Emission Tomography), and SPECT (Single Photon Emission Computerized Tomography) imaging techniques.

CAT scans use computers to reconstruct three-dimensional images of the body from x-rays.

MRI enables researchers and physicians to make useful maps of the human brain and other areas. A MRI can follow changes in the blood flow, which may help doctors understand the mechanism of stroke and help assess patients with epilepsy.

PET and SPECT use compounds marked with isotopes and observe how they interact with the human body. PET has been used to study drug addiction by introducing tagged cocaine and observing where it binds in the human brain. Both forms have also been used to study Alzheimer's, Parkinson's, and Huntington's disease as well as psychiatric disorders.

MICROBIOLOGICAL STUDIES

Different microorganisms, such as bacteria, are ideal for examining large numbers of poisons, mutagens, and aggravations. They reproduce quickly, have few are side effects, and have other potential uses.

Through an FDA compiled report in 1991, a study conducted from 1975 to 1985, 52 percent [of new medications introduced] were either withdrawn or relabeled secondary to severe unpredicted side effects" (Greek & Greek, 2000).

AUTOPSIES AND POST-MORTEM STUDIES

The examination of human bodies after death has been responsible for the discovery and description of thousands of disease, such as viral hepatitis. There are tests that use bacteria to test a chemical's potential to alter a cell's hereditary information (mutagenicity), which is one of the steps in the growth of cancer.

Autopsies have also been instrumental in studying environmental and occupational diseases such as cancer, heart disease, AIDS, Sudden Infant Death Syndrome, and aging. Studies from autopsies have shown that physicians misdiagnose approximately 10% of the time and that the undiagnosed diseases very often contributed to the death of the patient.

Cadavers are also useful for teaching techniques such as fixing a fracture, stabilizing the spine, or reconstructing a ligament.

Unfortunately, because people will not pay for autopsies, the frequency has decreased. It is stated that "...if 1 out of 5 patients were autopsied, an immense amount of valuable information would be retrieved" (www.curedisease/autopsi.html). An increase in willed-body donations would make more human organs available for use and research and would give medical students more applicable experience.

Even though the availability for autopsies in the U.S. is underutilized, many European countries have redirected funds from conducting futile animal experiments to perfomring autopsies, therby spending money for human health in a more relevant manner.

MATHEMATICAL AND COMPUTER MODELS

The way in which a drug will work can be determined by its structure. New drugs are designed using computer models to evaluate the structure-activity relationships. Computer models can simulate human disease states and allow physicians to test out new drugs and treatments.

Using complex software and human clinical and epidemiological data, computer models help to simulate biochemical reactions and recreate structural body components. The structural components are then categorized in terms of healthy and diseased chemical reactions. The reactions they observe through this model are similar to the observations in vitro, however they are simulated on a computer screen. The toxicity of a drug can also be predicted by formulating the structures on a computer without resorting to animal tests.

Some examples of the discoveries that resulted from computer models are:

- Revealing that there are two distinct types of breast cancer and the different forms of treatment for them (www.neavs.org)
- The development of high blood pressure medications (www.curedisease.com)
- Prosthesis development (www.curedisease.com)
- New information regarding epilepsy (www.curedisease.com)

DISSECTION ALTERNATIVES

There are many computer programs available that tutor students through proper dissection techniques as well as the anatomy and physiology of animals. Studies have found that students who use the alternatives gain knowledge and test as well as, if not better than, students who use the more traditional specimen dissection approach.

Not only are interactive CD-ROMs available, but many models are available to educate students on the anatomy of an animal. A booklet titled "Beyond Dissection" has been published by NEAVS (www.neavs.org) affiliate the Ethical Science and Education Coalition, listing more than 400 such alternatives that can be used in the classroom.

It is often disheartening to know that much of medical research, product testing, and education is still focused on the out-of-date and unreliable animal model. What can be done to change this?

WHAT CAN YOU DO?

Through education and an increased awareness of public opinion and advocacy, people can begin to influence the government's support of cruel and scientifically outdated methods of animal research.

There is a growing trend with many people including scientists, veterinarians, medical doctors, and researchers themselves to take a stand against vivisection.

CONSCIENSCIOUS OBJECTORS

Support those students who object the use of dissection by providing alternatives, or better yet, conduct a dissection lesson with the entire class by using one of the alternative techniques.

Support veterinarian and medical students who believe *prima non nocere*—first do no harm—and refuse to kill or injure animals as part of their training.

MONEY TALKS

Buy only cruelty-free products (products, formulations, or ingredients not tested on animals and not using suppliers who test on animals). Contact NEAVS to receive a free copy of the Cruelty-Free Shopping Guide.

Write to the companies that still test their products on animals, and inform them that you will no longer buy their products unless they stop testing on animals.

Tell the college or university from which you graduated that you won't donate to the alumni fund as long as they do vivisection.

Donate money to health charities that no longer fund animal experiments. Write to the other charities that do fund animal experiments and explain why you will not, or will no longer donate money to their charity. You can find a list of organizations that do and do not fund vivisection on the NEAVS website: www.neavs.org/hel_giv/crueltyfreegiving.htm.

POLITICAL PRESSURE

Become active in organizations that promote the welfare of animals. Students are organizing more and more such organizaitons thanks to the internet. Check these out for your students:

www.neavs.org/esec.html
www.loveallanimals.com
gurlpages.com/karma12/
www.lifesentence.org/life/index.htm
www.teenactivist@onelist.com
www.sharetheworld.com/form.html
www.peta-online.org/kids/index.html
www.1family.org/

(Most of these have been designed and organized by kids; others are useful for kids)

Write to your political leaders expressing your concern and oppostition to vivisection. Ask him/her to support progressive and humane development of alternatives. Also, make your vote count!

LIFESTYLE CHANGES

Many people who have taken a stand against vivisection also become vegetarians. Not only does it decrease your chances of heart disease and many other illnesses, it also means fewer animals are consumed in our society.

"We cannot solve the problems we have created with the same thinking that created them." Albert Einstein

Teacher/Student Information and Other Helpful Web sites

InterNICHE

The International Network of Individuals and Campaigns for Humane Education (InterNICHE - formerly known as EuroNICHE), a non-profit, charitable network of students and teachers, works to introduce educational alternatives to harmful animal use and to support student's freedom of conscience. With funding from the New England Anti-Vivisection Society (NEAVS) and other organizations, InterNICHE has produced a multi-language film, distributed across Europe, the U.S., Australia, and Japan, that shows the lastest in alternatives to the use of animals in science and science education. The film is targeted to students and teachers in the fields of biology, veterinary, and human medicine and to ethics committees, legislators, and animal protection groups. NEAVS also contributed articles and funding to InterNICHE's updated book, *From Guinea Pig to Computer Mouse,* expected to be released in the fall of 2001. The updated book catalogues alternatives to animal experiments in education.
http://www.interniche.internetworking.de/EuronicheHome.html

Some Web sites offering Information about U.S. Animal Experiments:

Computer Retrieval of Information on Scientific Projects (CRISP) is a major biomedical database containing information on research ventures supported with federal taxpayers' money. The CRISP database is at:
commons.cit.nih.gov/crisp/owa/CRISP.Generate_Ticket

The Freedom of Information Act (FOIA) is a federal law that establishes the public's right to obtain information from agencies licensed by the government or receiving government funds. The National Institutes of Health's FOIA information page is at:
www.nih.gov/icd/od/foia/index.htm

The Animal and Plant Health Inspection Service's FOIA information page can be found at:
foia.aphis.usda.gov/ and then click on E-FOIA

More details on how to file a FOIA request can be found at the Amerian Civil Liberties Union Web site at:
www.aclu.org/library/foia.html

FROG LEAP

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 class period

Subject Area: Science

Objectives: To educate students on alternatives to dissection and empower them to appropriately stand up for their beliefs. To help create or set the stage for an ethic of compassion and the non-detrimental use of animals in our education.

Materials: "Dissection Alternative Programs" hand out, "Loan Libraries, Databases, and Publications" hand out. Contact a lending organization to send you the Digital Frog demo and other alternatives.

Activity:

CLASS DISCUSSION:

Start by having the class share different ways animals are used/mistreated in our society...

(possible answers)

- neglect (different forms of each can be included)
- abuse
- experimentation (bio. med./cosmetic)
- entertainment
- educational purposes

Continue the discussion by asking the students the following questions:
Are there ways that education/schools mistreat animals as well?

If so, how?

- class pets (neglect, confining them, poor treatment, etc.)
- dissection - pithing
- live animal labs

Why do teachers use dissection as a form of education in their classroom?

(possible answers)

- teach anatomy of the animal being dissected
- learn about scientific observation
- teach the importance of precision and order
- hands-on experience ("the real feel")
- tradition
- the novelty of the lesson
- expose students to the objectivity of scientists (to be able to separate themselves from their test subject).
- medical/vet training

Are there ways you can experience the same things without harming an animal?

- Computer programs (Digital Frog, Neotek cat, and others that offer a 3D experience)
- the use of models and charts
- non-invasive observation of an animal in its natural environment
- studies that involve observing humans
- dissections on the Web

(Start a new tradition by using some of these ideas!)

If students do not want to take part in the dissection of an animal for their science class, what can they do?

As conscientious objectors...

- talk with their parents about their beliefs
- talk with their teacher about an alternative assignment
- borrow a model, chart, and/or computer program from an animal welfare organization
- encourage the teacher to purchase one for the classroom, for others who also choose not to dissect

With these alternatives for dissection, we can help foster empathy and compassion for all animals in all students. What are some other ways we can foster empathy and compassion for how animals are used in education and professional training programs?

Why is it important for future scientists and doctors to have empathy and compassion for all animals?

<u>Extension:</u>

Have students research animal welfare agencies in their area and see if they have a lending program for alternatives to dissection (models, computer programs, etc.).

If the local agency doesn't have a lending program, search the internet for other organizations across the country who have lending programs. Find out how they

implement it, and then pass that information on to the local organizations.

ORGANIZATIONS WITH LENDING PROGRAMS

The Ethical Science Education Coalition
(The educational affiliate of NEAVS)
333 Washington Street, Suite 580
Boston, MA 02108-5100
(617)567-9143
www.NEAVS.org/esec.html

The National Anti-Vivisection Society
53 West Jackson Blvd.
Chicago, IL 60604
(312) 427-1100
www.navs.org

Humane Society of the United States
2100 L. Street NW
Washington, D.C. 20037
(202) 452-1100
hsuslab@ix.netcom.com
www.hsus.org

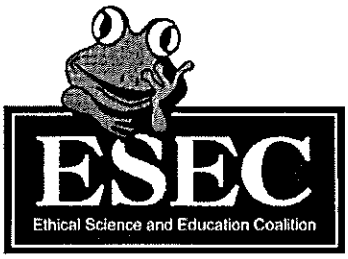
Amerian Anti-Vivisection Society
801 Old York Road #204
Jenkintown, PA 19046-1685
(215) 887-0816
www.aavsonline.org/Docs/join.htm

Find out more information on dissection alternatives by researching the companies that distribute the various computer programs. The Physicians Committee for Responsible Medicine (PCRM) has a link on their website that lists companies who have ready-available humane alternatives. To download a copy, go to the PCRM web site: www.pcrm.org.

The Association of Veterinarians for Animals Rights (AVAR) has a website for veterinarians and students that also includes alternatives for veterinary students: www.AVAR.org.

COMPANIES THAT SELL DISSECTION ALTERNATIVES COMPUTER SOFTWARE

www.neotek.com
www.digitalfrog.com
www.scienceclass.com
www.pierian.com
www.itgworld.com
www.tangentscientific.com (a drylab series)



DISSECTION ALTERNATIVES:

LOAN LIBRARIES, DATABASES, AND PUBLICATIONS

Ethical Science and Education Coalition (ESEC)

Alternative Resource Room
http://www.neavs.com/esec.html

333 Washington Street, Suite 850
Boston, MA 02108
Phone: (617) 367-9143

A credit card security deposit is required to borrow items. No charges incurred except for unreturned or damaged items. Items may be borrowed for a two-week period and, depending on demand, subsequently renewed. Borrowers pay return postage.

Humane Society of the United States (HSUS)
Humane Education Loan Program (HELP)
www.hsus.org/programs/research/alt_dissection.html

Cheryl Ross, Research Assistant
2100 L Street
NW, Washington, DC 20037
Phone: (301) 258-3042

Credit card information necessary. No charges will be incurred unless materials are damaged or not returned. Contact two weeks prior to needing materials and submit date when materials will be returned. Borrowers pay return postage.

The National Anti-Vivisection Society (NAVS)
Dissection Alternatives Loan Program
www.navs.org/dissalt.htm

P.O. Box A3728
Chicago, IL 60690-9528
Phone: 1-800-888-NAVS

Submit credit card information. No charges will be incurred unless the materials are not returned within the time prescribed. Call 2-3 weeks prior. Borrowers pay return postage.

The American Anti-Vivisection Society (AAVS)
The Science Bank: Animalearn's Lending Library
www.inet.net/imc/aavs/Docs/borrow.htm (temporary website)

801 Old York Road # 204
Jenkintown, PA 19046-1685
Phone: (215) 887-0816

No charges will be incurred unless the materials are not returned within the time prescribed.

BEYOND DISSECTION: A Catalog of Dissection Alternatives published by **ESEC**
This written catalog lists over 400 alternatives to traditional dissection. Ranging from life-size models to interactive, 3-D computer software, these alternatives enable students to utilize state-of-the-art technology and to replicate the dissection exercise again and again. Please contact **ESEC** for your copy.

NORINA: Norwegian Inventory of Audiovisuals
oslovet.veths.no/NORINA/
This website offers an overview of alternatives or supplements to the use of animals for all educational levels. The database consists of approximately 3700 entries (as of April 2000), including CD-ROMs, interactive videos, films, and more traditional teaching aids such as slide series, 3-D models, and classroom charts. This service is free to all who have Internet access.

AVAR: Association of Veterinarians for Animal Rights
www.avar.org
AVAR's Alternatives in Education Database provides information for all educational levels on books, audio-visual materials, and computer models and programs. It can be downloaded in its entirety for free or utilized when necessary from their website.

FROM GUINEA PIG TO COMPUTER MOUSE: Alternative Methods for a Humane Education
published by **InterNICHE**
This book contains numerous alternatives to undergraduate, graduate, and professional school animal experimentation and dissection. Each entry contains an in-depth description of the alternative and other relevant information. **ESEC** is a major supporter of the second edition of *From Guinea Pig to Computer Mouse*, an expanded and more comprehensive version of its predecessor, which should be available Winter 2001.

September 2000

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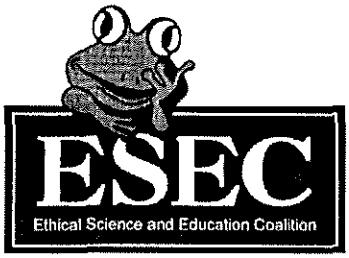

DISSECTION ALTERNATIVE PROGRAMS

Digital Frog 2

"...full spectrum of multimedia technologies—full-motion (and full-screen) video, animation, sounds, narration, in-depth text, and still images—to bring teaching dissection and anatomy to life."

Contents ecology and anatomy dissection modules
Grade Level all ages w/ focus on
secondary school
Special Features study guides w/ quizzes, puzzles, answer keys
Cost single w/ workbook $170
lab pack w/ 5 CDs and workbook $425
CD only $85 w/ workbook $99
Contact www.digitalfrog.com or 519-766-1097

Neotek's Catlab and Froglab

"Every major system (Skeletal, Musculature, Nervous, Digestive, Circulatory, Reproductive, Respiratory, and more) is presented in 80 brilliant dissections, each micro-surgically prepared."

Contents lecture, tutorial, quiz modes
Grade Level high school or college
Special Features three-dimensional capability requiring a base unit (video processor and power supply, 1 pair of liquid crystal glasses, user manual, installation guide)
Cost base unit $295
CD-ROM $85
Contact www.neotek.com or 412-0521-1111

Drylab Plus Series @ Crayfish, Earthworm, Pig, Frog, Perch, and Rat

Content dissection, schematics, video footage, lab practicals
Grade Level middle and high school
Special Features "editability"- design tests or modify the program to specific needs; three-dimensional capability
Cost single $125
5 pack $249
10 pack $449
3D series $149 (also requires Neotek's base unit)
Contact www.tangentscientific.com or 800 363 2908

Biolab Series-Frog, Invertebrate, Fetal Pig

Content dissection, practicals, interactive "labs"
Grade Level middle school
Special Features on-screen log allows tracking of work
Cost single $49
5-user pack $209
10-user pack $369
30 CD-site license $549
Contact www.pierian.com or 800 472 8578

DissectionWorks @ Frog, Pig, Crayfish, Earthworm, Perch, Cat

Content dissection, schematics, movies, tests
Grade Level middle and high school
Special Features printable files of tests, worksheets, and puzzles
Cost **Delux** (includes all species except cat)
single $199.95
5 pack $799.95
10 pack $1399.95
One species (except cat)
single $59.95
5 pack $229.95
10 pack $399.95
Cat
single $79.95
5 pack $319.95
10 pack $559.95
Contact www.scienceclass.com or 800-478-8476

September 2000

ESEC 333 Washington St., Suite 850 Boston, MA 02108 esec@ma.neavs.com 617-367-9143

FACT OR MYTH?

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1-2 class periods

Subject Area: Science

Time needed: One class period

Objectives: To help students better understand the issues regarding vivisection. To encourage students to become more discerning in regards to information presented in the media.

Materials: "Fact or Myth" sheet

Activity:

Begin by asking students where most of their views on animal testing (or vivisection) come from. (You may receive responses: my parents, the t.v., internet, relatives, friends, etc.)

Hand out the "Fact or Myth" sheet, have students complete it on their own. Before you review the answer sheet, share this thought with students:

"Much of the information that people gather regarding animal testing is derived from the biomedical research companies. They send press releases and information that the media then disseminates to the public. Many antivivisection organizations (organizations that are against the use of animals in painful, harmful, invasive, or lethal experiments) have information to counter the media releases but are unable to gain access to large public audiences for a variety of reasons. It is important to become educated on both sides of the issue, and then formulate your own informed opinion."

Continue to review the answers and justifications found on the "Answer Key."

FACT OR MYTH?

Read the statements below and state whether they are a 'FACT' or a 'MYTH'.

_____ 1. Animals in captivity behave differently than animals in the wild.

_____ 2. The results found when testing drugs or products on animals are the same when humans are exposed to these drugs or products.

_____ 3. Alternative research methods can replace the use of animals in biomedical research.

_____ 4. Animals have a choice whether to be included in biomedical research.

_____ 5. We wouldn't have any of the medicines we have today if it weren't for testing on animals.

_____ 6. Laboratory animals can suffer great pain and distress.

_____ 7. In order for our doctors to be well trained, they need to practice procedures on animals first.

_____ 8. Animals are well protected in the laboratories by laws.

_____ 9. Animal research wastes valuable research dollars that would be better spent on proven non-animal methods.

_____ 10. Those who object to animal research value the life of animals over people.

_____ 11. Animal research is more scientific than non-animal research.

_____ 12. Animal research concerns only those problems most essential to human health.

_____ 13. Animal research is a "necessary evil."

Teacher Answer/Discussion Key

1. FACT

Animals who live in captivity behave differently than their relatives in the wild. They often are in environments that are not very enriching or animal-friendly. Many animals develop stereotopies (rocking, pacing, or other repeated movements) because of the lack of stimulation.

2. MYTH

Many drugs that have been tested on animals have devastating, if not fatal, effects on humans. The genetic differences between humans and animals are such that many of the findings differ greatly. The following are three examples of these dangerous effects. 1) Smoking was thought to be non-carcinogenic for many years since smoking-related cancer was difficult to produce in animals. 2) Flosint, an arthritis medication was tested on rats, monkeys and dogs, all tolerated the medication. In humans, however, it caused deaths. 3) Eraldin, a medication for heart disease, caused 23 human deaths despite the fact that no harmful effects could be shown in animals. When introduced, scientists said it was noted for the thoroughness of the toxicity studies on animals. It also caused blindness in some humans. Often, scientists were unable to reproduce the same results in animals. (For more information contact: www.curedisease.com.)

3. FACT

With technological advances of today there are many methods to eliminate the use of animals in biomedical research, product testing, and education. Some examples are: in vitro research or test tube research (the use of living tissue to conduct studies), epidemiology (to study populations of humans to determine factors that could account for the prevalence of a disease among them), bacteria, viruses, and fungi (to reveal basic cell properties), autopsy and cadavers (to use to clarify disease and teaching techniques), physical models (to study the wear on joints and other physiology), genetic research (to find genes that are responsible for specific diseases and to help physicians educate and monitor patients),etc. (For more information contact: www.curedisease.com/Altern1.html.)

4. MYTH

Unfortunately, animals are not given the choice to consent to a test. It is hard to imagine that any animals would agree to the LD-50 (lethal dose 50–animals are continually given a product to see how much can be ingested before they die). In the past, research has been conducted on humans without consent. For example, children declared "mentally retarded" were sent to state mental institutions and were often used in experiments because of their "subhuman" status (some were infected with hepatitis so researchers could test experimental vaccines). The Manhattan Project used patients with chronic illnesses as test subjects. Prisoners of war were also subjected to high amounts of radiation (simulating a nuclear bomb explosion) to see how their bodies responded. These non-consenting human tests no longer take place because of ethical consideration.

5. MYTH

Many of the drugs and medicines that were tested on animals first were not used on humans because of the adverse effects on animals. In addition, some "good medications" for humans were delayed or never introduced because of "false negative" results in animals. Vice verse, many drugs that ended up harming humans had been found to be effective on animals. Animal researchers do not report to you the many drugs that have had disappointing and dangerous effects when transferred from animals to humans. The positive animal results are reported in the popular press and mislead the public by not citing the unsuccessful and even deadly accounts (refer to examples listed in #2). For example:

1) Penicillin might never have been used for humans when initial tests were conducted on guinea pigs or hamsters, since it killed them. In 1929 Alexander Fleming first tested penicillin on bacteria-infected rabbits. Penicillin was ineffective against the rabbit's infection. The drug was then set aside for a decade. Years later Fleming tested the drug on a patient near death, for whom all other

treatments had proved ineffectual. Fleming reached for the penicillin and the rest is history.

2) "Fluoride, which causes cancer in rats, was initially withheld from dental use. A dentist made the discovery that fluoride may decrease the risk of dental decay. By observing patients who had mottled teeth from living in areas with a large concentration of fluoride in the water, he noticed that they had fewer cavities.

Scientists carried out epidemiological studies and found the protective link between fluoride and cavities. Fluoride has been added to our water for years without hazardous effect." (Greek & Greek, 2000)

6. FACT

Animals feel fear, pain, and anxiety when faced with stressful situations. Often times animals are not anesthetized during an experiment. The overseeing animal care committee can allow researchers to even use drugs that paralyze the animalis body while keeping them conscious. Sometimes the animal is not given any drug but is only restrained while fully conscious diromg surgical procedures. Many animals are often housed in environments that are not supportive or nurturing. They are isolated in barren cages. Stress can also affect an animal's physiologically. Their immune system can breakdown and may be more susceptible to disease. These physiological effects will actually skew the results of an experiment, thus making the experiment that much more irrelevant.

7. MYTH

Even though some surgeons still practice on animals, two-thirds believe it is unnecessary. Many procedures that were perfected on animals caused more harm than good to humans. For example, ophthalmology procedures blinded humans (but not the rabbits the procedure was developed on) and transplantation surgeries worked on animals but not on humans.

8. MYTH

We do have a law, the Animal Welfare Act (AWA), that sets some standards for the care and treatment of laboratory animals, including housing, feeding, cleanliness, ventilation, and veterinary care. Unfortunately laboratory inspections are infrequent and often announced. The inspection process itself allows violations to not be monitored closely. For example, many animals die due to negligence and are not reported. Even for those laboratories that are found to not meet the standards, discipline is often not carried out. The AWA does not offer animals real protection from researchers. The AWA does not regulate *scientific protocol*. Until recently, many animals were not even included in the AWA, for example mice, rats, and pigs who make up the highest percentage of animals used in experiments and often kept in abominable conditions. Although their inclusion in the AWA was already signed into law as of 2000, the laboratories have been given a generous grace period for when this needs to be implemented.

9. FACT

Animal experimentation is a highly profitable business. The more testing they do and the more papers they publish, the more funding they receive. Unfortunately, the American taxpayer is the one paying for these experiments. Trillions of taxpayer and charity dollars continue to go into scientifically unsound and unjustifiable experiments that are of no use to the consumer who unknowingly supports them.

10. MYTH

The majority of those who object to animal experimentation value the lives of **ALL** beings. Many objectors to animal testing are also aware of all the non-animal scientific and technological advances that are available. Why continue with something as cruel and destructive as animal experimentation from our past, when there are more scientifically valid, humane, and constructive

measures now. Finally, being against a method that is not in the best interest of humans as well as animals comes from a concern for ALL species.

11. MYTH

Science is based on predictability. If a model is reliable, it has predictive value. In medicine good models would have four factors: the same symptoms, the same presumed source of disease, the same nervous system, and the same treatment response. Some animals fulfill some of the same criteria as humans in some instances, but no animal regularly satisfies all four. Animals are not strong models for human disease and are not the best scientifically valid method because of their lack of predictability and reliability.

While much of animal research is claiming to benefit human health, the findings are not applicable to humans. Other forms of animal experimentation could not even pretend to claim to provide direct benefit to human health. "Basic research" does not even claim to have direct clinical applicability. But rather, is basic curiosity that causes tremendous pain and suffering to other beings. Chemical warfare and military research, are other examples of animal research paid for by tax dollars with no benefits to human health or well-being.

The scientific method is crucial to establish the validity of research regardless of whether animals are used. Epidemiology (the study of populations and the prevalence of diseases), genetic research (researching genes that are responsible for different diseases), autopsies on cadavers (to clarify disease and teach operating techniques), and the development of technological equipment (computer based equipment, heart-lung machine, electrocephlograms), must all follow the scientific method. Better ways to understand, prevent and treat human illness already exist. The scientific process is crucial to the validity of research even without the use of animals. There are other forms of scientifically valid research that do not use animals.

12. MYTH

Many experiments done on animals have become so outdated or widely repeated that they have no relevance to human health. Rather, they continue to give us redundant information or with information already known from human data itself.

13. MYTH

Animal experimentation is scientifically outdated, ethically indefensible, and cruel. It is not necessary for the advancement of human health. As a method of scientific investigation, animal experimentation is over 100 years old. Science should be about progress and discovery. Animal experimentation to a very large extent continues because it is highly profitable. Progressive scientists are abandoning the animal model for more sophisticated and promising avenues of scientific discovery.

Conclude this discussion by reminding students about the importance of making informed decisions. The media is willing to cover claims of the successes from animal experimentation. However, they are reluctant and rarely cover its failures. Hopefully this information has been able to balance the scales and inform you not only of the alternatives to animal experimentation but also the dangers of it.

CHECK OUT THE OPTIONS!

THEME ACTIVITY:

Grade level: 7-9

Time Needed: 1 class period

Subject Area: Science

Objectives: To educate students on other forms of research and treatments that do not cause harm to animals.

Materials: "Alternatives Information Sheet," 'Alternatives Worksheet"

Activity:

Introduction:
Many vivisectors argue that animal testing is a necessary part of biomedical research. It is understandable that they would want to believe this, since they have invested so much into their careers. It is important, however, to be aware that animal testing is not the only option available and that the alternative forms of testing actually result in much more accurate information for humans.

Activity:
Read through the "Alternatives Information Sheet" as a class or individually. Review the information and clarify any medical terminology with the class.

Assignment:
Have students read through the scenarios on the "Alternatives Worksheet" and match the correct alternative(s) to the scenario.

Review the answers as a class.

ALTERNATIVES
INFORMATION SHEET

Many discoveries have been made about disease through alternative forms of biomedical research that do not use animals. Some alternative forms are:

Epidemiological Studies

These studies are conducted on human populations that suffer from the same disease. Through interviews, epidemiologists can identify factors that may have influenced the onset of the disease, such as lifestyle, heredity, and exposure. In addition, epidemiological studies examine factors that contribute to health and longevity.

Epidemiological findings that have enlightened our knowledge of diseases include the link between smoking and lung cancer and the relationship of heart disease to high cholesterol and blood pressure. AIDS was also first identified through epidemiological studies when rare infections and illnesses began showing up in patients in the late 1970s.

Genetic Research

This often coincides with epidemiological studies. Genetic research has helped physicians learn about the predisposition people have to certain diseases or birth defects. With this information, physicians can educate people on lifestyle changes that may lower their chances of developing the disease.

Thanks to current genetic research, scientists can already correct or alter some genetic traits by inserting new or different genes into existing DNA strands. This ability has also enabled them to retrieve insulin from humans instead of animals, which decreases the adverse effects of animal-derived insulin in the treatment of diabetes.

Clinical Research

This is the study of humans and their responses to new treatments and medicines where existing illnesses can also be observed. There are strict guidelines to follow to protect the volunteers participating in the research.

Drugs that treat AIDS and HIV (including AZT) were recognized as effective through such clinical trials. Another clinical study proved that lowering cholesterol through diet, drugs, or both prevented later heart attacks.

Tissue and Cell Research

This research is conducted on living tissue in a container such as a flask, instead of using a living organism. By conducting research on blood, tissue, and organ cultures, researchers have been able to learn about the effectiveness and toxicity of medications and other products.

This type of testing is less time consuming. For example, screening plates can produce precise information for as many as 100,000 compounds a day. The National Cancer Institute (NCI) switched their screening procedures for potential anti-cancer drugs from mice to a series of human cancer cell lines. This switch has tremendous economic benefits and produces rapid and reliable results.

Autopsies

These examinations performed after death have enabled the discovery and further understanding of virtually every disease in humans. Some of the discovered diseases include Legionnaire's disease, viral hepatitis, and fetal alcohol syndrome.

Autopsies can also help teach medical students operating techniques, for example, fracture fixation, ligament reconstruction, and other procedures. Medical students who learn the procedures from hands-on experience on human cadavers have considerably more accurate information to use when applying operating techniques in a real-life situation.

Technology

Without technology we wouldn't be receive the support and high-quality care we receive in hospitals today. These techniques help reveal to us how the human body works, and they also help us to monitor the progress of a disease as it responds to a therapy.

A few of the current technologies used presently are CAT scans (3-dimensional images of the body from x-rays), ultrasound, blood-gas analysis, microscopes, and electrocardiograms. Technology used for treatment purposes include lasers, molecular tweezers, anesthesia machines, and laparoscopic surgery.

Post-Marketing Drug Surveillance (PMDS)

Once a drug is released to the public, PMDS reports the effects and side effects of the medication. Some side effects are beneficial to humans and are often only recognized in post-marketing surveillance. Drugs with specific side effects can then be used to treat a different illness than it may have originally been developed for. For example: "Beta-blockers were originally used for irregular heartbeats, and still are, but during clinical use scientists noticed that the medication lowers blood pressure and relieves angina and headaches" (Greek & Greek, 2000).

PMDS is not used as often as could be. The FDA (Food and Drug Administration) uses it sporadically. If it were used more regularly, it could prevent many tragedies. If Thalidomide, a drug to treat morning sickness, was followed up with a PMDS, there may have been fewer children born with defects, than the 10,000 who were. "Seldane, an allergy drug, was tested extensively on animals. Although it did not cure allergies, it had no ill effect. It caused life-threatening heartbeat abnormalities in humans. Taking it with grapefruit juice increased blood levels thus raising the risk of dysrhythmia. Seldane is no longer on the market." (Greek & Greek, 2000) The PMDS procedure could also increase the probability of finding new uses for old drugs. There are many drugs used today that were originally determined for other diseases, but only by accident were we able to ascertain their true capabilities.

Mathematical and Computer Models

Thanks to our increasingly advanced technology, sophisticated software can simulate biochemical reactions, determine how drugs work in the body, and simulate human disease states so new therapies and drugs can be tried out via the computer simulation.

This method, which uses mathematics to simulate living systems and chemical reactions, is a relatively new branch of medical research that has already led to new breast cancer treatments, high blood pressure medicines, prosthesis development, and new information regarding epilepsy. Mathematical and computer models are also increasingly used in veterinary and medical training. For example, human computer models are used in Emergency Medical Training (www.curedisease.com).

Microbiological Studies

Bacteria, viruses, and fungi are well suited for screening large numbers of toxins and irritants. These studies also reveal basic cell properties. Since these substances can reproduce quickly, they are more cost effective.

ALTERNATIVES WORKSHEET

Read the scenarios below, and match the correct alternative(s) to the scenario.

Alternatives:

Epidemiological Studies	**Genetic Research**	**Clinical Research**
Tissue and Cell Research	**Autopsies**	**Technology**
Post-Marketing Drug Surveillance	**Mathematical and Computer Models**	**Microbiological Studies**

1. Marcy has a sister with cystic fibrosis (c.f.). Marcy has been tested and knows she carries the gene for c.f. She is engaged to be married and wants to be sure her husband doesn't also carry the gene.
   This is an example of: _____

2. Joe has a type of cancer that is not responsive to chemotherapy. He found that the The Cancer Federation, Inc. is conducting a test on a new drug therapy for his type of cancer. He is interested in participating in the study.
   This is an example of: _____

3. Shelly experiences extreme headaches and nausea once a week. The physicians are trying to find out why this is happening. Tomorrow she will undergo an MRI to evaluate her brain.
   This is an example of: _____

4. Mark works in a facility that is growing human tissue cell samples. These samples have helped the researchers understand more about the toxicity of drugs being introduced to the public.
   This is an example of: _____

5. Sierra is a computer engineer and Mike is a mathematician. Together they have constructed how a certain virus infects the body on a computer-generated program. With this model, they are testing different drugs to see how they combat the virus.
   This is an example of: _____

6. At Brad's request, his body will be donated to science when he dies. Brad understands how important it is to use human bodies to educate medical students on different diseases and surgical procedures.
   This is an example of: _____

7. Aspirin is no longer considered only a pain reliever. It is also known to help prevent heart attacks.
   This is an example of: _____

8. A strange disease has infected thousands of people in the Pacific Northwest. Lea has been sent there from the World Health Organization to conduct interviews and research to find out what is causing the disease.
   This is an example of: _____

9. Justin's father died of a heart attack due to high blood pressure. Justin's mother has high cholesterol. With this information Justin tries to eat healthy foods and exercise to keep his blood pressure and cholesterol down.
   This is an example of: _____

10. In medical school Tricia is learning how to reconstruct the ligaments of the knee on a cadaver.
    This is an example of: _____

11. Joe and Sara have an appointment with her doctor to have an ultrasound taken of their baby before birth.
    This is an example of: _____

12. Melanie works in a laboratory that is testing the toxicity of an anti-fungal treatment on the fungus that causes ringworm.
    This is an example of: _____

ALTERNATIVES WORKSHEET

ANSWER KEY

Read the scenarios below, and match the correct alternative(s) to the scenario.

Alternatives:

Epidemiological Studies	**Genetic Research**	**Clinical Research**
Tissue and Cell Research	**Autopsies**	**Technology**
Post-Marketing Drug Surveillance	**Mathematical and Computer Models**	**Microbiological Studies**

1. Marcy has a sister with cystic fibrosis (c.f.). Marcy has been tested and knows she carries the gene for c.f. She is engaged to be married and wants to be sure her husband doesn't also carry the gene.
   This is an example of: Genetic Research

2. Joe has a type of cancer that is not responsive to chemotherapy. He found that the The Cancer Federation, Inc. is conducting a test on a new drug therapy for his type of cancer. He is interested in participating in the study.
   This is an example of: Clinical Research

3. Shelly experiences extreme headaches and nausea once a week.The physicians are trying to find out why this is happening. Tomorrow she will undergo an MRI to evaluate her brain.
   This is an example of: Technology

4. Mark works in a facility that is growing human tissue cell samples. These samples have helped the researchers understand more about the toxicity of drugs being introduced to the public.
   This is an example of: Tissue and Cell Research

5. Sierra is a computer engineer and Mike is a mathematician. Together they have constructed how a certain virus infects the body on a computer-generated program. With this model, they are testing different drugs to see how they combat the virus.
   This is an example of: Mathematical and Computer Models

6. At Brad's request, his body will be donated to science when he dies. Brad understands how important it is to use human bodies to educate medical students on different diseases and surgical procedures.
   This is an example of: Autopsies

7. Aspirin is no longer considered only a pain reliever. It is also known to help prevent heart attacks.
   This is an example of: Post-Marketing Drug Surveillance

8. A strange disease has infected thousands of people in the Pacific Northwest. Lea has been sent there from the World Health Organization to conduct interviews and research to find out what is causing the disease.
   This is an example of: Epidemiology

9. Justin's father died of a heart attack due to high blood pressure. Justin's mother has high cholesterol. With this information Justin tries to eat healthy foods and exercise to keep his blood pressure and cholesterol down.
   This is an example of: Genetic Research

10. In medical school Tricia is learning how to reconstruct the ligaments of the knee on a cadaver.
    This is an example of: Autopsies

11. Joe and Sara have an appointment with her doctor to have an ultrasound taken of their baby before birth.
    This is an example of: Technology

12. Melanie works in a laboratory that is testing the toxicity of an anti-fungal treatment on the fungus that causes ringworm.
    This is an example of: Microbiological studies

QUOTABLE QUOTES

THEME ACTIVITY:

Grade level: 8-9

Time needed: 1 class period

Subject Area: Science, Communication

Objectives: To encourage disussion regarding animal experimentation. To inform students of those people who are against animal experimentation.

Activity:

Introduction:

Give each pair of students a quote to read and interpret to the class.

"How we think and feel about other people and about ourselves greatly influences how we treat others. The following quotes will help you think about how animals are used in experiments, in medical and veterinary training, and in product testing. Then you can decide how you feel about using animals for such purposes."

After each pair has had a chance to read their quote and discuss it together, have the students read their quote to the class and share their interpretation/feelings about the quote. Encourage others to share their insights on the different quotes as well.

After each pair of students has shared their quote, ask the class the following questions?

- Who were the people quoted? (doctors, authors, professors,famous people, etc.)

- Were you familiar with any of the names?

- Why would these people be quoted?

- What was the earliest date of someone quoted?

- What does this tell you about those who are against animal experimentation?

- Could these quotes change people's view of animal experiemtation? Why? Why not?

Quotable Quotes

"We cannot solve the problems we have created with the same thinking that created them."
-Albert Einstein, PhD (1879 - 1955)

Einstein received the Nobel Prize in physics in 1922. His General Theory of Relativity laid the foundation for cosmology and our understanding of physical reality.

"We sacrificed daily from one to three dogs, besides rabbits and other animals, and after four years experience, I am of the opinion that not one of these experiments on animals was justified or necessary." - **Dr. George Hoggan (1875)**, student of **Claude Bernard, MD**, a leading and ardent vivisectionist

Bernard (1813-1878) was France's most famous physiologist. In his 1865 book, "Introduction to the Study of Experimental Medicine," Bernard argues that progress in medicine is not possible without animal-based physiological research. He taught that the researcher must not be hampered by the blood and cries of his animal subjects.

"During my medical education...I found vivisection horrible, barbarous and above all unnecessary." - **Carl Jung, MD (1875-1961)**

Jung is the founder of analytical psychology. His break with Freud is an important event in the history of psychoanalytic thought. Jung stressed the human psyche's quest for spiritual and archetypal meaning vs. Freud's emphasis on sex and aggression.

"The inhumanity of science concerns me, as when I was tempted to kill a rare snake that I may ascertain its species. I feel that this is not the means of acquiring true knowledge." - **Henry David Thoreau, *Journal* (1854)**

Thoreau (1817 - 1862) described himself as "a transcendentalist and natural philosopher." His essay, "Civil Disobedience," influenced both Gandhi and Martin Luther King Jr.

"Vivisection has done little for the art of the doctor at the bedside, but it has done immeasurable harm to the character and mind of the rising generation of doctors." - **Dr. Rudolph Hammer, LLD (1909)**

"Atrocities are not less atrocities when they occur in laboratories and are called medical research." - **George Bernard Shaw (1856-1950)**

Shaw was the 1925 Nobel Laureate for Literature. Best known for his plays and essays, he was a theatre critic, political activist, socialist, and an opponent of war.

"Whenever people say, 'We mustn't be sentimental,' you can take it they are about to do something cruel. And if they add, 'We must be realistic,' they mean they are going to make money out of it." - **Brigid Brophy (1929-)**

Brigid Brophy is an English-Irish novelist and playwright.

"We are drowning and suffocating unanesthetized animals in the name of science.... We are producing frustration ulcers in experimental animals under shocking conditions in the name of science.... We are observing animals for weeks, months, even years, under infamous conditions in the name of science...." - **Robert Gesell, MD, Professor of Physiology, University of Michigan, speaking to his colleagues in the American Physiological Society (1952)**

"I abhor vivisection.... I know of no achievement through vivisection, no scientific discovery that could not have been obtained without such barbarism and cruelty." - **Charles W. Mayo, MD (1961)**, son of the co-founder of the Mayo Clinic

Dr. Charles W. Mayo (1898 - 1968) was a skilled surgeon and a member of the Mayo Clinic's Board of Governors. The Mayo Clinic is consistently ranked among the top three U.S. hospitals.

"Kindness to animals must be taught to our students early in life." - **John Ames, MD, (1969)**

"Ask the experimenters why they experiment on animals, and the answer is 'Because the animals are like us.' Ask the experimenters why it is morally O.K. to experiment on animals, and the answer is: 'Because the animals are not like us.' Animal experimentation rests on a logical contradiction." - **Professor Charles R. Magel (1980)**

"Giving cancer to laboratory animals has not and will not help us to understand the disease or to treat those persons suffering from it." - **Albert Sabin, MD (1986)**, developer of the live-virus polio vaccine

Sabin (1906 - 1993) was a physician and microbiologist who developed a live-virus polio vaccine that helped curb the spread of the then deadly disease.

"It is totally unconscionable to subject defenseless animals to mutilation and death, just so a company can be the first to market a new shade of nail polish, or a new improved laundry detergent..." - **Abigail "Dear Abby" Van Buren,** testifying before Congress, **(1988)**

Abigail Van Buren is a well-known syndicated advice columnist and author.

"By and large students are taught that it is ethically acceptable to perpetrate, in the name of science, what from the point of view of the animals would certainly qualify as torture.... By the time [the students] arrive in the labs they have been programmed to accept the suffering around them." - **Jane Goodall, PhD,** *Through a Window - My 30 Years With the Chimpanzees in Gombe (1990)*

Dr. Jane Goodall is a world-famous primatologist whose decades of field research in Africa have contributed significantly to our understanding of chimpanzees and humans. She is author of several books and an internationally recognized lecturer.

"At present it is a rare person that emerges from medical training with his or her humanity intact." - ***Journal of the American Medical Association***, Vol. 261, p. 2011, **(1989)**

"We suffer from different diseases and we respond in different ways to drugs. Using animals to 'try out' products intended for humans is at best useless and at worst...dangerously misleading." - **Vernon Coleman, MD,** to the International Scientific Conference, Paris, **(1989)**

"[Dog labs] did more to damage my identity as a physician than anything else. I learned nothing physiological. I learned that life is cheap and that misery can be ignored." - **Murry Cohen, MD, (1990s)**

Cohen is founding co-chair of the Medical Research Modernization Committee. He has authored numerous books, articles, chapters, and letters on animal experimentation, including "Of Pigs, Primates, and Plagues," a scientific critique of xenotransplantation.

LEARN FROM OUR FELLOW ANIMALS

THEME ACTIVITY:

Grade level: 6-9

Time needed: 1 class period

Subject Area: Science, Language Arts

Objectives: To help raise student awareness of other forms of research that do not cause harm to animals.

Activity:

Introduction:

Animals are masters of invention; many human inventions were the result of human observations made of different animals in their habitat.

Some examples are camouflage(moth), glue(spider), rafting(leaf cutter ant), v-formation(geese). What are some other examples of animal "inventions" that have influenced human inventions? (grooming(chimpanzee), trapping(spider), tunneling(gopher), chemical warfare(skunk), basket weaving(bird), drinking straw(mosquito), pins(porcupine), medicinal plants(chimpanzee))

Much can be learned by observing animals in their natural environment through observing their behavior, interactions, and daily routine. By observing free-living chimpanzees in Africa, humans have been able to identify certain leaves they eat to soothe their stomach when it is upset. Another researcher is observing what leaves Koalas eat when they are sick.

"Learning" from animals, however, by cutting them open in dissection class causes more harm than good. The same lessons and more are learned from CD-ROM programs and other forms of study and research. The non-invasive study of living animals can reap far greater rewards as the work of *Jane Goodall, *Birute Galdikas, *Diane Fossi, *Daphne Sheldrake, *Cynthia Moss (see footnote) and others have shown. Much can be learned by observing an animal in their natural environment. You can learn about the effects of stress, forms of communication, behaviors, culture, and family structure and their use of "medicinal" plants.

The findings from drugs tested on animals cannot be safely correlated to humans because they differ on a cellular, organ, and anatomical level. Many tests on animals have produced inconclusive results. For example, for many years saccharine was considered safe based on animals tests. Later it was listed as a carcinogen (cancer-causing agent) because it was found to cause cancer in rats. Yet, by May, 2000 saccharine was again taken off the carcenogenic list because the human findings were inconclusive.

Assignment:

Choose an animal. Carefully study the animal's behavior either by observing him/her firsthand, by reading about him/her, or by watching videos of the animal in their natural environment. While observing, take notes on what you see in terms of their behavior, contact/communication with other animals, response to stressors, and their familial interactions.

Using your observations, write at least two paragraphs sharing your findings, what ideas you have formulated from your observation, and what you could further study.

What inventions can you come up with by observing animals?

Conclude:

Jane Goodall was a pioneer in her field and helped us to change our view of our next of kin through her observations. She was able to find many correlations between chimpanzees and humans from tool usage to maternal care to warfare.

Footnote:

Jane Goodall: studies chimpanzee behavior in Tanzania. (www.janegoodall.org)

Diane Fossey: studied gorillas in Rwanda. (www.gorillafund.com)

Birute Galdikas: an anthropologist who studies orangutans in Borneo. (www.orangutan.org)

Daphne Sheldrick: helps to rehabilitate orphan elephants in Kenya. (www.africanconservation.com)

Cynthia Moss: has spent more than 30 years in Africa studying elephants and working for their conservation. (www.elephanttrust.org)

WHAT'S TOO HOT TO HANDLE?

THEME ACTIVITY:

Grade level: 7-9

Time needed: 2 class periods

Subject Area: Science, Social Studies

Objectives: To formulate a class definition of violence. To raise student awareness on the relationship between human-to-human violence and human-to-animal violence.

Materials: "Violence Gauge" overhead, class handout and colored dots (for value voting)

Preparation:
Make an overhead and a class set of copies of the violence gauge. You may even want to enlarge the gauge onto a poster for future reference. Have either the board or some large sheets of paper set up in the room for class lists and brainstorming. Find the actual definition of "violence" from a dictionary.

Activity:

Begin by having the class share what they think of when they hear the word "violence." Write their thoughts or words on the board (or on an overhead). With this discussion help the class formulate a class definition of violence.

Use this class definition and the dictionary definition of violence to begin brainstorming about what are violent acts between humans. Use the 1-3-6ing technique to brainstorm with the group. Give individual students 1-2 minutes to list as many violent acts between humans that they can think of on their own. Next, have students partner up with two other students to make a group of three. Have them share their lists and then combine them (omitting those items repeated), give them 3-5 minutes. Once the groups of three have finished, have the groups of three join another group to make a group of six. Give the groups of six 5-7 minutes to combine their lists, omitting the repeated ideas. Once each group of six has a new list, have them circle their top ten acts that they consider to be most violent. Then have them prioritize their list from 1) the most violent act to 10) the least violent act. Have each group then write their final list on either the board or a piece of newsprint.

Once all lists are written so the class can see them, go through the lists with the students. Have them identify any repeated acts, underlining one from one list and crossing it out in the other lists. Have students value vote to decide the top nine violent acts between humans. *Value voting*: Give each student 3-4 dots; they can place them on acts they think are important (if they want to put more than one dot on one act they may). Once all students have voted, go through and circle those acts that have the most dots, prioritizing them. The act with the most dots is considered the most violent act. Then prioritize the others accordingly.

Copy these onto the "Violence Gauge" overhead under the category "Human-to-Human." Place the most violent act on the top line and follow in descending order.

Bring the students' attention to the other category entitled "Human-to-Animal." Have the students, as a class, brainstorm a list of violent acts humans commit against animals. Through discussion of the list determine the top nine violent acts against animals and list them accordingly on the "Violence Gauge" overhead.

Have students compare and contrast the two lists.

<u>Possible discussion questions:</u>

Which acts are more violent - those committed against humans or animals?

Is there a correlation between those who harm animals and those who harm humans?
(Yes, psychologists have found a direct correlation between those who harmed, tortured, or killed animals in their youth and those who commit crimes of violence against humans as they become adults.)

Why is it "okay" to harm animals and not "okay" to harm humans?

What are some consequences of violent acts?

Could experimentation on animals be considered a violent act? (Refer to the dictionary definitions.)

Are steps being taken to protect animals from acts of violence?

Are killing cats, frogs, fetal pigs, and other animals to be cut up in dissection classes a violent act?

VIOLENCE GAUGE

Adapted from Stopping Violence Curriculum
by ETR Associates, 1991.

THE SLIPPERY SLOPE
A VALUES CONTINUUM

THEME ACTIVITY:

Grade level: 6-9

Time Needed: 1 class period

Subject Area: Science

Objectives: To engage students in a discussion of issues dealing with vivisection and different belief systems surrounding this practice.

Materials: List of Statements (for the teacher), Three signs: "Agree," "Disagree," and "Middle of the Road."

Activity:

Prior to the activity, set up the signs along a wall or on the ceiling, placing "Agree" on one end and "Disagree" on the other. In the middle of the two, place "Middle of the Road."

Introduction:

There are many issues that overlap when the discussion of vivisection is introduced. Where do you draw the line?

I will read a statement and once that statement has been read you will move to the sign that best supports your feelings. I will be calling on people randomly to explain why they moved to where they are.

Statements:

1. Animals don't have feelings, so the testing that is done on them doesn't affect them.
2. It is not okay to test on larger animals (dogs, chimpanzees, cats), but it is okay to test on smaller animals (frogs, rats, rabbits).
3. It is okay to test on poor people from different countries who are poorer than us, especially since they don't speak the same language.
4. It is okay to test on prisoners who committed hideous crimes or are on death row.
5. It is okay to test on children who are brain damaged; they won't understand what is happening to them.

6. It is okay to test on chimpanzees even though they are an endangered species, because they are so close to us genetically.
7. It is okay to test on chimpanzees or other animals if they are bred for that purpose.
8. It is okay to test on human embryos if they are produced for that purpose.
9. It is okay to test on dogs and cats if they are strays and not pets.
10. It is okay for a dominant species to use all others in whatever way they see necessary and to its advantage.
11. It is important to care for all beings.

Conclusion:

It is a slippery slope on both sides of the issue. How do you know when our society has gone too far? What repercussions will we experience because of the choices we have made? What are alternatives to animal testing that also do not offend the general public? Which slope is more dangerous; the one that leans toward compassion and inclusion or the one that leans toward exploitation and exclusion?

All of these questions need to be considered when examining the issue of vivisection.

Note to teacher:
A good follow-up activity would be the lesson dealing with alternative forms of testing "Myth vs. Fact" as well as "Check Out the Options!"

RESEARCH FLIP-FLOPPED

THEME ACTIVITY:

Grade level: 7-9

Time needed: 1-3 class periods

Subject Area: Language Arts, Writing

Objectives: To increase student compassion and understanding of the plight of animals who are exploited.

Materials: information sheets, paper, pencils

Activity:

Student Assignment: Research information on an animal who is used for human health/diet/entertainment. Write a report explaining what is done to/with the animal.

After students have written their rough drafts share this directive with them: ***As you write the final draft of your report, replace the term "human" with the name of your animal and replace the name of your animal with "human."***

After students have completed their papers follow up the assignment with a class discussion and debriefing questions.

Suggested Debriefing Questions:

- How did you feel as you conducted your research about the treatment of some animals for research/entertainment/human diet?
- Did your reaction change or increase when a human became the subject?
- What are some examples of books, movies, etc. that have switched the role of humans and animals?
- Do these stories teach a lesson?
- What can we learn from each other's reports on the treatment of animals?
- Is the inhumane treatment of these animals necessary?
- What can be done (as individuals, as groups, as a nation) to improve the living conditions or lives of these animals?
- Do you think there will be a time when animals are cared for as beings instead of specimens/things/commodities?

HUMANE CAREERS

Grade level: 6-9

Time Needed: 1 class period

Subject Area: Language Arts, Reading

Objectives: To educate students on the careers that promote and support animal welfare.

PLEASE NOTE: This activity is dependant on the book "Careers With Animals" by Willow Ann Sirch.

Materials: "Careers With Animals" Book, Worksheet

Activity:

In the book "Careers With Animals" there are 31 professions that individuals are interviewed about. Assign a profession to each student, have them read the information from the chapter (2-3 pages) and then answer the questions on the worksheet about their humane professional.

After students have filled out the first half of the worksheet, have them pair up with another student. Have each student share information about his or her humane professional. On the bottom half of the worksheet, have them compare and contrast the two careers by answering the four questions.

Follow-up Questions:

What do you think makes a career a humane career?
What is his/her job?
What is his/her view on animal welfare?
What is his/her view on animal testing? (Did it say?)
How did his/her views influence their career choice?
Did she/he always have these views?
If not, what changed his/her mind?
What does he/she do outside of work to help animals?
Do you believe this is just a job for him/her or a lifestyle?

CAREERS WITH ANIMALS

Read the following questions and answer from the information you read on your humane professional.

1. The job of my professional is _____.
2. His/Her job helps with the well-being of animals by_____.
3. How did his/her views influence his/her career choice? _____
4. If so, what does she/he do outside of work to help animals? _____
5. What is one thing your professional does not like about his/her job?_____
6. What other skills are needed for this job?_____

_____

After sharing the information with your partner about the professional you read about, compare and contrast the two professions.

1. How are the two professions similar? _____ -

   _____ -
2. How are the two professions different? _____

   _____
3. What are some educational skills needed for each profession?_____

   _____
4. Which job would you choose? _____ Explain _____

   _____

TALKING THE TALK, WALKING THE WALK

THEME ACTIVITY:

Grade level: 6-9

Time Needed: 1 class period

Subject Area: Writing, Communication

Objectives: To give students the opportunity to set goals that support the care and well being of all animals.

Materials: "Setting Goals to Walk the Walk" sheet

Activity:

Many people who share their lives with their pets (companion animals) believe that they are animal lovers. They look out for the well-being of their companion animal and have a close bond with him/her. Unfortunately, this belief is not always transferred to animals being used in biomedical research.

All animals feel fear and anxiety. They all have a need to be nurtured and to seek support and reassurance from others. All animals thrive when they are loved and cared for. Animals in research are not nurtured; many live their lives in solitary confinement and become ill physically and mentally as a result. (Show pictures or segments from videos to demonstrate. Call your local animal rights or welfare agency and see if they have a lending library, use pictures/videos from animals in their natural environment, or contact NEAVS to use their loan library www.neavs.org.)

It is easy for many people to show love toward their companion animal, but what about those animals in biomedical research who do not have relationships with humans? Many people "feel sorry" for those animals who are subjected to invasive unnecessary testing, but never do anything to help them.

It is time not only to talk the talk, but to also walk the walk to help all the animals on which many needless studies are conducted for the supposed "health and well-being of humans."

(After the introduction) Have students fill out "Setting Goals to Walk the Walk." After they have completed the goal sheet, discuss with the class ways to help achieve these goals. Place goals in a visible spot, inform other people of your goals so they can support you and help you stay focused, recruit friends to help you achieve these goals, join an organization with views that complement your goals, etc.

SETTING GOALS TO WALK THE WALK...

Goal 1:
To help my companion animal(s) enjoy a quality life I plan to...

a) _____

b) _____

c) _____

Goal 2:
To increase my awareness about animals involved in biomedical testing I plan to...

a) _____

b) _____

c) _____

Goal 3:
To help those animals in biomedical testing I plan to...

a) _____

b) _____

c) _____

Goal 4:
To educate my family and friends on the importance of helping animals in biomedical testing I plan to...

a) _____

b) _____

c) _____

THESPIANS WITH A MESSAGE

THEME ACTIVITY:

Grade level: 6-9

Time Needed: 1 class period

Subject Area: Drama, Language Arts

Objectives: To encourage students to share the message of compassion for our fellow animals through informative and non-threatening activities.

Activity:

Introduction:

(To the class)
Animals who are vivisected will often be given numbers that are tattooed on them as identification during a procedure. Why do you think that is?
(Possible answers- keep track of them, help with identification, *depersonalize the subject they are testing.) (* Is the focus of this lesson.)

With a name comes attachment, personalities, and feelings. Would it be more difficult to take part in invasive research on someone who has a name and a personality? Many researchers seem to have detached themselves from the animals they experiment on. In so doing, they do not feel or respond to the needs and cries of the animal who has become to them a mere object to coldly investigate.

Even though animals are given numbers, it doesn't lessen the stress, anxiety, or pain they feel during the experiment. As we have learned, many of the animals experience severe psychological and physical reactions to stressors inflicted upon them during the experiments and procedures.

Not only is the vivisection of animals needless for human good, the process and procedures are not animal-friendly. This all starts with the depersonalization by assigning numbers instead of names.

Assignment:

Have groups of students develop a play focusing on the issue of "numbers not names."

Have them write a script with 3-4 characters.
(Borrow a script for a play from your drama teacher to show students what the

format of a script looks like.) Refer to stories that include animals and send a message of compassion: Charlotte's Web, Secret of NIMH (Mrs. Frisby and the Rats of NIMH), Plague Dogs, Tailchaser's Song, Beautiful Joe, and Watership Down. Use these as idea generators for a story line to incorporate the "numbers not names" issue.

If time allows, have them also produce and perform the play. Have them produce props, costumes, and a backdrop.

Alternate assignment:

Have students write a poem about the life of an animal in biomedical research and their views on using numbers instead of names. Have some read aloud in class.

Have students write a story about animal abuse. Assign the animal in the story with a number. After you have written the story, give the animal a name. How would this change their attitude toward the character?

Give students a badge with a number on it. For one day have them refer to each other only as their assigned number.

MAKING COMPASSION THE FASHION

THEME ACTIVITY:

Grade level: 6-9

Time Needed: 1 class period

Subject Area: Art, Language Arts

Objectives: To encourage students to share the message of compassion for our fellow animals through informative and non-threatening ways.

Activity:

Introduction:

Have you ever heard a dog yelp when they've been stepped on or seen them cower away from something that they are afraid of or don't want to do? If you have, you know that animals express their feelings and needs in ways similar to us. They know when something is not safe or scares them, and they know when they are injured.

Animals who are used for biomedical experimentation (vivisection) are being used for scientifically unnecessary experiments that are very traumatic, painful, and detrimental to their physical and psychological well-being.

It is important for people to share their concerns and feelings about needless testing and experimentation on animals. It is important to do this in ways that are informative and non-threatening.

Have students brainstorm informative but non-threatening ways to share the message of compassion.

If, after students have brainstormed, they haven't mentioned t-shirts, bumper stickers, hats, or buttons, include them on the list.

Have some examples to share with the class of designs and slogans that are catchy and easily understood. Compare those with designs that are busy, confusing, and messy. Talk with the class about the influence something like this has over the public especially if it is a quality design.

Assignment:

You are part of an organization that is trying to educate the public on the unnecessary use of animals in biomedical research. Design a t-shirt, button, bumper sticker, or poster that can be used to support this philosophy.

Please make sure your design is:
Colorful
Error-free
Final draft form
Concise
With a catchy theme/slogan

After completion:
Hang up the designs around the room. Have students explain their design and theme/slogan.

HUMANE COMMUNITY
GLOSSARY

Anesthetize- to make someone, or an area of the body, unable to feel pain, touch, cold, or other sensations.

Anti-vivisection- to oppose the act or practice of cutting into or experimenting on living animals for scientific study or experimentation.

Biomedical research- the study and application of the principles of the natural sciences, especially biology and physiology, to clinical medicine.

Cadaver- a dead body; corpse.

Chemotherapy- the treatment of a disease by means of chemicals that have a specific toxic effect on the disease.

Compassion- the feeling of another's feelings and hardships that leads to wanting to help; sympathy; empathy. Wishing to help those who suffer; sympathetic.

Conclusive- decisive; convincing; final.

Correlated- related one to another.

Cystic Fibrosis- a hereditary disease of the pancreas, primarily beginning in childhood, characterized by excessive secretion of mucus from internal organs, malnutrition, and accompanying respiratory infection.

Disseminate- to scatter widely; spread information.

Epidemiology- the branch of medicine dealing with the causes, distribution, and control of the spread of diseases in a community, especially of infectious diseases.

Exclusion- the act or process of excluding; to shut out; keep from entering.

Exploitation- selfish or unfair use.

Genetics- the branch of biology dealing with the principles of heredity and variation in animals and plants of the same or related kinds.

Inclusion- the act or fact of including; to put in a total, class, or the like.

LD-50- Lethal Dose 50, a form of biomedical testing on animals that tests the toxic level of a substance by tracking the amount of the ingested substance that it takes to kill the 50% of the animals used.

Ligaments- a band of strong, flexible white tissue that connects bones or holds parts of the body in place.

Methodologies- the system of methods or procedures used in any field.

Microbiological- having to do with or utilizing microorganisms.

MRI- Magnetic Resonance Imaging, the use of nuclear magnetic resonance spectrometer to produce electronic images of specific atoms and molecular structures in solids, especially human cells, tissues, and organs.

Negligence- lack of proper care or attention; neglect.

Non-invasive- not imposing, forcing, or not being intrusive; in research referring to procedures that leave the animal intact without cutting or otherwise injuring.

Nonsensical- senseless; foolish or absurd.

Pithing- to destroy the spinal cord or central nervous system.

Reconstruct- rebuild; make over; restore.

Scientific Protocol- the general expectations or rules for controlled methods or procedures in science.

Stereotypies- excessive repetition or lack of variation in movements.

Stressors- any stimulus that produces stress or strain.

Surveillance- watch or guard kept over a person or thing.

Tissue Culture- the technique or process of keeping bits of live tissue growing in a sterile, nutrient environment.

Ultrasound- the use of ultrasonic waves for diagnostic or therapeutic purposes, specifically to visualize our internal body structure, monitor a developing fetus, or generate localized deep heat to the tissues.

Vivisection- the act or practice of cutting into living animals for scientific study or experimentation.

HUMANE COMMUNITY
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Name _____

HUMANE COMMUNITY ASSESSMENT

Read each question carefully and answer appropriately.

1) Identify one alternative form to biomedical research and explain how this form is helpful to humans.

_____

_____

_____

_____

2) Explain how we can learn from animals in a way that does not cause them harm.

_____

_____

_____

3) What is one animal that humans have learned from and adapted their "invention" to meet the needs of humans?

_____

_____

_____

4) How can human-to-animal violence affect how we feel and view animals in research?

_____

_____

_____

_____

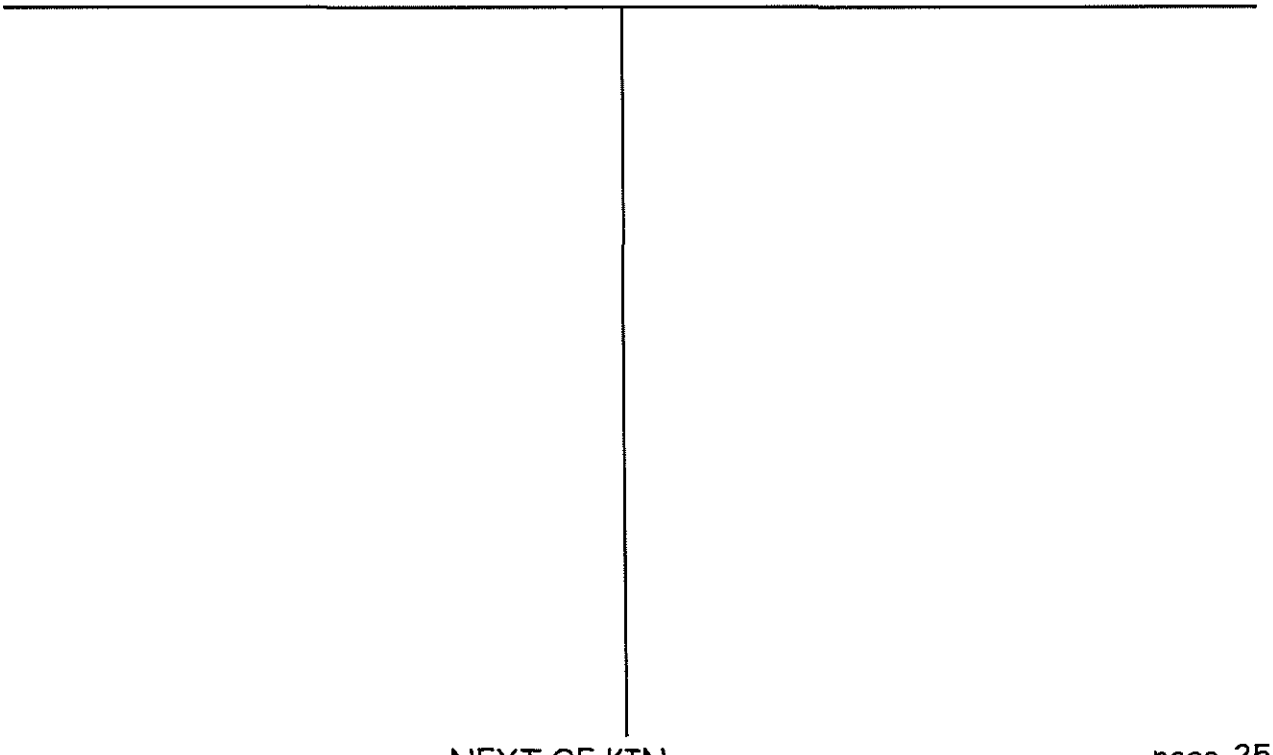
5) Write a paragraph explaining why humans feel it is okay to experiment on animals. Write another paragraph opposing this view.

6) Describe what a Humane Career is and give two examples of Humane Careers.

7) Design a t-shirt that encourages compassion and understanding for all animals.

FRONT	BACK

8)Compare and contrast an animal in research and one animal living in their natural environment by listing examples or drawing a picture.



9) List three reasons why dissection is still used in schools and three reasons why dissection does not need to be used in schools.

Is Used	Should not be used
A.	A.
B.	B.
C.	C.

10) Match the following terms with their appropriate definition.

a. anti-vivisection	b. compassion	c. epidemiology
d. exploitation	e. stereotypies	f. stressors
g. scientific protocol	h. vivisection	i. nonsensical

_____ The act or practice of operating on living animals for scientific study or experimentation.

_____ Selfish or unfair use.

_____ The feeling of another's feelings and hardships that leads to wanting to help; symapthy; empath. Wishing to help those who suffer; sympathetic.

_____ Any stimulus that produces stress or strain.

_____ Excessive repitition or lack of variation in movements.

_____ To oppose the act or practice of operating on living animals for scientific study or experimentation.

_____ The general expectations or rules for controlled methods or procedures in science.

_____ The branch of medicine dealing with the causes, distribution, and control of the spread of diseases in a community, especially of infectious disease.

_____ Senseless; foolish or absurd.

ANSWER KEY

Name _____

HUMANE COMMUNITY ASSESSMENT

Read each question carefully and answer appropriately.

1) Identify one alternative form to biomedical research and explain how this form is helpful to humans.

Refer to "Alternative Information Sheet" or "Fact vs Myth" for alternatives and how they can be helpful to humans.

2) Explain how we can learn from animals in a way that does not cause them harm.

By observing them in their natural environment and observing their behaviors, interactions and daily routines.

3) What is one animal that humans have learned from and adapted their "invention" to meet the needs of humans?

Answers may vary

Refer to "Learn From Our Fellow Animals" for possible answers.

4) How can human-to-animal violence affect how we feel and view animals in research?

Animals can be viewed as objects by a person who feels it is okay to harm an animal. People become desensitized to the treatment of animals. Another view may lean toward a growing compassion from observers of a violent act may develop compassion for the animal.

5) Write a paragraph explaining why humans feel it is okay to experiment on animals. Write another paragraph opposing this view.

Answers may vary

6) Describe what a Humane Career is and give two examples of Humane Careers.

(An explanation including some or all of the following) A career that believes in the care and well-being of all animals, and does not support the exploitive use of animals in research or entertainment

Refer to "Careers with Animals" for possible answers.

7) Design a t-shirt that encourages compassion and understanding for all animals.

FRONT	BACK
Answers may vary	

8)Compare and contrast: an animal in research and that animal living in their natural environment by listing examples or drawing a picture.

Answers may vary	

9) List three reasons why dissection is still used in schools and three reasons why dissection does not need to be used in schools.

Is Used — Possible Answers	Should not be used
A. -Teach anatomy -Learn about scientific observation -Teach importance of precision and order	A. -Needless killing -Stop supporting the dissection industry -Outdated
B. -Hands-on experience -Tradition -Novelty of the lesson	B. -Other options are now available -The reverence for all life
C. -Expose students to objectivity medical/vet training	C.

10) Match the following terms with their appropriate definition.

a. anti-vivisection	b. compassion	c. epidemiology
d. exploitation	e. stereotypies	f. stressors
g. scientific protocol	h. vivisection	i. nonsensical

h The act or practice of operating on living animals for scientific study or experimentation.

d Selfish or unfair use.

b The feeling of another's feelings and hardships that leads to wanting to help; symapthy; empath. Wishing to help those who suffer; sympathetic.

f Any stimulus that produces stress or strain.

e Excessive repitition or lack of variation in movements.

a To oppose the act or practice of operating on living animals for scientific study or experimentation.

g The general expectations or rules for controlled methods or procedures in science.

c The branch of medicine dealing with the causes, distribution, and control of the spread of diseases in a community, especially of infectious disease.

i Senseless; foolish or absurd.

APPENDIX

APPENDIX A

Washington Essential Academic Learning Requirements covered in "Next of Kin" curriculum.

SCIENCE

1.1 Use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize things.

1.2 Recognize the components, structure, and organization of systems and the interconnections within and among them.

1.3 Understand that interactions within and among systems cause changes in matter and energy.

2.1 Develop abilities necessary to do scientific inquiry.

2.2 Apply science knowledge and skills to solve problems or meet challenges.

3.2 Know that science and technology are human endeavors, interrelated to each other, to society, and to the workplace.

WRITING

1.1 Develop concept and design.

1.2 Use style appropriate to audience and purpose.

2.1 Write for different audiences.

2.2 Write for different purposes.

2.3 Write in a variety of forms.

3.1-3.5 The student understands and uses the steps of the writing process.

COMMUNICATION

1.2 Listen and observe to gain and interpret information.

2.1 Communicate clearly to a range of audiences for different purposes.

2.2 Develop content and ideas.

2.3 Use effective delivery.2.4 Use effective language and style.

3.1 Use language to interact effectively and responsibly toward others.

3.2 Work cooperatively as a member of a group.

3.3 Seek agreement and solutions through discussion.

4.3 Analyze mass communication.

GEOGRAPHY

1.1 Use and construct maps, charts, and other resources.

3.1 Identify and examine people's interaction with and impact on the environment.

APPENDIX B

Washington Essential Academic Learning Requirements Matrix

	Science						Writing						Communication			
	1.1	1.2	1.3	2.1	2.2	3.2	1.1	1.2	2.1	2.2	2.3	3.0	1.2	2.1	2.2	2.3
Making Distinctions	x			x	x											x
The Order of Things		x				x										
Chimp or Human?	x															
Our Friends in Afrrica		x	x				x	x		x	x	x		x	x	x
It's Mime Time													x	x		x
Chimpanzees in Danger			x				x	x								
How They Live						x	x	x	x	x	x	x				
A Life Inside?						x	x	x	x	x	x	x				
Diary of a Chimp									x	x	x					
Are They Chimp Friendly?							x	x	x	x	x					
To Zoo, or Not to Zoo?							x	x		x	x					
Tell Me More													x	x		
A New Home										x	x	x				
Building a Foundation						x	x	x	x	x	x					
It's All Greek to Me!													x	x		x
Get To Know Me!													x			
Chimpanzee Dominoes													x			
Home is Where the Stuff Is																
Frog Leap					x	x							x	x		
Fact or Myth?					x	x							x			
Check Out the Options!					x	x							x			
Learn From Our Fellow Animals				x		x							x			
What's Too Hot to Handle?													x	x	x	
The Slippery Slope													x	x	x	
Research Flip-flopped										x	x	x				
Humane Careers							x	x	x	x	x					
Talking the Talk, Walking the Walk								x	x	x	x					
Thespians With a Message														x		
Making Compassion the Fashion											x					

	Communication					Geography	
	2.4	3.1	3.2	3.3	4.3	1.1	3.1
Making Distinctions	x		x	x			
The Order of Things			x	x			
Chimp or Human?			x	x			
Our Friends in Africa			x			x	x
It's Mime Time							
Chimpanzees in Danger	x			x		x	x
How They Live			x	x	x		
A Life Inside?					x		
Diary of a Chimp							
Are They Chimp Friendly?					x		
To Zoo, or Not to Zoo?		x			x		
Tell Me More							
A New Home							
Building a Foundation					x		
It's All Greek to Me!							
Get To Know Me!							
Chimpanzee Dominoes			x				
Home is Where the Stuff Is	x						
Frog Leap			x	x	x		
Fact of Myth?				x	x		
Check Out the Options!					x		
Learn From Our Fellow Animals							
What's Too Hot to Handle?		x	x	x	x		
The Slippery Slope		x	x	x	x		
Research Flip-flopped							
Humane Careers							
Talking the Talk, Walking the Walk							
Thespians With a Message		x	x				
Making Compassion the Fashion					x		

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this chapter is to discuss conclusions derived from the piloting of the curriculum and to suggest changes or additions that would be useful for teachers and students using the curriculum.

Summary

The "Next of Kin" curriculum was developed and designed to meet three objectives:

1. To better prepare middle level students who attend the CHCI school-group Chimposiums.
2. To educate middle level students about chimpanzees and the issues surrounding chimpanzees who are free-living and those who live in captivity.
3. To educate middle level students on the issue of animal experimentation (vivisection), and to help students become more aware of alternatives to vivisection.

After the initial development of the "Next of Kin" curriculum it was piloted by a group of classroom teachers. The teachers feedback provided the developer with information on how the curriculum worked and was received in the classroom. (See Appendix D)

Conclusions

Through the development and piloting of the "Next of Kin" curriculum the following conclusions were reached:

- The curriculum could be utilized as a supplement to other units or randomly when appropriate.
- Certain sections of the curriculum could be used in science classes that focus on scientific ethics.

- The lessons were grade level appropriate.
- Teachers reported high student engagement and interest in individual lessons.
- Additional Rubrics need to be developed for some of the lessons.
- Time constraints as a result of state standard requirements made it difficult for teachers to complete the full curriculum.
- The "Next of Kin" curriculum could be considered a "null" (Eisner, 1985) curriculum. One that does not already exist, yet could help to enlighten students on issues that are relevant to their world.

Recommendations

To assist teachers and students to derive the most from the "Next of Kin" curriculum, the following recommendations are made:

- In order to fully understand the issues enumerated in the curriculum, it should be used in its entirety.
- The curriculum could be used with the support of other curricula focusing on similar issues but with different points of view.
- The development of a CD-ROM to accompany the curriculum would be beneficial.
- A supplement be developed for the curriculum which would include written hand outs for students in Spanish.
- Teachers planning to use the curriculum attend the CWU summer workshop specifically designed to help teachers fully understand and be able to more effectively use the curriculum.
- The curriculum be further developed for additional grade levels.

- Teachers using the curriculum be encouraged to read the book "Next of Kin" by Roger Fouts and Stephen Tukel Mills to more fully understand the philosophy of the CHCI.
- Purchase of the curriculum may be made through the CHCI gift shop or website.

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APPENDIX

APPENDIX A

PROJECT TITLE: "Our Fellow Animals: An ethical science curriculum developed for K-12 education."

PROJECT DESCRIPTION
The development and implementation of phased K-12 curriculum for use in natural science courses. The curriculum will focus on:

*** Chimpanzees: A People made up of Persons.**
1 The chimpanzee life span developmental characteristics will be presented, e.g. length of pregnancy, length of nursing, dependency on mother, adolescence and adulthood. This will be present within the context of the chimpanzee community and its characteristics with regard to within and between community relations.
2 Genetic and blood similarities between chimpanzees and humans will be presented. The "150 mile line of grandmothers" can be used to help the students visualize the relations.
3 The chimpanzee cultural diversity will be presented with regard to tool use, hunting, food preferences, and gestural and vocal dialect differences. This will be use to define chimpanzee as "people".
4 Individual chimpanzees will be described with regard to their individual personalities. For example Freud mourning himself to death over his mother's death. Other examples of positive as well as negative behaviors will be given.

*** Project Washoe: Implications for science, ethics and human responsibility.**
1. A history of Project Washoe, how and why she was raised like a human.
2. The finding with regard to cognitive abilities and compassion. For example the story the birth, death and adoption she experience.
3. Loulis and the cultural transmission.
4. The research findings in such areas as conversation repair and private signing.
5. The difference between good research and bad research from an empirical stand point.
6. The difference between ethical research and unethical research.
7. The difference between rational and irrational research.

* Biological Kinship of primates and all animals. Going back to our connection of genes and behavior with the chimpanzees we will extend this to other animals and discuss the traits we share with emotions and social live. For example, the love of a mother for her child. Altruism in our species and other species. Finally, how we all are connected, how the "common grandmother" example can be extended beyond the classroom and beyond chimpanzees to all our fellow animals.
* Our Fellow Animals as part of the ecological system that all animals share, including humans. The goal of living in peace with the planet.
* Hope for the Future with regard to the efforts of giving legal status to the great apes and the implications of these future laws. What each one of us can do to improve life on this planet for ourselves and our fellow animals.

CURRICULUM CHARACTERISTICS

The computer-based curriculum will allow for group as well as individualized learning in an interactive learning format. The curriculum can be used as part of the educational outreach of the Chimpanzee and Human Communication Institute or as a stand-alone curriculum. The curriculum will be a rich media-based package, with extensive audio, video, and animation components. The curriculum delivery platforms will include CD-ROM and/or web or Intranet. This method of delivering instruction will employ a high level of interactivity to keep students engaged, use multiple instruction methods to improve results, and provide ongoing assessment and feedback to reinforce learning. Inherent in the curriculum design is an appeal to different learning styles and an open format that allows for individual exploration.

WHO BENEFITS FROM THIS PROJECT

K-12 School children, both in and out of Washington State. Washington State students receive the added benefit of on-site visitation to CHCI. Out of state students will participate via a media rich curriculum using video and audio of the CHCI facility. On site visitation and video workshops, by the curriculum coordinator and/or a trained facilitator will give the out of state students a point of contact with Washoe and this family of Chimpanzees. Scholarships for out of state student participation in CHCI's apprentice program and the Earthwatch program will offer first hand experience with these chimpanzees and CHCI's approach to humane education and research.\CHCI will benefit by enhancing the educational outreach programs that serve as a funding source the supports CHCI's research and educational programs.

THE SCOPE OF THE PROJECT

The world famous research of Project Washoe and the Chimpanzee and Human Communication Institute reflects a groundbreaking perspective of looking at non-human animals. This curriculum will attach a face and an intellect to the animal models used in scientific research and hopefully give students a realistic view of the use of animals in science and research. By placing Washoe and the other chimpanzees at the Institute at the heart of the curriculum we expect a student will at the very least be able evaluate the human effect on the environment and look at scientific research methods from a more humane and ethical viewpoint.

DEVELOPMENT AND IMPLMENTATION

The curriculum will take approximately one year to develop. We will use cutting edge computer technology and programming to develop a program that will be delivered over the Internet or via a CD ROM platforms, using media rich audio, video and animation techniques. The curriculum will be developed in age specific formats for different age groups. The program as offered to Washington State students will include a visit to the Chimpanzee and Human Communication Institute in Ellensburg, Washington. Out of State implementation may include an on-site visit.

In year two the implementation of the program will be by presentation to public school curriculum administrators and corporate sponsors for distribution in public schools as part of a comprehensive science curriculum. Attention to specific learning objectives, as

well as, the feedback and individual student evaluation in the package will make it an attractive unit for teachers to use in fulfilling state ELARS for all grade levels.

In a possible year three we plan to make changes based on the assessment information found in year two.

"Next of Kin": An ethical science curriculum development project, a collaboration between Friends of Washoe and The New England Anti-Vivisection Society

APPENDIX B

Attention Science Teachers!

The Chimpanzee and Human Communication Institute (with the help of a grant from the New England Anti-Vivisection Society) is in the process of developing a K-12 curriculum. This curriculum will focus on Free-Living Chimpanzees, Captive Chimpanzees, our five Chimpanzees at CHCI, as well as a component on the vivisection of animals. The first installment of the curriculum will be focused on middle level students, with plans of expanding the curriculum to Elementary and Secondary students as well.

We are interested in finding teachers to Pilot the curriculum during Fall/Winter of 2000/2001. If this is something in which you would like to participate, please call our Educational Specialist at or email her at [redacted]@cwu.edu.

0Even though we hope this curriculum will be applicable nation-wide it is also our hope that it will help prepare those students in Washington state who attend school-group Chimposiums. Because of this, we would like a Chimposium to be part of your pilot program.

If you would like to take a look at two sample lessons, please check out the "teacher info." link of our web site: www.cwu.edu/~cwuchci and download the two sample lessons found there.

When the curriculum is published we will also be including an interactive cd-rom that will enhance the paper curriculum with information, activities and quizzes.

The final product of this first installment will be ready to order by Spring of 2001. It is our hope that this curriculum will not only help prepare those classes who plan on attending Chimposiums, but to also help raise awareness of the plight of all animals and our closest living relative.

We will be limiting the amount of schools piloting the curriculum to **TEN**, so be sure to respond ASAP. If we haven't heard from you by **Friday, September 29** we will know you are not interested.

We look forward to working with you!

Sincerely,

Rachel Fouts-Carrico
CHCI Educational Specialist

Please note: Contact info was redacted due to privacy concerns.

CURRICULUM EVALUATION

Name(s) _____School _____
Subject(s)_____ Grade level_____

Thank you for taking the time to pilot our curriculum Next of Kin. Your insights and comments will be most helpful as we work toward the publication of the curriculum. Please take the time to fill this out. (Feel free to make editing marks in the curriculum for us to correct for the final printing. If there will be more than one teacher editing the curriculum, please identify yourself with initials.)

Please return the curriculum and this evaluation form to us **no later** than the first week of April, 2001.

(Please circle the appropriate response.)
The curriculum was used:

In its entirety (time allowing)
Randomly, when applicable
As a supplement to a unit

Please evaluate the lessons you used:	great				poor
Making Distinctions					
Clarity of lesson plan	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Student handouts/worksheets	**5**	**4**	**3**	**2**	**1**
Overall	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

The Order of Things					
Clarity of lesson plan	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Student handouts/worksheets	**5**	**4**	**3**	**2**	**1**
Overall	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

Chimp or Human?					
Clarity of lesson plan	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Student handouts/worksheets	**5**	**4**	**3**	**2**	**1**
Overall	**5**	**4**	**3**	**2**	**1**

Comments _____

Our Friends in Africa

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

It's Mime Time

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

Chimpanzees In Danger

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

How They Live

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

A Life Inside?

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

Diary Of A Chimp

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

Are They Chimp Friendly?

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

To Zoo, Or Not To Zoo?

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

Tell Me More

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

A New Home

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Building A Foundation

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

It's All Greek To Me!

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Get To Know Me!

Clarity of lesson plan	1	2	3	4	5
Grade level appropriateness	1	2	3	4	5
Student handouts/worksheets	1	2	3	4	5
Overall	1	2	3	4	5

Comments _____

_____

_____

Chimpanzee Dominoes

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Home Is Where The Stuff Is

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Frog Leap

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Fact Or Myth?

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Check Out The Options!

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Learn From Our Fellow Animals

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

What's Too Hot To Handle?

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

The Slippery Slope

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Research Flip-flopped

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Humane Careers

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Talking The Talk, Walking The Walk

Clarity of lesson plan	5	4	3	2	1
Grade level appropriateness	5	4	3	2	1
Student handouts/worksheets	5	4	3	2	1
Overall	5	4	3	2	1

Comments _____

_____

_____

Thespians With A Message

Clarity of lesson plan	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Student handouts/worksheets	**5**	**4**	**3**	**2**	**1**
Overall	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

Making Compassion The Fashion

Clarity of lesson plan	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Student handouts/worksheets	**5**	**4**	**3**	**2**	**1**
Overall	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

ASSESSMENT

If you used the assessments for the units, please take the time to evaluate.

	great				poor
Free-Living Chimpanzees					
Clarity of questions	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Use of higher level thinking	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

Captive Chimpanzees

Clarity of questions	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Use of higher level thinking	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

CHCI

Clarity of questions	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Use of higher level thinking	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

***Animal Experimentation**

Clarity of questions	**5**	**4**	**3**	**2**	**1**
Grade level appropriateness	**5**	**4**	**3**	**2**	**1**
Use of higher level thinking	**5**	**4**	**3**	**2**	**1**

Comments _____

_____

_____

***This is still in process, if you are interested in using this evaluation, please email Rachel and she will send you a copy as it comes available, foutsCaR@cwu.edu.**

Please take a moment to share with us some of the strengths and weaknesses you found with the curriculum.

Strengths _____

_____

_____

_____

Weaknesses _____

_____

_____

_____

Thank you again for your insights and involvement with the development of our Next of Kin curriculum. Please be sure to have the curriculum and this evaluation returned to us **no later** than the first week of April, 2001.

APPENDIX D

Lesson Title	Clarity of lesson plan	Grade level appropriate	Student Handouts/worksheets	Overall	(Scoring 5=great ... 1=poor) Comments
Making Distinctions	5.0	4.5	4.5	4.5	Great Introduction
The Order of Things	4.8	4.3	4.3	4.5	Very appropriate & timely; frustrating if done w/o prior knowledge
Chimp or Human?	4.7	4.8		4.8	Fun! Instead of cards, scrambled terms on overhead.
Our Friends in Africa	4.6	4.5	5.0	4.8	Good starter info., I liked the grading rubric – made my job easier, easy to integrate into curriculum
It's Mime Time	4.8	5.0	5.0	5.0	Great Fun! Extended w/ dramatic guessing game, could have vocabulary simplified on handouts.
Chimpanzees in Danger	5.0	4.6	4.6	4.8	Easy to integrate into curriculum, maps and dots hard to decipher on map
How They Live	4.5	4.6	5.0	5.0	Looks very good
A Life Inside?	5.0	4.8	4.6	5.0	Book excerpts clear, concise and very moving, good alternate – oral reading using jigsaw technique
Diary of a Chimp	5.0	5.0	4.3	4.6	Super!
Are They Chimp Friendly?	5.0	5.0		4.0	Use sq. cm graph paper for blueprints, adds math/scale dimensions
To Zoo, Or Not To Zoo?	4.0	5.0	4.0	4.0	T charts & Venn diagrams are good graphic organizers, journal entries very WASL appropriate, easy to integrate into curriculum
Tell Me More	4.3	4.0	4.0	3.8	Acted out in pairs and each group do a question in front of class, adding world map to identify sanctuaries could help
A New Home	4.0	4.5		4.5	Put class into teams of 3, each w/ a different topic, share info. after research
Building A Foundation	4.0	4.5	5.0	4.0	I liked the extensions, good lesson

It's All Greek To Me!	5.0	5.0	5.0	5.0	Make 4x6 cards w/o terms and have kids problem solve first. Loved this, motivating for students
Get To Know Me!	5.0	4.3	5.0	5.0	Wonderfu – gr. 4-9, Beautiful section. Suggest more on this, more on personalizing the chimps. Great unit.
Chimpanzee Dominoes	5.0	5.0	3.6	5.0	Good idea hampered by poor photos, my favorite unit!
Home is Where The Stuff Is	4.5	4.8	5.0	4.8	One of the best, also easily adapted to a game format, my students created new scenarios too, we had fun!
Frog Leap	4.5	5.0	4.0	4.5	Spent much time on this more as discussion
Fact Or Myth?	4.3	4..3	5.0	4.3	Very provocative for discussion, we had parental input on this one – some scientists, physicians too!
Check Out The Options!	4.5	4.0	3.5	4.0	I used the fact sheet w/ kids but didn't have time for worksheet – with more time I'd ask students to compile a list of examples. We had fun with this, using as bingo/tic tac toe was a nice variety.
Learn From Our Fellow Animals	4.5	5.0	5.0	4.5	
What's Too Hot To Handle?	4.5	5.0	4.5	5.0	Have done similar things to this in past, good for critical thinking.
The Slippery Slope	4.0	4.0		4.0	Ethics is a major theme running throughout our grade 7-8 science curriculum, hard to discuss in schools, much pressure due to sensitive nature of topic...
Research Flip-flopped	4.5	4.0	4.5	4.5	Could be power point presentations
Humane Careers	4.5	4.5	5.0	4.5	Used in our career class, We used the careers our students had already chosen for the qtr. Students are eager to explore how they can help animals.
Talking The Talk...	5.0	5.0	5.0	5.0	This was fantastic, very goal oriented. Should be expanded.
Thespians With A Message	5.0	4.5	5.0	5.0	Another favorite, love the numbers not names angle! Fits in well with social studies.
Making Compassion...	4.0	4.0	5.0	4.0	This would probably be too pro-animal rights for a teacher to do. Hard to provide in school.

Curriculum Strengths:

"Very informative, enough background for teachers with a little previous background on the issues to use effectively. Very thorough treatment of issues interesting/motivating for students. Insightful, inspirational, well-thought out."

"You put together some terrific activities. "

"Very easy to use & interesting. Teacher friendly. The kids loved it."

Curriculum Weakness:

"Some grammatical errors, poor clarity of photos."

"Hard to integrate into existing curriculum in school. Issues are touchy in a school. Also, hard to fit into everyday curriculum, not enough time to do as much as I would like because of state standards/curriculum."

"The curriculum is (understandably) slanted toward the "animal" rights perspective. I think most kids this age are capable of hearing both sides of the issue and making their own conclusions."