

AWARENESS AND USAGE OF THE TULSA ZOO OUTREACH
PROGRAM BY FIRST AND SECOND GRADE PUBLIC SCHOOL
TEACHERS

By

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CHAPTER I

INTRODUCTION

Education is composed of a mosaic of our experiences. Our educational experiences may originate from curriculum presented in a formal classroom or free-choice education where the learner initiates the learning (Falk, 2010). Whether through traditional learning such as a school or free-choice learning such as a zoo or museum, the experience stays with us and helps develop our cultural capital, literacy and citizenship. The school has been thought of as the front line of education, but what about all the learning that takes place outside the school setting? Community and family have equal responsibility in creating educational experiences for our youth. Experiences from free-choice education can take form as an inquisitive mind actively seeking out information on the internet, or as a fourth grade child participating in an outreach program created and taught at a zoo. Whether self-directed or scheduled programs at a zoo, free-choice education is a way the community can actively participate in the education of young citizens creating learning experiences to encourage lifelong learning.

Free-Choice Education: Learning for Life

The word outreach means to extend services and/or benefits (Outreach, 2010); educational outreach extends information and services such as teaching materials and

expertise in areas not normally available to the formal education sector. By extending services through outreach programs, both parties benefit in the partnership. The group offering the service is able to further their mission through education and the group receiving the outreach gains additional services not readily available. The Tulsa Zoo, in Tulsa, Oklahoma, has for over 30 years, provided schools across the northeastern region of Oklahoma with an outreach program including ex-situ programs, teacher loan trunks, teacher professional development and in-situ tours and programs led by zoo staff and docent volunteers. These programs include curriculum created by the zoo, activities and materials related to science and nature with biofacts and live animals that can visit the classroom.

Through the years, verbal support for the program has been adequate, but standards and expectations in free-choice education are changing as the school system itself has transformed. Additionally, much discussion is being directed towards the importance of moving students to be scientifically literate scholars. For this purpose, powerful learning environments, such as those created by free-choice education institutions are becoming more and more valuable in formal education. With the rise of mass information through the internet, multimedia and technology; graduates not only have to have a specific knowledge base but also be able to apply this knowledge to solve complex problems in efficient ways (Dochy, Segers, Van den Bossche & Gijbels, 2003). Science instruction is one way to encourage students to think critically and master skills to solve complex problems. The skills gained in solving scientific problems in early elementary can encourage critical thinking and problem-based learning for later in life.

Traditional, formal science education, as indicated in current research, is restricted in the amount and quality of science education it can provide. According to Faulk and Dierking (2010), there are many factors that contribute to teachers not spending more than an average of 60 minutes or less per week teaching science. Possible reasons for the lack of science instruction may be contributed to teachers not understanding the importance and relevance of science instruction, limited content knowledge and experience in conducting scientific investigations or limited pedagogy in science (Dochy, Segers, Van den Bossche & Gijbels, 2003). The lack of resources, administrative support and financial support also play a large role, according to research, in the amount of time devoted to science learning.

Since there are no set educational standards in free-choice education, it is important to track the impact of these programs on children, especially in early elementary, specifically, to make sure they create programs that are authentic and aligned with goals embedded as part of the program activities (Wulf, Mayhew & Finkelstein, 2010). One such program, the Tulsa Zoo outreach program, must constantly adapt and reassess the impact of the program to ensure it is meeting the needs and demands of patrons, the schools. With the necessity of teaching science education falling to the wayside to make room for reading and mathematics curriculum, outreach programs play an ever increasing role in the source of scientific learning for students and adults.

Research involving the role of zoos and museums in increasing science education is on the rise. Free-choice educational research foundations have even been established in assisting museums and zoos to evaluate their programs, but a vast majority of this research takes place within the comforts of the institution (Institute for Learning

Innovation, 2012). So, what happens outside the perimeter fence? According to Falk and Dierking (2010), “Insufficient data exist to conclusively demonstrate that free-choice science learning experiences currently contribute more to public understanding of science than in-school experiences, but a growing body of evidence points in this direction” (p. 493). More and more schools are facing financial constraints not allowing them to take trips to a zoo or museum so the demand for outreach away from the zoo or museum and inside the school settings is on the rise. As Lederman and Niess (1998) discuss, “It is time for educational programs at free-choice settings to customize their offerings to the needs of particular teachers and school groups” (p. 3). With this trend, it is essential to be sure free-choice educational institutions are putting forth their best efforts in creating and implementing successful and academically rigorous programs.

Developmentally, first and second grade standards in science are aimed at teaching students skills that help them to observe their environment, classify organisms and interpret observations (Oklahoma State Department of Education, 2002). These standards fit hand-in-hand with the goals of the Tulsa Zoo outreach program. This program aims at increasing student awareness of nature. First and second grade teachers were chosen for this study because the state’s first and second grade curriculum objectives are similar to the Tulsa Zoo educational content of observing, classifying and interpreting findings. Rational for choosing first and grade teachers as participants in this qualitative descriptive study on the awareness and usage of the Tulsa Zoo outreach program was primarily based on the developmental stage the students and mission and most age-appropriate programs the zoo offers.

Yearly, The Tulsa Zoo outreach program reaches an average of 2,500 first and second grade students from three districts that were invited to participate in this study: Jenks Public School (JPS), Broken Arrow Public School (BAPS) and Berryhill Public School (BPS), as indicated from 2012 Tulsa Zoo outreach program request records. These school districts represent three different socioeconomic groups including a rapidly growing district, small community district and one with an increasing immigrant population in their district. JPS and BAPS are both larger suburban school districts around Tulsa. Berryhill is a much smaller district with a total student body of 1,200. All of these districts have high API scores yet face a growing percentage of demographic diversity (API and Accountability Report Cards, 2011) Jenks Public Schools and Broken Arrow Public Schools have at least one school designated as a Title I School. These schools are identified on the 2011 Needs Improvement List in which the majority of students at the school receive free or reduced lunches (Districts in Need of Improvement, 2011). These schools are at risk of losing funding to provide quality science education. For this reason, it is becoming increasingly important to provide research validating the role of free-choice education in traditional public schools.

Purpose of the Study

The purpose of this study is to ascertain the awareness and usage of the Tulsa Zoo outreach program by first and second grade Oklahoma public school teachers. Teacher surveys, teacher interviews and assessment of the Tulsa Zoo outreach program requests were combined to determine the awareness and usage of the Tulsa Zoo outreach program by first and second grade teachers in Jenks Public School, Broken Arrow Public School and Berryhill Public School around the Tulsa, Oklahoma metropolitan area. Since little

is known about what and how people learn when exposed to free-choice education (Wilson, 2005), the need and purpose for further research in this field is becoming progressively evident. Upon completion of this study, the impact of this outreach program was used to create a framework for a new outreach program offered by the Tulsa Zoo. Furthermore, if connections can be made between materials and programs offered by free-choice institutions, such as the Tulsa Zoo, and the needs of teachers in public school systems, teachers and administrators will have more incentive to utilize these programs. Historically, free-choice education has been seen as a detriment to education because it takes time away from traditional content learning. When compared to more traditional methods of learning, activity-based learning, such as that used in free-choice education, showed no loss of content understanding, and often higher achievement scores (Bredderman, 1983).

Statement of Problem

Benefits of including free-choice educational experiences in formal education are well established. The question is now how do we include these experiences to be most advantageous to teachers, students and their community? This study will ascertain the awareness and usage of first and second grade teachers in Jenks Public School, Broken Arrow Public Schools and Berryhill Public School of the Tulsa Zoo outreach program.

Teachers teaching first and second grade must find engaging educational experiences for their student's budding minds where they can "begin to form relationships between concrete and abstract ideas" (R. Howard, personal communication, March 22, 2012). The Tulsa Zoo outreach program aims at increasing knowledge of the natural world through observation and critical thinking. This study concentrated on first

and second grade teachers in an effort to evaluate a pool of educators providing content that is most comparable to content being created by the Tulsa Zoo. Comments from teachers in the form of a survey, teacher interviews and data from the Tulsa Zoo outreach program database were used to create a picture of how the program has been utilized in the past to help plan for future outreach programs.

Research Questions. How do first and second grade teachers in Jenks Public Schools (JPS), Broken Arrow Public Schools (BAPS) and Berryhill Public Schools (BAPS) use the largest regional free-choice education outreach program provided by the Tulsa Zoo?

1. To what extent, if any, are JPS, BAPS and BPS first and second grade teachers aware of outreach programs offered by the Tulsa Zoo?
2. What attributes, if any, do JPS, BAPS and BPS first and second grade teachers believe to be an integral part of the Tulsa Zoo outreach program?
3. To what extent, if any, are the Tulsa Zoo outreach programs being used by JPS, BAPS and BPS first and second grade teachers?

By answering the questions posed in this study, the Tulsa Zoo created a new outreach program based on teacher comments received through the survey and interviews. This outreach program developed through merging with another educational facility in the zoo and creating a zoo-wide educational focus for students. The first and second grade outreach focus, resources and framework came as a direct result of the input received as a result of this study.

Significance of Study

The American Association for the Advancement of Science has stated that science literacy is an enduring objective noted in recent science education reform and holds the key to the understanding and habits of mind that enable people to make “sense of how the natural and designed worlds work, to think critically and independently and weigh alternative explanations of events” (Bodzin & Beerer, 2003, p, 39). The National Science Teachers Association (NSTA) (Anderson, A., Druger, M., James, C., Katz, P., et al., 1998) has published a formal statement of support for inquiry-based science instruction similar to what is being created by free-choice education institutions. By teaching science through inquiry-based practices, students will be able to become involved in learning science by building on their conceptual framework and integrating different content fields such as math and communication skills.

Another position statement from NSTA (1999) promoted partnerships between schools and free-choice institutions. The position states that research shows free-choice education institution content “complements, supplements, deepens and enhances classroom experiences” (Informal Science Education, 1999, p. 30). Furthermore, from the point of view of a free-choice educational institution, more research on the impact of free-choice science programs will help to reform inefficient outreach programs through a better understanding the needs of schools, allowing free-choice education institutions to create better outreach programs, exhibits, teaching materials and resources for students and educators (Donald, 1991).

Upon completion of this study, the results from the surveys, interviews and program analysis were used in creating a new outreach program for the Tulsa Zoo. The

focus of programs, such as whether they focused on habitats, conservation or different animal groups, were a result of the program analysis and responses from the survey and interviews. Resources available to teachers were also a direct result of this study. After talking to teachers about their preferences and how they used teaching resources from the zoo, books, biofacts, and technology used in the new outreach program were carefully chosen to reflect those responses.

Definition of Terms

Cultural Capital - non-financial assets that involve educational, social, and intellectual knowledge provided to children who grow up in non-wealthy but highly-educated and intellectually-sophisticated families.

Docents – volunteer teachers in free-choice educational institutions, these people often receive rigorous training in creating and presenting free-choice education outreach programs

Ex-situ Outreach – outreach education programs taking place away from the free-choice education institution site.

Free-choice education – programs and experiences developed outside the classroom by various institutions and organizations (Falk, 2010).

Highly Qualified Teacher – a teacher who is fully certified and/or licensed by the state, holds at least a bachelor's degree from a four-year university and demonstrates competence in each core academic subject area in which the teacher teaches.

Inquiry-based learning – An instructional strategy that challenges students to develop curriculum. After being presented with content and background information,

students are expected to design and carry out experiments and observations pertaining to the content presented.

In-situ Outreach - outreach education programs taking place within the free-choice education institution site.

Mindfulness – actively processing information within one’s surrounding context, and is more likely to become manifest when a setting or situation is varied, interactive and involving (Frauman, 2010).

Mindful Settings – creating environments that capitalize on the human tendency to be mindful by “telling a story that makes sense,” the participants becomes fully involved in the environment and in the process of choosing what to do and how to do it and attempt to figure out what resources are available to accomplish this goal. In a free-choice setting, this refers to creating an exhibit that provokes thought and connects the person to the environment causing them to be mindful and more likely to act responsibly and become more environmentally conscious.

Outreach - The act of communication of the organization’s mission and goals to a wide variety of audiences including news media, educators, students, the general public, scientists, legislators and others. This can be done in a school setting (ex-situ/offsite/school-based) or at the free-choice education groups providing the program (in-situ/onsite).

Pedagogy – The art or science of teaching

Teacher-guided learning – An instructional technique used in traditional schooling where the teacher leads discussion or lecture in content relating to a textbook.

Thematic Interpretation – A technique used to increase knowledge gain from interpretive programs with educational goals and objectives.

Title I School – Schools serving students of whom at least 40% qualifies for free or reduced lunches.

CHAPTER II

LITERATURE REVIEW

We learn from our experiences. These experiences may be carefully planned out or spontaneous in nature, but none-the-less we learn and remember them. Each year, nearly 600,000 people enter the gates of the Tulsa Zoo. It is the hope and mission of the zoo that every person who enters the gates of the Tulsa Zoo, 2004's *America's Favorite Zoo* (Tulsa Zoo Crowned King, 2004), leave the gates with a greater understanding of the natural world and how each can become better stewards of conservation.

Education that takes place in a setting like a zoo is called free-choice education. It is the choice of the patron to take part in the educational experiences and the zoo has free-range of the educational messages they deliver as they are not bound by state or national educational standards. This creates a plethora of ways to introduce people to science. Imagine a young child touching a bear fur for the first time, seeing a snake up close, or a future biologist interacting with a chimpanzee through the exhibit glass, and it's easy to see how the impact these experiences leave behind frame the role of free-choice education.

Setting the Stage: Free-choice and Formal Education

With the changing dynamic of our educational system, now is the time to seek out new learning opportunities and models. Free-choice education is one such opportunity and model to explore and incorporate into formal education settings. The cultural capital and intellectual stimulation that come from such a partnership is not without its limits. Yet, combining free-choice education and formal education has been shown through recent research to be something worth embracing and conducting further study.

Free-choice education opens minds through experiences encouraging adults to be more educationally literate and better members of society. A forty-five year old adult with a general 4-year Bachelor's degree has spent, on average, 3,060 of their 16,200 days or approximately 19% of their life in a formal school setting. The day to day experiences in a person's community shape a large portion of their education. The places one visits, experiences one participates in and people one interacts with make up a large portion of a person's education. Even after they have reached adulthood, work experiences and experiences with family frame continued education. School really plays a limited part in the entire educational experience.

Within the relatively short time during one's life spent in schools; Falk and Dierking (2011) argue by looking at past research on the matter that within this short span of formal education, "much of what is learned in school actually relates more to learning for school, as opposed to learning for life" (p. 489). Alternatively, free-choice education, learning that occurs outside of a classroom setting, where the learning is voluntary based on the needs and interests of the learner, provides a lasting impact on the learner, increasing knowledge retention and encouraging further learning (Engelhart,

1930; Falk, 2001, 2010; Kola-Olusanya, 2005; Melber & Abraham, 1999). Both free-choice and formal education, independently, provide quality, essential educational opportunities in different ways as well as they both have their limitations.

Historically, activities undertaken by free-choice institutions were thought to be spontaneous “with no conscious recognition of an educative purpose on the part of the individual or others influencing him” (Englehart, 1930, p. 174). Today, free-choice institutions such as museums, zoos, aquariums, nature centers, etc. have blurred the line between the traditional, formal education schools provide and free-choice educational experiences they have been known to provide. Recently, many institutions of free-education write curricula based on national or state standards and conduct visitor studies to better understand the scope of information people are learning as they spend time in their facilities (Falk, Reinhard, Vernon, Bronnenkant, Heimlich & Deans, 2007) but few have yet to realize the untapped potential of close partnership and study of the impact free-choice education has on the school system.

Many institutions of free-choice education recognize the importance of creating outreach programs where content and curricula developed by the institution are taken to the school or presented to students as they visit their facility. Many schools and free-choice institutions would agree it is “a shared goal of [free-choice] science institutions and the more formal classroom environment to create a scientifically literate public who is better informed to make important decisions about our world” (Melber & Abraham, 1999, p. 3). In the zoo setting, this task is easily accomplished by visitors entering a carefully constructed experience providing the patron with a storyline involving exhibitory, animals, signage, sounds and presentations.

One such experience can be found at the Tulsa Zoo Tropical American Rainforest Building. The entire building is constructed as an immersive exhibit where from the time you enter the doors you are transported to the rainforest. As you take your first steps you enter the water of the flooded forest. While you continue walking, you hear the calls of the plush-crested jays, marmosets and tamarins, and loud boom of the howler monkeys. You feel the humidity on your skin and see the vibrant colors of the rainforest. Then, deep behind the dense vegetation, you see the ancient Mayan ruins with Jamaican fruit bats clinging on to the top of the sculptures. All these visuals tell the story of life in the rainforest. You cannot help but allow yourself to be transported to this far land where the environment and culture are so foreign to life in Tulsa, Oklahoma. By the end of the building, you visit banana, avocado, cacao (chocolate) and spice plants with a larger understanding of the foreign land, but our close connection to it, and the dependence we have on the rainforest.

Exhibits such as the rainforest building in the Tulsa Zoo are created by free-choice educators and constructed to provide visitors an experience that can be interpreted differently by the individuals participating. These mindful settings set the stage where the participants can relate differently to the story yet grasp the concept, creating a story with purpose, an invitation to provoke thought, and a “conclusion that invites reflection” (Vallance, 2004, p. 352). This reflection portion is a crucial part of the program or exhibit where the action is put into the hands of the visitor. Storyline education (Vallance, 2004) is a very useful model for creating in-situ free-choice educational experiences, but once you leave the grounds it becomes a lot harder to construct in a

school. The ability to control the environment is limited and it is not always reasonable or possible to take materials needed to create this experience.

Obligation to Scientific Literacy: The need for free-choice science education

In a time of standardized tests for elementary students and the possibility of teacher pay and school funds being dependent on test scores, it becomes harder and harder for teachers to provide an all-encompassing educational experience for students. So much of the content pertains to the specific skills being tested for that particular year; leaving other educational opportunities by the wayside. Science is one such subject that is often left on the curricular sidelines. In the state of Oklahoma, science is not tested until the fifth grade (API and Accountability Report Cards, 2011). As a personal observation when communicating with teachers, many state it has become increasingly difficult to find time to teach science due to testing pressures. Melber (2003) adds “...without outside enrichment activities, many students are not receiving science instruction at all. It’s frighteningly clear that science instruction is waning in our public schools as the emphasis on standardized testing in math and reading grows,” (p. 258). Test scores in Oklahoma, in general, reflect a lack of science knowledge. Early school subtests in science reflect poor scores for fifth grade, low scores in high school biology tests and especially low ACT science scores. According to the 2011 ACT scores, Oklahoma ranks thirty-six in the country (ACT, 2011).

As a result of years of poor science scores, politicians are starting to take a little notice and beginning to make statements on the importance of free-choice and formal science education. President Obama announced an initiative in 2009 to challenge scientists to find a way to connect and engage young people in science and engineering to

improve achievement in math and science (Encouraging Science Outreach, 2009). Even a recent report by the Organization for Economic Co-operation and Development on science education stated,

Top performing students in science get involved in science-related activities outside school, and although they report feeling well prepared for science-related careers, only around half say they are well informed about such careers.

Scientists are well placed to help in both areas. (Encouraging science outreach, 2009, p.665)

This type of partnership also acts as a benefit to the scientist to encourage continued learning in their discipline and the ability to articulate their research to peers and future scientists. These skills become increasingly valuable with the necessity of public outreach whether in-situ or ex-situ since mounting research on where people learn science is beginning to uncover a realization that people do not usually learn most of their science in school (Falk, 2010).

The role of free-choice education in providing the public with a basic scientific education is becoming more and more valuable. There begins to be an increase in knowledge retention of students whose family visits free-choice education institutions such as zoos and aquariums (Falk, 2010) and an increase in the need for *cultural capital* in a child's life (Lamont & Lareau, 2011). The more experiences children are exposed to the more diverse their educational stimulation will be leading to increased literacy in multiple disciplines including scientific literacy (Lamont & Lareau, 2011). Free-choice educational institutions play a vital role in this literacy development. Most zoos and

aquariums are readily accessible to large metropolitan areas making them prime partners in a formal/free-choice educational partnership.

The National Science Teachers Association, (NSTA), states many reasons to encourage free-choice/formal education partnerships:

- [Free-choice] science education complements, supplements, deepens, and enhances classroom science studies.
- [Free-choice] science education allows for different learning styles and multiple intelligences and offers supplementary alternatives to science study for nontraditional and second language learners.
- [Free-choice] science institutions give teachers and students direct access to scientists and other career role models in the sciences, as well as to opportunities for authentic science study, (Anderson, A., Druger, M., James, C., Katz, P., et al., 1998, p.30).

A recent example of these goals put into action is demonstrated by a program called Science Buddies created by a non-profit, free-choice software developer. This program provides a platform for scientists and engineers to communicate their research to students in which students create an original project based on the scientist's research (Hess, Corda & Lanese, 2011). However, matching students to scientists can be an arduous and not always a sustainable way to promote science education as resources for making such a partnership are limited. Also, sometimes these programs begin to fuse with formal education so they lose their individual characteristics of a free-choice education program.

It is important to keep these sectors separate. They each have benefits and limitations based on their abilities, resources and constraints. Formal education has the expectation set forth by standards aligned to the current goals of the educational process. Free-choice education is not bound by standards. The addition of standards on the part of the free-choice institution is one out of consideration for the ease of use by schools, not mandated by the institution. It is easy to see with the research leading to the effectiveness of free-choice education on science literacy that the curriculum used in free-choice educational institutions should be handed over to the schools. However, this may not be appropriate. Free-choice learning is at the mercy of the learner. The learner must initiate the learning process by being available to the experience which is challenging to create in a setting where the choice of the learner is not so flexible such as in a formal classroom.

The goal of the free-choice institution is to provide meaningful, tempting experiences to engage the learner. By adapting these programs to a formal education setting, much of the voluntary learning on behalf of the learner is taken away. The best part about free-choice learning is "...the learning that lies between play and academics. The inclusion of free-choice science learning experiences in the lives of children is essential because young children in particular learn through play" (Falk and Dierking, 2010, p, 492). Partnering the two models of learning can help to create a new framework for learning and capitalize on the best qualities of both sectors, especially for young children.

Children in their early elementary years, predominantly first and second grade, are particularly responsive to these experiences. Free-choice education has often times

geared their outreach programs towards young learners as they are the best match for their curriculum and goals. Early elementary developmentally appropriate curriculum embraces promoting observation and inquiry about the world. These two objectives play nicely in the free-choice education goals such as the Tulsa Zoo to promote awareness of nature and interest in the natural world.

Limitations of Free-choice and Formal Education

As with each sector's benefits, both free-choice and formal education have their limitations. For example, schools are bound by tests. Teachers are conditioned to teach in preparation for the test negating other content unless they can sneak it into the day. As a personal observation throughout the 2010-2011 school years, numerous teachers have commented to me and volunteer teachers leading outreach programs in their school that the time we enter the school to deliver a science based zoo program is the only time the students receive science. Often, these programs only last for thirty to forty-five minutes and we may only do three to six programs throughout the school year. The fact that it is considered acceptable that students are only receiving at most 180-270 minutes of science education out of their 64,800 minutes spent in the classroom for one school year is shocking.

On the other hand, time is a huge constraint for free-choice education. It is now a mandate to include education as a part of every zoo and aquarium that belongs to the Association of Zoos and Aquariums (AZA) a large network of free-choice institutions (How Does Accreditation Work, 2012). The overall view of education in relation to free-choice education includes the mission of zoos, aquariums, etc. is to promote conservation by promoting/teaching positive values and beliefs about nature. This begins with

understanding the natural world and natural processes. The hard part is to find the time to create and present ex-situ education programs to the vast array of classrooms waiting to receive them.

Outreach programs are only one component that makes up the education department within a free-choice institution. The Tulsa Zoo education department employs four full-time employees with about 120 Docent volunteers who have the opportunity to deliver outreach programs. Even with this number of people, many must spend time attending to on-grounds educational programs and exhibits, fee-based classes, and other duties such as husbandry and care of educational animals. This makes the time allowed to leave the zoo and enter a classroom to teach very limited. With additional financial constraints, this makes the ability of hiring additional staff exclusively devoted to presenting outreach programs small and still short in supply compared to the number of classrooms in the Tulsa Metropolitan area in need of science education.

Another limitation on free-choice education lies in the logistics of producing in-situ educational messages to the masses since the level and magnitude of the audience is not easily controlled making it impossible to create programs which are grade or subject specific as would be done in formal education. These in-situ programs also limit the audience. Most free-choice educational institutions charge an admission for visitors to enter the gates. This price can limit the socio-economic diversity exposed to the educational message. Most often, the patrons who can afford memberships benefit the most from the programs while the most at risk students do not have an equal opportunity to participate. These students are generally not able to participate in an array of activities

to increase their cultural capital (Lareau, 2010) such as free-choice educational programming.

This gives good reason for ex-situ outreach programs which can be more tailored to specific classes, ages and heterogeneous demographics and socioeconomic levels (Lederman and Niess, 1998). By blending both formal and free-choice education while keeping their individual identities in-tact, students can benefit from the array of knowledge brought by the teacher and scientist. Lederman and Niess (1998) also suggest, “It is time for educational programs at [free-choice] setting to customize their offerings to the needs of particular teachers and school groups,” (p.3). By showing the demographic and intellectual diversity that exists in free-choice learning environments, students can identify with different aspects of the free-choice learning environment creating a more authentic model of learning for the teacher, free-choice educator and student.

Integrating the Worlds of Formal and Free-choice Education

Individually both sectors have their limitations, but combined there is substantial potential to increase the intellectual benefit to scientists, teachers, students and communities. With the growing pressure of No Child Left Behind legislation, teachers constantly have to reflect on current practices and ways to reach more and more learning styles of students to meet standards set by the legislation. Free-choice education offers another tool in the teacher toolbox to meet these demands. The repertoire of instructional strategies created through free-choice learning and the range of learning environment possibilities for the diverse and heterogeneous populations of today’s students is practically endless when a community is created between free-choice

educational institutions and formal educational institutions (Hofstein & Rosenfield, 1996).

A community of multiple free-choice groups and schools working together creates strong educational partnership. Faulk, Randol and Dierking (2011) discuss one such community;

...there are sub-communities that are participating more fully [within the CoP], for example, the organizational cluster of Science Centers, Natural History Museums, Zoos and Aquariums and possibly Children's Museums. These four sub-communities currently strongly share mission and complementary subject matter focus, are a cohesive community of people who care about this domain and have many commonalities of practice shared between them, (p. 8).

These communities create a unified front to assist schools in education. The expertise of these groups can serve as an excellent source for formal educators to provide up-to-date information from reputable sources. They can also aid in identifying the misconceptions in science present in society and schools (Melber, 2000).

More specifically, Melber (2006) studied the history and possible future of free-choice science education. Through her research, she believes;

...the science learning community seems to be in agreement that science museums, zoos, planetariums, parks, and aquariums are indeed a rich resource to which all students should have access, the reality of providing this access continues to be a struggle. Certainly regular publications highlighting the importance of access to [free-choice] learning venues, further partnership

between schools and museums, and continued support from professional science education associations and researchers will go a long way to maintaining success (p. 4).

Some of this success has already been documented, in a study by Miller (2002); the researchers looked at multiple outreach programs across the United States. They found that there are some groups that are providing a sustainable impact on students and teachers in science education. For example the Missouri Botanical Gardens reaches over 108,000 children and 2,700 teachers every year and the Denver Zoo visits over 10,000 Denver students in their schools. Although many of these figures are limited in research as ex-situ outreach is a newer aspect of research, these initial findings do show there is a substantial difference being made in the education of these students. Students participating in these types of programs also generally show increased attention, heightened enthusiasm and more willingness to observe, question and discuss objects or phenomena exhibited around them more so than they do a traditional formal education setting (Abraham-Silver, 2006).

Another study conducted by Volk and Cheak (2003) in Hawaii quantitatively measured critical thinking and environmental literacy of middle school students before and after an intervention of an environmental education program. Students participating in the study were all taking an environmental education class but 50% of the students were taught using the environmental education curriculum developed by a free-choice educational institution. When comparing student attitudes towards the environment, more students exposed to the intervention, compared to those not exposed, considered themselves knowledgeable about the environment, believed they can make a difference in

the environment and had taken action in an environmental cause since the conclusion of the study. This study also showed a connection between free-choice curriculum and the students whereas this connection was not as strong for the students who attended their normal environmental education class using traditional formal science education curriculum.

This is not to say one curriculum is better or worse than the other as all students learn differently and have different intellectual needs that cannot all be met by any one curriculum model. The two previous studies do show a value in including free-choice education curriculum and outreach in formal education because it does bring a new model to light. When the pressure for testing is stripped away and the ability to just allow students to learn, amazing things can happen.

Often, free-choice education uses a model of storytelling creating a mindful setting that tells a story in order to relate to students (Frauman, 2010). These *mindful* stories meant to provoke thought in the visitor, create opportunities for students to connect with a cause or to science in a way that will stay with them for a longer amount of time. This mindful experience fosters a relationship urging them to make better decisions and to think more critically about future problems whether a problem on a standardized test or a political/environmental problem.

To construct a model, many free-choice educational institutions such as zoos and aquariums take careful steps when planning and teaching their curriculum. Many presenters are nationally Certified Interpretive Guides by the National Association of Interpreters where they teach many techniques about how to teach people and create

effective programs. These presenters are also highly qualified as a bachelor's degree in education or a related field is now a requirement of free-choice educators in zoos and aquariums. Many free-choice educators are also pursuing higher degrees in education or hold teaching certifications in their state of employment.

By aligning the sectors of highly qualified formal and free-choice educators, the educational system as a whole has a better chance of improving scientific literacy. Alone, achieving this goal is very difficult and thus far, has not been achieved. As Falk (2001) states in his book, "By combining efforts of the formal and free-choice education sectors, we can recognize the scale of the problem and, in that sense alone, we can view it as a constructive alliance" (p.45).

Current Focus in Free-Choice Educational Research

Currently, a majority of research regarding free-choice education focuses on in-situ or what happens after students have entered the gates. Even within the free-choice science education community, there is little ongoing research about the impact of outreach programs. These programs are being presented to peers with little research to show the current models of outreach are the most successful and needed by schools. At the recent 2011 Association of Zoos and Aquariums National Conference (2011), there were multiple sessions sharing the benefits of hosting university classes on grounds, using zoos and aquariums as sites for formal classrooms being taught by formal education teachers but little discussion on research pertaining to outreach programs taught by zoo or aquarium staff or volunteers as used by most of these facilities.

With the current financial constraints, it becomes increasingly harder to find opportunities for in-situ education whereas the students receive programming at the free-choice education site. Many teachers are not allowed to take field trips before testing causing a rush for field trips and onsite outreach just after testing concludes. The masses in the zoo make it very difficult to provide thorough educational experiences for the students and the cost of busses and sometimes lunches make it very difficult to even make the trip; thus, creating a need to assess outreach programs used in schools.

Research Summary

As a majority of free-choice educational research is focused on visitor experience; research in the form of evaluating outreach programs used by free-choice educational facilities such as the Tulsa Zoo in traditional classrooms is in need. Research has shown value in science education and value in creating innovative learning experiences through outreach, problem-based learning and inquiry-based learning; particularly in the early elementary years. The curriculum taught in these grades concentrate on many of the same objectives that free-choice educational facilities concentrate on such as observation and interpretation. These grades also must engage students in learning environments that are able to cater to their unique learning styles. Programs offered by free-choice educational facilities are an ideal match to the learning styles and innovative learning needed in these early elementary years. Therefore, proper evaluation of the use and effectiveness of outreach programs would be essential to provide school districts with reason to incorporate free-choice outreach programs into their curriculum and offer to their students and teachers.

The first step in evaluating the effectiveness of an outreach program is to find how aware schools in the area are of the program and how it is being used. Different zoos and museums do informal evaluations of their programs, but there is little peer-reviewed documentation of these evaluations. Each institution is left to create their own evaluation instruments when there is a definite possibility there would be value to sharing evaluation instruments to find a more efficient way to assess free-choice outreach programs being used in schools. Sharing evaluation techniques and instruments used for evaluation would be a benefit for school districts and free-choice institutions. This would allow for more open conversation about how to use free-choice education in traditional educational settings and the benefits and limitations on the programs.

CHAPTER III

METHODOLOGY

This study investigated the awareness and usage of the Tulsa Zoo outreach program in Tulsa, Oklahoma. This chapter describes the methodology of this study. The target populations including demographics, sampling methods, survey instruments, open-ended question and interview analysis and database analysis are also described in full detail.

Researcher

As the primary researcher for this project I am a graduate student at Oklahoma State University in the School of Teaching, Curriculum and Leadership. I also work, and have worked for the last seven years, as the Formal Education Supervisor at the Tulsa Zoo. My experience with teachers and students spans across northeast Oklahoma, northwest Arkansas, Missouri and southeastern Kansas. I have provided professional development to over 400 teachers, taught programs for over 5000 students in fifteen different districts. I am trained and certified as an Interpretive Guide from the National Association of Interpretation, and certified in Project WET, Project WILD and Project Learning Tree.

For the last four years, I have coordinated a summer teacher institute program called SENSEsational Science for pre-kindergarten through fifth grade teachers. My role with this program entails the coordination and mentoring of other free-choice institutions in Tulsa and Lawton, Oklahoma to create teacher resource materials and programs to be used and by the teachers during the school year. My background in free-choice education and my Master's degree in Teaching, Learning and Leadership will aid in my interest and ability in evaluating free-choice education to make it beneficial to both the formal and free-choice educational sectors.

Research Design

This study was a qualitative descriptive study (Creswell, 2012) informed by three data sources; a teacher survey, interviews and program request database analysis. The responses gathered from the survey and interviews were combined with the Tulsa Zoo program database to create a summary of the teacher awareness and reasons for using the Tulsa Zoo outreach program (Creswell, 2012; Sandelowski, 2000). This study analyzed the open-ended survey questions to create a “descriptive summary of the informational contexts of the data organized to best fit the data” (Sandelowski, 2000, p.339). These patterns and commonalities were represented through word repetition, categorizing the teacher's statements into groups labeled by codes (Sandelowski, 2000), looking for missing information in the comments and finding the usage frequencies and central tendencies (Creswell, 2012) of survey answers and program requests.

Procedures

Participants for the survey and interviews were solicited by the Superintendents' offices of BAPS, JPS and BPS (see Appendix A) and at the end of the survey they were

solicited for the second part of the study, the interviews (see Appendix C). All participation was strictly voluntarily with no compensation for participation. This study was mainly conducted electronically using surveys and ascertaining program request information from a database at the Tulsa Zoo. The only direct contact with teachers was in the form of personal interviews. The interviews were scheduled at the convenience of the teacher participants. Four of the interviews took place at the teacher's school while the other four took place on the Oklahoma State University Campus in Tulsa, OK. Only the interview participant and researcher were present for the interview. Each teacher interviewed was asked a series of open ended questions (see Appendix D) about different features of the Tulsa Zoo outreach program. These interviews were taped and transcribed for analysis.

Ethical Issues

As with any research project, there are ethical issues. The ethical issues relevant to this study were minimal. Teacher confidentiality on the teacher survey was the most relevant issue to this study. I set the parameters on www.surveymonkey.com, the survey instrument, to block all IP addresses so I could not track the computer the surveys originated from. I also changed settings in www.surveymonkey.com so upon completion of the survey, respondents could not see any results. The questions asked on the survey (see Appendix C) solicited answers in the form of multiple-choice, ranking responses and open-ended questions. These answers and comments were exclusively the opinion of the participant. If at any time the participant wished not to answer a question or participate in any phase of the program, they were allowed to do so without any consequence. These answers, along with any other data or communications relating to this project such as e-

mail transmissions or taped/transcribed verbal communications, have been stored on an external hard-drive not attached to a network.

Consent

Teachers gave consent by agreeing to the statement on the first page of the survey (see Appendix B). If they did not agree to the consent form they were not allowed to complete the survey. A page at the end of the survey displayed a solicitation for participation in the personal interviews. During the interviews, teachers were asked to sign a consent form (see Appendix E) allowing taping and transcription of conversations during the session. No consent was necessary for the program requests as they did not have any identifying markers and were public access to employees of the Tulsa Zoo.

Support

In order to facilitate this study I obtained support from the BAPS, JPS and BPS Superintendents' offices (see Appendix A), consent from the teachers involved in the survey and interviews and support from the Tulsa Zoo to evaluate their outreach program. Financial support was also a factor in implementing this study. The following budget outlines the financial needs and supporters for this project.

Table 1

Awareness and Usage of the Tulsa Zoo Outreach Program Study Budget

Material	Amount	Total Price
www.surveymonkey.com membership	\$25.00 per month for 2 months	\$50.00
Audio recorder and computer	\$0 – already available	\$0
	Total Budget	\$50.00

Table 1. The entire budget represented in this table was funded by the researcher.

Project Timeline

This project took place over a relatively short amount of time with some of the data collection occurring simultaneously. The following table (Table 2) depicts the project timeline for this research.

Table 2

Awareness and Usage of the Tulsa Zoo Outreach Program Study Timeline

Date	Task
January 26, 2012	Teacher surveys initiated and program request database data collection initiated and analyzed
February 9, 2012	Reminder of survey was sent to district Superintendent Office
February 17 2012 –February 27, 2012	Personal interviews were conducted
February 28, 2012	Data collection concluded

Data Security

All data including surveys, for which I did not have access to the IP addresses, the interview transcriptions and program database analysis were stored in a password protected file on an external hard drive that was not connected to a network. The actual audio Compact Disk of the interviews was safely stored in a locked cabinet, where it stayed until one year after the approval of this study.

Research Setting

Three different school districts were included in this study. All three districts reside near Tulsa, Oklahoma and serve students from pre-kindergarten through twelfth grade. Broken Arrow Public Schools, the largest of the three districts resides just to the southeast of Tulsa and seventeen miles away from the Tulsa Zoo. This city has a mean household income of \$64,534 in 2009 with 3.1% of the population earning below the state average of \$41,000 (City-Data, 2011). Broken Arrow is a bursting city with a

rapidly growing population. The total student body enrollment for the year 2009-2010 equaled 16,704 with an average class size of 23.8 students. The entire district was considered a “Needs Improvement District” (API and Accountability Report Cards, 2011) by the No Child Left Behind Act. This designation signifies the schools in this district did not make adequate yearly progress for their performance targets (Districts in Need of Improvement, 2011) on their yearly student achievement tests. All of the teachers from BAPS were considered Highly Qualified Teachers (100.0%) with 22.6% holding Masters Degrees and 0.4% holding Doctoral degrees. One school from the BAPS district was designated as “Needs Improvement” according to the Annual Report Card (API and Accountability Report Cards, 2011) for districts that indicates whether or not a school or district has made required testing requirements on the annual progress reviews.

Jenks Public Schools was another rapidly growing district twenty miles away from the Tulsa Zoo has a rapidly growing minority population. This city has a mean household income of \$74,482 in 2009 (City-Data, 2011). Jenks Public Schools enrollment totaled 10,165 for 2009 also with a mean class size of 23.8 students. This district also had three schools on the “Needs Improvement” list as designated by their Annual Report Card (API and Accountability Report Cards, 2011). All of the teachers in this district were also considered Highly Qualified Teachers (100.0%) with 27.6% holding Masters Degrees and 1.4% holding Doctoral degrees.

Berryhill Public Schools was a substantially smaller school district located fifteen miles away from the Tulsa Zoo. The mean household income of families with students attending these schools totals at \$38,426 (City-Data, 2011), slightly under the state

average. The school district had a student body of 1,200 for 2009. This district did not have any schools on the “Needs Improvement” list as indicated by their Annual Report Card (API and Accountability Report Cards, 2011). They also had Highly Qualified Teachers (100.0%) with 20.4% holding Masters Degrees.

Participants

For this particular study, first and second grade teachers from three different school districts around the Tulsa area were invited to participate. As first and second grade content was most consistent with the content created by the Tulsa Zoo and are the two grade levels that have been the most active in requesting programs from the Tulsa Zoo, teachers first and second grade teachers from these three districts seemed the most appropriate sample for this study. A total of 199 teachers were invited to participate. Broken Arrow Public Schools had 123 first and second grade teachers from eighteen different schools, 68 first and second grade teachers from two elementary schools in Jenks Public Schools and eight, first and second grade teachers from the two elementary schools in Berryhill Public Schools. Demographics on race and education level were very limited, but all participants (100.0%) in the study were female, 83.0% indicated they are white, 8.5% African-American and 8.5% American Indian.

Online Survey

The teacher survey (see Appendix C) was sent through a secure online program, www.surveymonkey.com. This survey was sent out by the Superintendents’ offices of BAPS, JPS and BPS to survey the 199 first and second grade teachers. I anticipated between 30% and 35% return on my surveys giving me an estimated n = 60-70 samples; 68 surveys (34.2%) were received by the conclusion of the data collection. The make-up

of the survey included multiple-choice, open-ended and ranking questions. The exact questions can be found in Appendix C. The questions used were developed by the researcher as there was little peer-reviewed literature, including instruments used when evaluating free-choice educational outreach programs. Questions were structured so teachers could choose whether or not to answer questions and allowed space for additional comments or to elaborate on their answer after each question.

Closed-ended answers on the survey, composed of demographic information, single item response questions or ranking questions, were tallied and response percentages was calculated and graphed. The responses to the open-ended questions were categorized by codes to describe the commonalities between the teacher's answers. These categories were organized into groups describing the main views of the program. These were derived by looking at repeating words, similar and differences between statements and missing information or assumptions made by the participant.

Online Survey Response Analysis. Once all interviews were transcribed and surveys were collected, I looked for commonalities among the responses. First, the responses were scanned for word repetition (Ryan & Bernard, 2003). Words repeated in comments were highlighted in the same color. This generated a list of words that were used most frequently. If words were different but had the same meaning such as “beneficial” and “useful” these words were included in the same list.

Second, the responses were cut into individual segments and sorted based on commonalities within the comment. These segments were organized into basic groups pertaining to overall attitudes towards the program whether positive or negative, how students respond to the program and how they value the information delivered during the

program. Third, the different comments for each question were compared and contrasted to each other (Ryan & Berard, 2003). Similar comments were connected and comments that contrasted from each other were dissected further to find what the main difference was. An example of a difference found in the text included differences of opinions of scheduling programs whether it was a hassle to get tickets verses scheduling as being a very appealing feature of the program.

Personal Interviews

Survey participants were solicited by an interest question at the end of the survey about their willingness to participate in a short personal interview with the researcher about the Tulsa Zoo outreach program. Participants were selected based on the following categories pertaining to interest and familiarity with the program: teachers who are familiar, teachers who are unfamiliar and teachers who chose not to use the Tulsa Zoo outreach program. An optimal sample size for the interviews included three teachers from each category selected on a first-come-first-serve basis. Eight teachers participated, four who were aware, three who were unaware and one who choose not to use the program.

Four teachers were familiar, three were unfamiliar and one teacher chose not to use the program. During these sessions a series of semi-formal, open-ended questions were asked regarding the current Tulsa Zoo outreach program. Examples of current program features were available to view for teachers unfamiliar with the program. A script of the interview is provided as Appendix F. During the interview, teachers were shown a fifteen minute video of an ocean program. This program included the presenter discussing features of oceans and showing a large replica of a giant squid and discussing

biofacts, bones, pelts and parts of animals used in zoo education. They were also shown a teacher loan trunk that contains, videos, biofacts, books, lesson plans and activity materials pertaining to oceans. Teachers were welcome to give opinions on overall attitude of the presentation, trunk and possible professional development at the zoo.

Each teacher was given a number to provide anonymity. Even though their voices could still be a trace of their identity, to ensure accuracy when coding the responses, recording the sessions allowed me to study the answers in detail and conduct a descriptive analysis (Creswell, 2012). Each participant was asked to sign a consent form (see Appendix E) allowing the recording and transcription of the interview. Upon completion of the interview and transcription, each teacher received a copy of their comments for member checking to increase the validity of the data. The transcriptions were sent to the participants who were asked for an e-mail verification of their statements or any changes that needed to be made.

Interview Analysis. Most of the analysis for the interviews was very similar to that used on the responses for the online survey responses. Responses were assessed for word repetition (Ryan & Bernard, 2003), compared and contrasted but also scanned for missing information and assumptions made by the interviewee. The missing information and assumptions made by the interviewee was much more difficult to find, but a few commonalities emerged from the data. Each of the participants answered all the questions, but their responses to some of the questions, especially questions pertaining to limitations of the program were the vaguest answers. These vague answers were assessed for missing information and assumptions the participant may have been making about the familiarity the researcher has with their school.

Tulsa Zoo Program Request Database

The program analysis of the database used to schedule and track outreach program requests made to the Tulsa Zoo Education Department. The database is an open Access database with public information given by the teacher requesting the program. The database program is used to schedule all program requests including in-situ programs and impromptu docent interactions with the public. For the calendar year of 2010, the Tulsa Zoo Education Department interacted with 20,437 children in the form of classes at the zoo, scout programs, tours, church groups, library programs, outreach programs, amphitheaters, stationing and other in-situ interactions such as answering questions at exhibits. The number of children seen during ex-situ outreach totaled 16,116 ranging from pre-kindergarten through twelfth grade across the northeastern region of Oklahoma.

Tulsa Zoo Program Request Database Analysis. The sample size of the database analysis only included first and second grade program requests made by BAPS, JPS and BPS teachers. The analysis encompassed three years of program requests, 2007-2008, 2008-2009 and 2009-2010 school years looking at the most requested topics, usage frequencies for each category of outreach program. I calculated the usage frequency and central tendency (Creswell, 2012) of the programs used by first and second grade teachers in BAPS, JPS and BPS. Then, I categorized the requests to find the most popular topics requested by first and second grade BAPS, JPS and BPS teachers. These results were used to give a current look at the usage of Tulsa Zoo outreach programs to compare to awareness of these programs and the manner in which these programs are being utilized within the sample population.

Triangulation

To validate the accuracy of the findings, the database analysis, online survey responses and personal interviews were compared to generate the codes to describe the overall commonalities of the responses used to answer the research questions posed by the study. The codes derived from the open-ended survey questions, the codes from the interview responses, most requested topics from the Zoo database and most valuable features and opportunities as indicated by the ranking questions in the survey were combined to create an overall look at the awareness and usage of the Tulsa Zoo outreach program.

In particular, to answer the first question about how aware teachers are of the Tulsa Zoo outreach program, the Zoo program database showed how many programs each district requested, the survey indicated whether or not participants were familiar with the program and interviews asked about how they became familiar with the program were combined to see whether or not teachers were in fact aware of the outreach program offered by the zoo. The second question, pertaining to what attributes teachers consider to be the most integral part of the program, the program database showed the types of programs teachers prefer, the survey aided in allowing the teachers to rank most valuable outreach opportunities and features and the interviews allowed open discussion about the different attributes of the program. The last question, how programs are being used by teachers, took into account the survey responses on how often teachers are using the outreach program, the interviews allowed discussion about what parts of the outreach program they use the most. The conclusions derived from these instruments are further discussed in the next chapter.

Conclusion

Online survey, personal interviews and analysis of a program request database used by the Tulsa Zoo were the data sources for this study. This was a descriptive study, employing both quantitative and qualitative analysis to create a picture of teacher awareness and usage of their current outreach program so the zoo can build a new outreach program.

CHAPTER IV

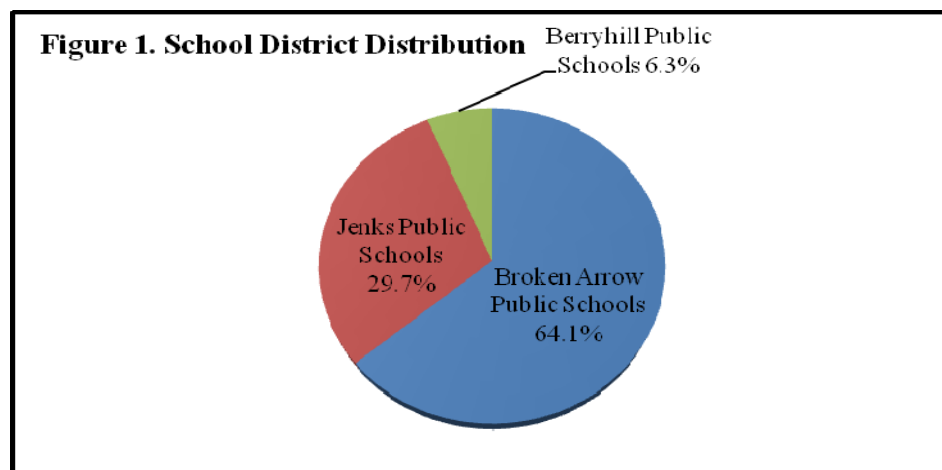
FINDINGS

During analysis of the data, first and second grade teacher's responses were grouped together as the Zoo provides the same programming to each grade level and their standards are very similar. The only main difference in the analysis of the grades came from the database analysis where the most requested topics included more categories in the first grade group than they did in the second grade group. Overall sample sizes in response to the survey and interviews were optimal as set by the methodology, but as to be expected the sample size dropped substantially on the open-ended questions in the survey and the diversity of interview participants. A mixed pool of teachers for interviews with even groups between those familiar with the program, those unfamiliar with the program and those who chose not to use the program was used. As interviews were conducted, this mixed pool was not able to be upheld.

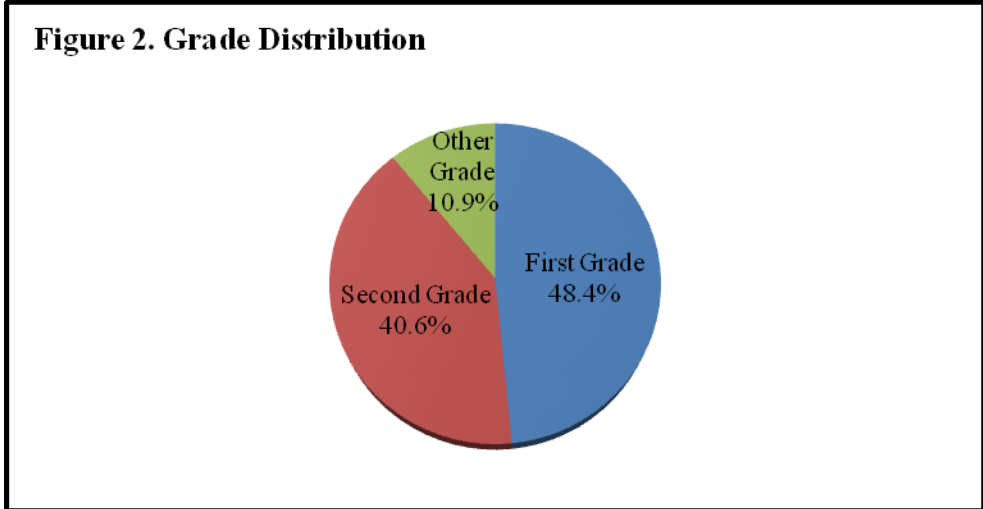
Participant Response to Survey

Upon sending the first survey solicitation, BAPS and BPS teachers promptly responded. JPS teachers did not respond till after the second e-mail was sent out. Of the 199 teachers solicited for the study, 68 (34.2%) responded to the survey and eight

teachers participated in personal interviews. Four of these teachers were teachers who were familiar with the program, three were teachers unfamiliar with the program and one was a teacher who was familiar but chose not to use the program. Of the total 68 teachers, the majority of teacher participation came from Berryhill Public Schools (50% of their participant population), Broken Arrow Public Schools (34.2% of their participant population), while Jenks Public School teacher participation accounted for 30% of their participant population. Grade distribution (see Figure 1) of the teacher participants was fairly even with 48.4% teaching first grade, 40.6% teaching second grade and 10.9% teaching other grades.

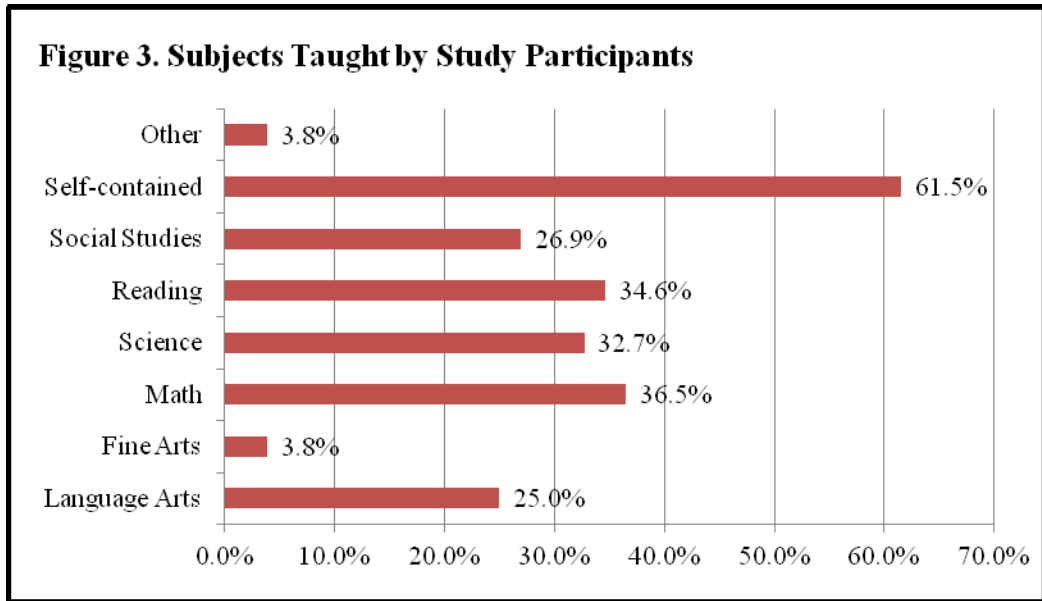


The teachers who answered “other” to what grade they teach were immediately excused from the survey and from the study. If a teacher chose “other” as a grade level, they were given an opportunity to indicate what grade they teach. Two of these teachers indicated they taught gifted and talented for grades 1-5. These teachers were excused from the study since I could not determine exactly what grade they taught and survey parameters did not include contact information so I could not contact the teachers to confirm their grade. Grade distributions that were analyzed in the study can be viewed in Figure 2.

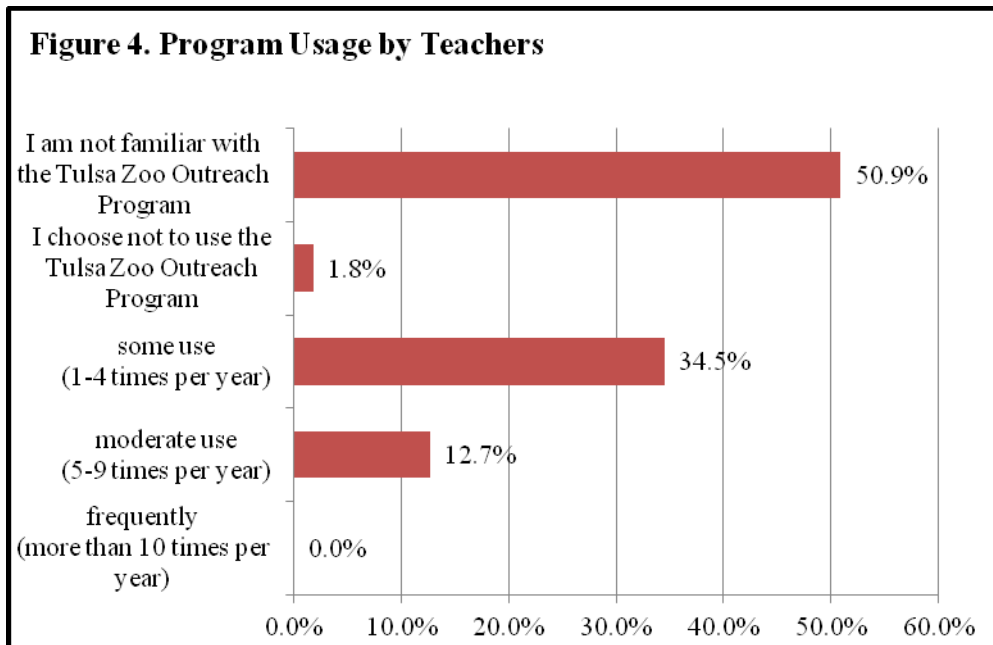


Teacher Survey Results

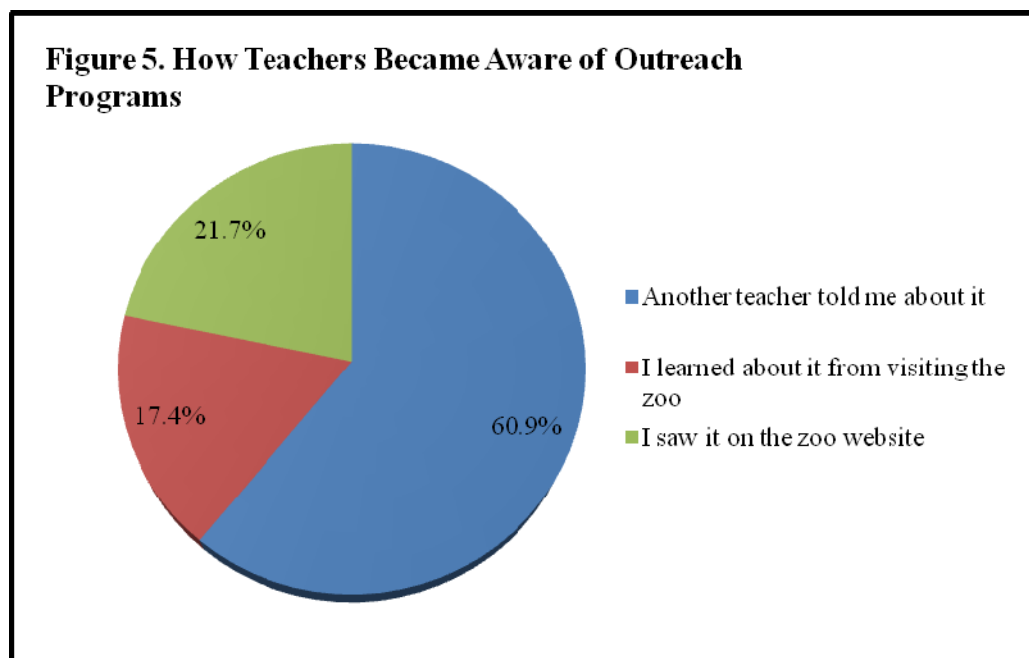
Teachers participating in the online survey had the option of skipping questions if they chose not to answer them. The response rate of the open-ended questions was substantially lower (4% - 8% of participants responded) than the response rate on the closed-ended questions (32% - 100% of participants responded). The close-ended questions asked a variety of different things such as general demographics: grade level, gender, race, years of teaching experience, subjects currently taught and more detailed questions about awareness and usage of the Tulsa Zoo outreach programs. All the teachers who participated indicated they were female, 83% indicated they were white and the majority indicated they taught in self-contained classrooms (61.5%) (see Figure 3).



Questions pertaining to the awareness and usage of the program included how often they used the program, how they learned about the program, why they started using, continue using or stopped using the program and questions about appealing and unappealing features of the program. Results for program usage yielded a 50.9% of teachers who said they are not aware of programs being offered by the Tulsa Zoo (see Figure 4).



Of those that do use the program, most teachers used the program between 1-4 times per year and learned about the program by other teachers who use it (60.9%) (see Figure 5). Teachers who use the program five to nine times a year (12.7%) accounted for the next largest group of teachers aware of the program, followed by 0% of teachers who use the program more than ten times a year. As far as where teachers learned about the program, if they did not respond to learning about the program from another teacher, 21.7% indicated by their answer they learned about the program on the zoo website and 17.4% responded they learned about it by visiting the zoo.



When asked why the teacher participants used the program, the main responses that arose from the open-ended questions included availability of *novel resources* and the ability to *connect students with learning*. These responses were derived by categorizing the responses of questions pertaining to beginning usage of the program. The responses from each question were looked at as a group to find word repetition. The most repeated words in the text included, *engaging, enhance beneficial, hands-on activities, enriching,*

limited funds and scheduling. Next, the passages were cut and sorted to find commonalities between them to help answer the research questions. For example, one question pertaining to how teachers incorporated the Tulsa Zoo outreach program in their curriculum included statements such as, “Tie it in with the theme taught” (Survey Response, January 31, 2012) and “We have a docent come 3-4 times throughout the school year to share information that meshes with our units of study” (Survey Response, January 30, 2012). One code concluded from these responses included using outreach to *enhance curriculum being taught.* This code was then supported through responses from other questions such as why teachers started using the outreach program where one teacher bluntly states, “We started using the program to enhance our science units” (Survey Response, February 16, 2012). Also, regarding why one teacher stopped using the program because, “students were not engaged in the presentation and it was much too long for the age group” (Survey Response, February 21, 2012). All these responses connect to each other by discussing why or why not the program enhanced or engaged students in curriculum.

Responses from two different questions; why teachers started using the program and why they continue to use the program received multiple responses regarding the importance of engaging or enriching their kids. Five teachers refer to the program’s ability to teach objectives through enjoyable, hands-on activities. Eight teachers also stated the use of the program to connect students to animals and habitats they would not otherwise have access to in the curriculum.

Of those that responded, twelve teachers commented when asked why they continued using (nine teachers) or why they stopped (three teachers) using programs.

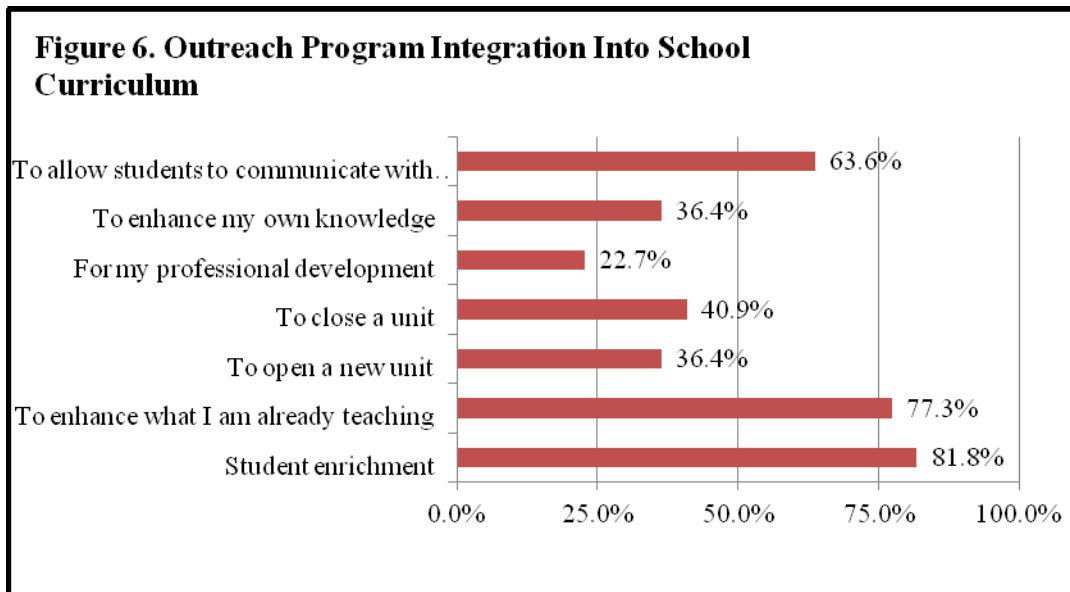
Two main themes of positive attributes pertaining to the program included *student-centered learning environments*, such as providing enjoyable experiences for students with hands-on activities, and *standards appropriate content*. Teachers commented on the ability to teach their objectives through the zoo outreach programs while keeping them engaged, "...we were able to teach objectives in a more hands-on manner and reach those kids with sensory learning styles. The students enjoy it and it enriches their learning" (Survey Response, January 30, 2012). Many teachers indicated the need to align programs with state educational standards as a need and positive attribute of the current Tulsa Zoo program.

When asked about limitations of the program, the two most apparent codes that arose included, *grade specific programming* and *scheduling issues*. Teachers who discussed *grade specific programming* referred to the schools as selecting particular grades that could schedule zoo programs. The reasons for this were not conveyed in the survey. Scheduling issues, as indicated by the responses, pertained to the balance of visitor experiences and special events occurring at the zoo while teachers are trying to schedule school programs. "I do not like the idea of it not being available during Halloween activities at the zoo. We were told that due to things scheduled at night it would not be possible to have outreach activities during the daytime around Halloween" (Survey Response, January 30, 2012).

Overall, in assessing the open-ended questions, the most appealing attributes of the outreach program included providing *budget-friendly learning opportunities* and *valuable content for students and teachers*. Negative attributes included again, *scheduling issues*. Teachers expressed deep interest in providing cost-effective ways to

engage students, “Because of limited funds for field trips, we were looking for ways to reach our kids without spending money” (Survey Response, January 30, 2012). “In tight financial times, it is nice to have organizations that will visit the schools when there isn’t funding for field trips” (Survey Response, February 21, 2012). They also commented on the nature of the program and presenters. Many commented on “engaging presentations” (Survey Response, February 16, 2012) and allowing “students to understand, practice and grasp the topic best” (Survey Response, January 31, 2012).

Teachers surveyed indicated their desire to use the programs to enhance their units whether they use the programs to open, close or in the middle of a unit, yet most indicated they used programs to close their unit (40.9%). “After teaching about the different animals, the children then got to see them in person. They were asked to look for specific characteristics for each group of animals” (Survey Response, January 30, 2012). Many of these teachers described science units in which these programs were being incorporated into while others stated when incorporating programs they look at their objectives and see where zoo programs can fit into science and social studies curriculum. These comments can be visualized in the trends seen in the answers to the close-ended questions pertaining to integrating zoo outreach programs into their school curriculum. Most teachers indicated they use the zoo programs to provide student enrichment and enhance what they were already teaching (see Figure 6).



Another trend that emerged was the teachers' desire to allow students to communicate with zoo professionals. This trend was seen numerous times when asked about relationships with zoo professionals in accordance to important features of the program (see Figures 7-10).

Since the zoo offers many different resources as a part of their outreach program, teachers were asked to identify aspects of the program were most valuable to them as a teacher, for professional growth, to their curriculum and to provide their students. From these categories the most valuable outreach opportunities included docent led programs (37.84% of responses) and the use of live animals in programs (31.25%). For program features, increasing the teacher and student's personal knowledge (25.71% and 20.0% of responses, respectively) were the most popular choices. Program features ranked as the most valuable in regards to teaching and students included providing programs aligned to state testing standards (28.57% of responses) and allowing students to communicate with zoo professionals (34.38% of responses) (see Figures 7-10).

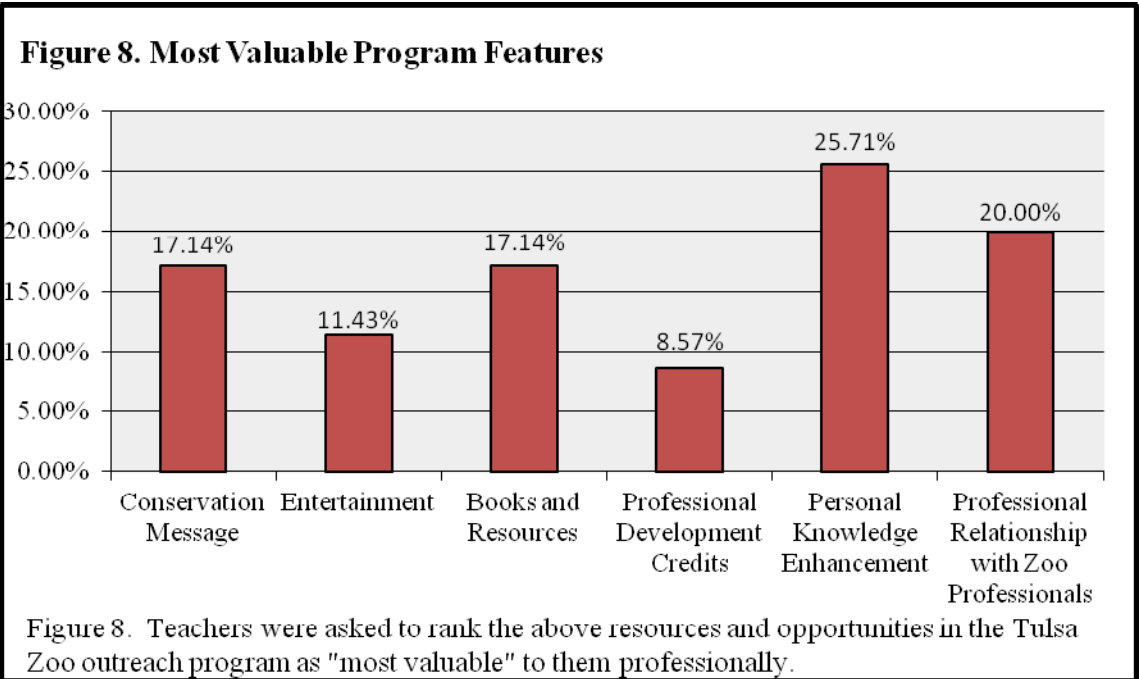
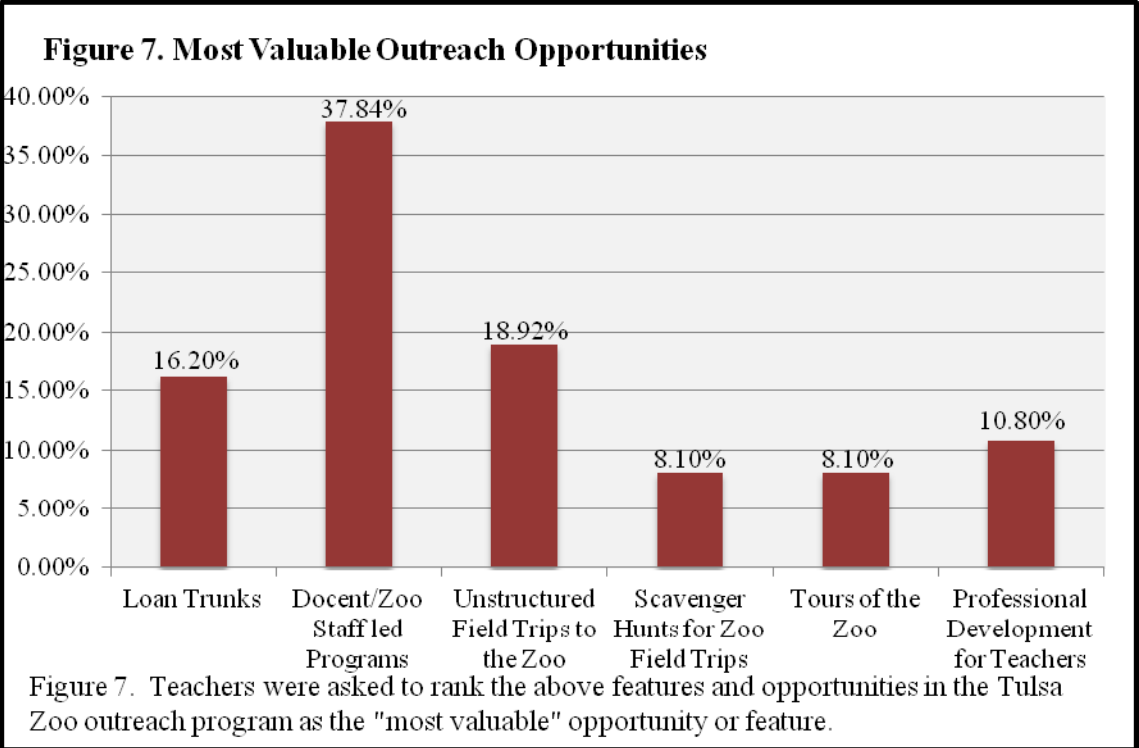


Figure 9. Most Valuable Program Features for Teaching

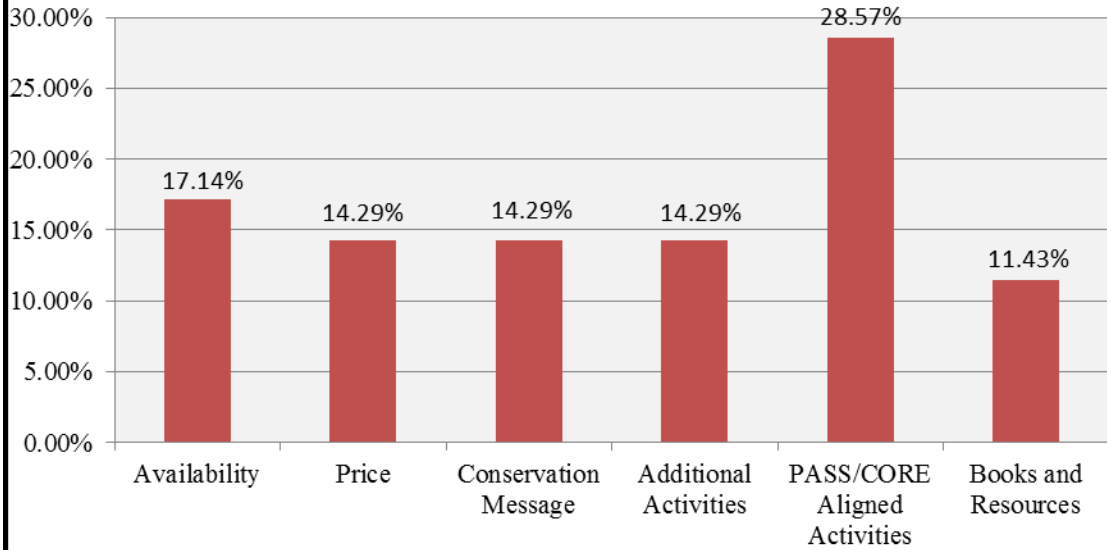


Figure 9. Teachers were asked to rank the above resources and opportunities in the Tulsa Zoo outreach program as "most valuable" to their teaching.

Figure 10. Most Valuable Program Features for Students

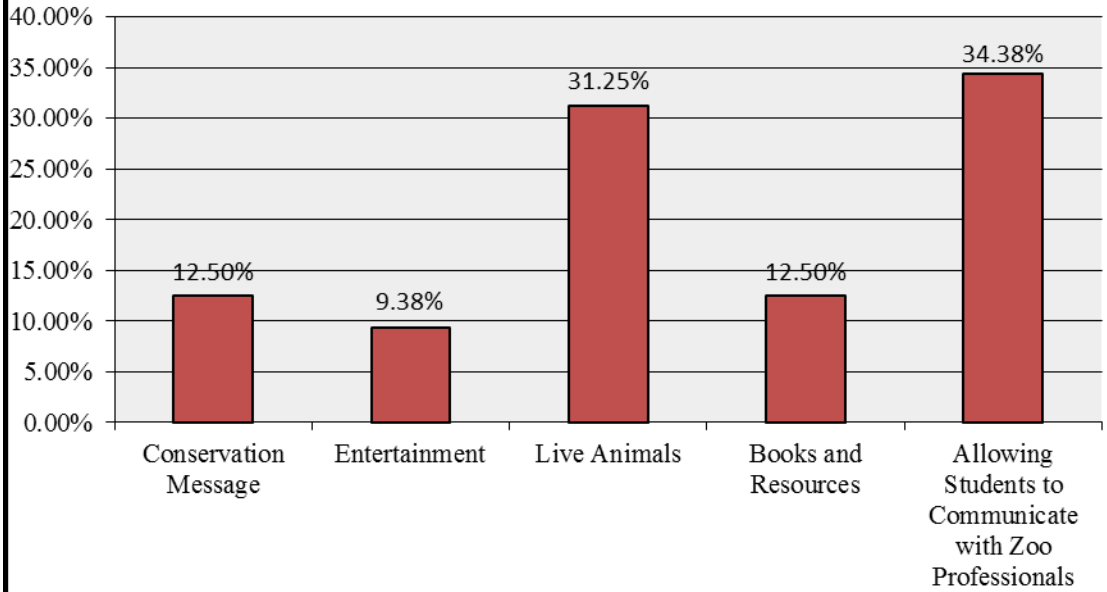


Figure 10. Teachers were asked to rank the above resources and opportunities in the Tulsa Zoo outreach program as "most valuable" for their students.

Personal Interview Results

At the end of the survey teachers were asked if they would like to participate in an interview discussing in more detail the Tulsa Zoo outreach program. If they chose to participate they were instructed to contact the researcher through e-mail to set up a day and time for the interview. The response from the question indicated fourteen teachers were willing to participate (27.5%), yet eight actually contacted the researcher to set up an interview. Of these teachers, four were familiar with the program, three were unfamiliar with the program and one chose not to use the program. These interviews were scheduled at a time most convenient for the participants.

During the interviews, a series of open-ended questions were asked about three different aspects of the Tulsa Zoo outreach program; staff/docent led programs, teacher resources and teacher professional development. A series of questions probing the teacher's attitudes towards using resources, improving current programs and overall focus of programs were asked, recorded and transcribed. The transcriptions of the interviews were sent to the teachers for member checking. All eight of the teachers approved their comments and the responses were categorized into groups and given codes similar to the method used on the open-ended survey questions. The responses and comments were also scanned and highlighted for word repetition, cut and sorted to categorize into similar groups and evaluated for missing information and assumptions made by the interviewee. The teachers who were users of the program repeatedly stated their desire to teach science education and to use the zoo outreach program to enhance their curriculum.

I probably teach every subject with science. I like the science and math. If I

teach math we talk about the frog life cycle and how many days it takes for each part. We then tie in literature by reading about frog life cycles. (Interview Response, February 20, 2012)

All the teachers, including the one teacher who does not use the program, described a desire to use science and the zoo outreach programs as a tool to engage students in learning, no matter the content area. All eight stated they preferred hands-on materials and activities in the programs and would like professional development opportunities from the zoo in which they can develop or leave with lessons and materials ready to go back to class pertaining to the outreach programs offered by the zoo.

Of the three teachers unfamiliar with the program, one specifically focused interest on how to gain more information about zoo offerings and the possibilities of integrating it into their curriculum. “I like that they really know what they are talking about. I would like someone like that coming to my classroom” (Personal Interview, February 22, 2012). All the teachers were interested in providing a new stimulus to their students and a low financial cost.

We have had a lot of budget cuts, I have to buy a lot of stuff for my students on my own. If there is a way I can get these things, even for a short time, it would be a great help. (Personal Interview, February 22, 2012)

These teachers were also interested in zoo programs and resources being aligned with state testing standards. Two of the three teachers repeatedly asked how they could receive the programming during the interview. Even though they were not familiar with the program, they were all able to quickly come up with ways in which they would

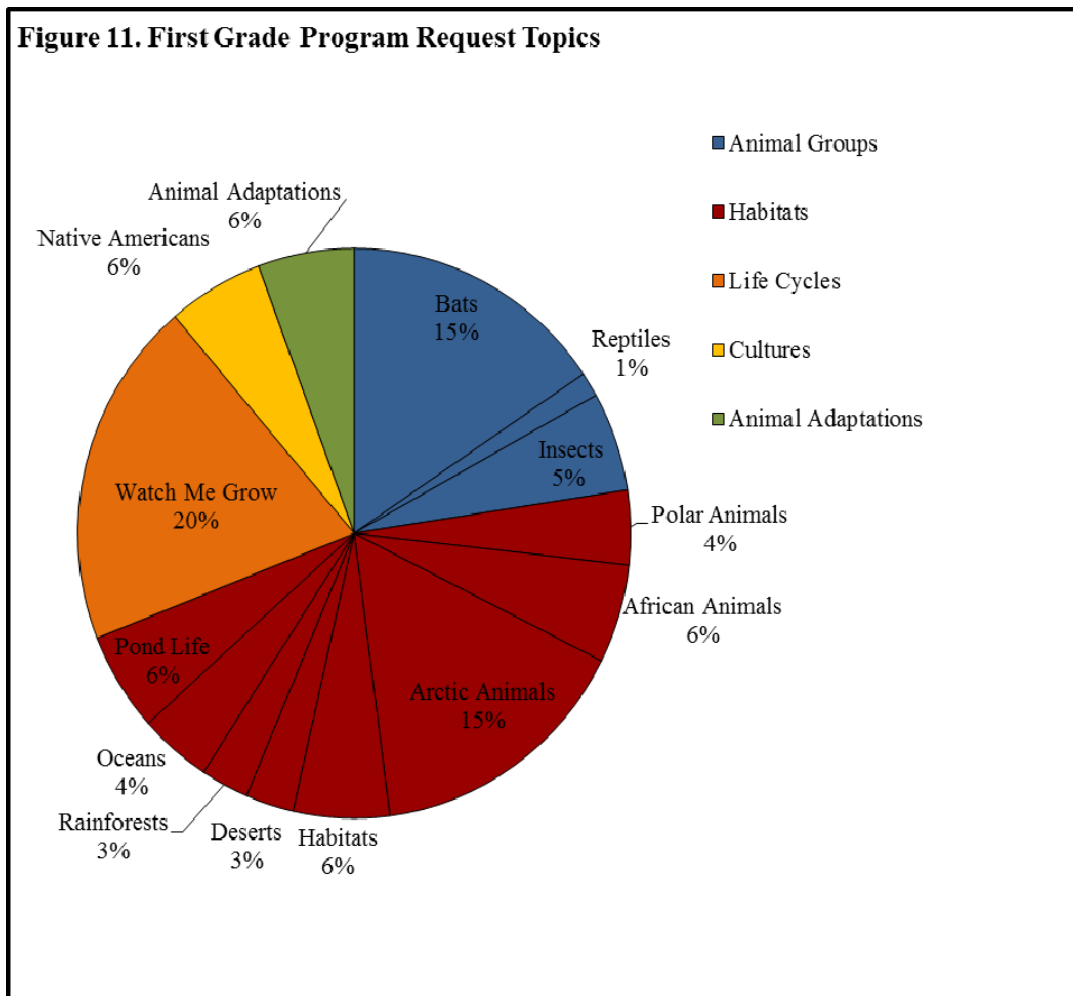
integrate the program into their teaching with using it as a *tool to engage students in learning* as being the most prominent theme. One teacher commented, “When she [the presenter in the video of the zoo presentation] talked about the layers of the ocean that would be neat to compare. My kids would like that a lot” (Personal Interview, February 20, 2012).

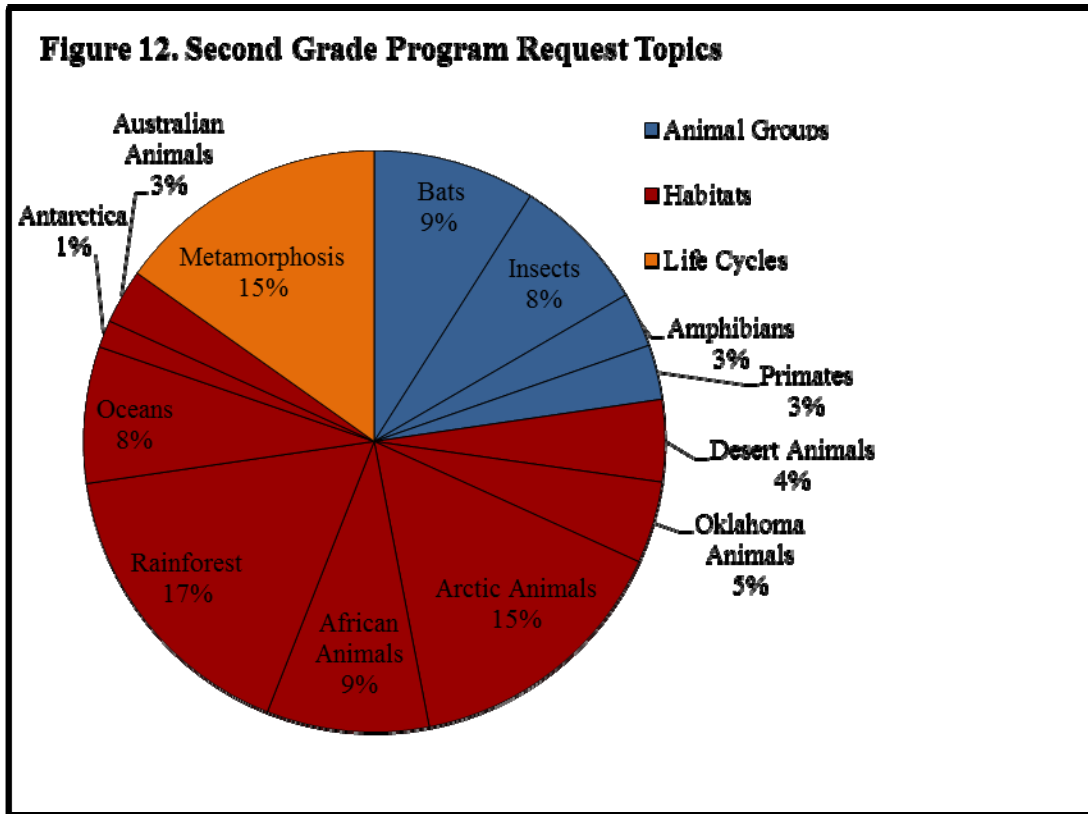
The teacher who did not use the outreach programs stated she did not teach science due to restrictions put on her by her school administration. She would be willing to schedule programs if she felt she was allowed to do so, “to have anyone like this come to my classroom would be an improvement to what they are getting. If someone came to my classroom, that is probably all the science they would get” (Personal Interview, February 23, 2012). For this instance, it seems administrative constraint was the most controlling factor as why she did not use the programs or resources although not directly stated by the teacher. This piece of missing information could indicate the interviewee assuming the researcher was very familiar with the political situation in the school and the reasoning for not being allowed to teach with the outreach program.

From this participant’s comments, the reasoning for this constraint could stem from low reading and math scores and the pressure to teach more reading and math and not to teach science. When asked how the loan trunk resources could be improved, she stated, “I guess make it where we can meet math and reading standards. Maybe then I could use it or at least show my principal we can use it. I just don’t know how you could do that though” (Interview Response, February 23, 2012).

Tulsa Zoo Outreach Program Request Results

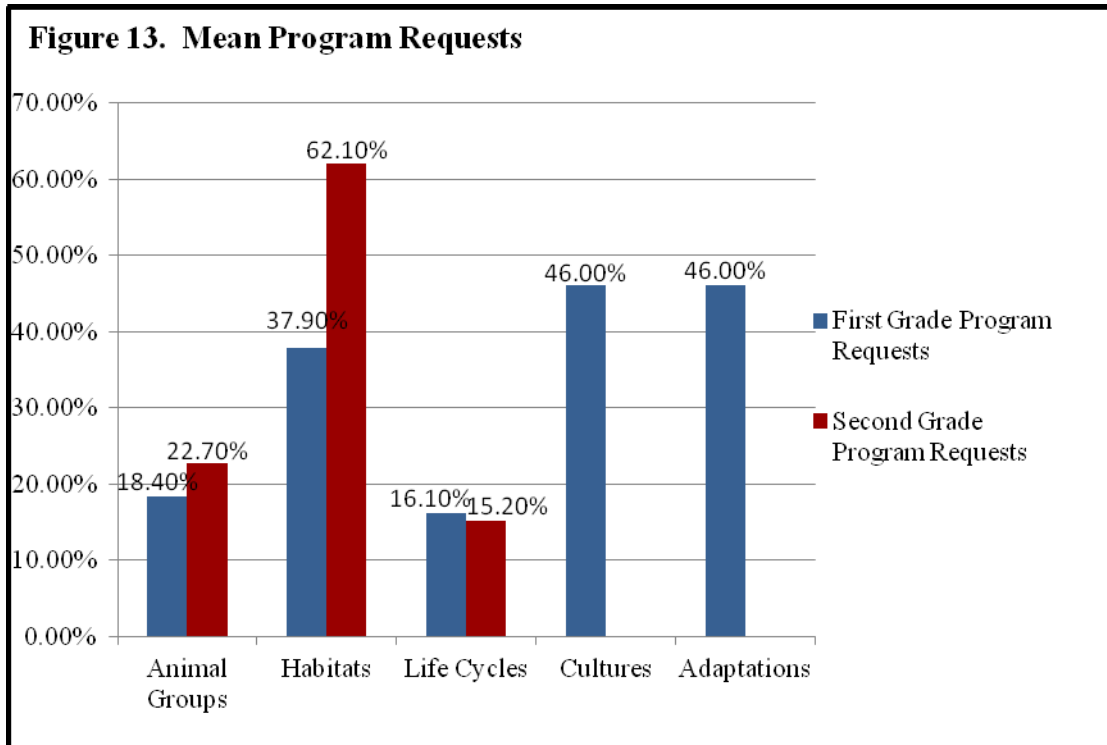
Every program request made at the Tulsa Zoo is logged in a database. During the three years analyzed in this study, the zoo provided 71 programs to first grade classes and 66 programs to second grade classes in the three target districts. Looking at each program, the usage frequencies were calculated and graphed to determine the most used types of programs. From these programs, the following five program categories surfaced: *animal groups, habitats, life cycles, cultures* and *adaptations* (see Figure 11 and Figure 12).





Programs pertaining to habitats were, by far, the most requested category with 47% of first grade and 62% of second grade requests. First grade had a very close usage frequency for requested programs pertaining to life cycles and animal groups, 20% and 21% respectively. Second grade, on the other hand, requested more animal group programs (23%) than they requested life cycle programs (15%).

The main categories give a picture of the most requested programs by first and second grade BAPS, JPS and BPS teachers (see Figure 9). Both grade levels had a majority of programs requested focus on *habitats* while *cultures* and *adaptations* programs only accounted for a small amount of first grade programs.



Findings Summary

Through the analysis of the surveys, interviews and outreach program database, commonalities between the data began to emerge. The most prevalent commonality in the open-ended survey questions and interviews entailed providing an *applicable, engaging and student-centered framework* for programs. These programs also needed to be grade and standard appropriate and available for schools to use by being budget-friendly and easy to schedule. Teachers also placed a high value on *resource availability* in relation to providing programs with valuable content and opportunity for student and teacher conversations with zoo professionals and volunteers. This can also be seen in the program requests as the themes most requested are themes most closely related to classification and observation skills which is easily applied and correlated with the standards for first and second grade Oklahoma students.

CHAPTER V

CONCLUSIONS

Overall, findings showed a lack of awareness of the Tulsa Zoo outreach program. Even if teachers were aware of particular aspects of the program, they were unaware of other aspects of the program. The commonalities that emerged from the survey and interviews showed teachers placed the most value in the curricular framework of the program meaning it must be engaging and aligned with state testing standards. They also stressed programs must be readily available. This availability encompasses creating a more efficient scheduling procedure and increasing awareness of resources so they can be used by teachers. All these findings did suggest teacher that used or teachers that placed value in using the zoo outreach program would use it in a more sophisticated way and not just to provide a fun activity for their students. They found value in the content and opportunity to engage their students and themselves in conversation with zoo professionals.

Awareness of Outreach Programs

Most noticeably, as seen in the survey results, most first and second teachers in the BAPS, JPS and BPS districts are unaware of the Tulsa Zoo outreach program. By reviewing the surveys and talking to teachers in the interviews it became apparent teachers are constantly seeking out new tools and programs to engage their students in

learning yet these programs must be easily integrated into their current curriculum and standards. Even teachers who were familiar with programs did not know about the trunks or professional development opportunities. As seen through the responses from the survey and interviews, more attention should be given to developing an efficient and effective way to communicate with teachers about programs, resources and professional development opportunities.

Trends in program requests also reflected a lack of awareness of the diversity of programs the zoo offers. Some of these results could have been the product of state testing standards. Habitats and environments are two areas in the testing standards for Oklahoma early elementary education (Oklahoma State Department of Education, 2002). Yet, even when discussing the different programs and resources regarding habitats and environments with teachers during the interviews, they were unaware of the scope of programs the zoo offers. Two teachers stated when asked their thoughts regarding the program shown in the video that they did not even know the zoo did programs or had resources regarding oceans. These were two teachers that had used the outreach program frequently (at least four times a year). One teacher stated when asked why she chose the themes the zoo should focus on the most,

It [themes of programs she requests] is just whatever interest is their [students] interest for that year. I may not teach nocturnal animals for two more years and the next group [of students] who wants to learn about it may need to learn everything about it. (Interview Response, February 20, 2012)

It seems this teacher has a good grasp of the scope of outreach possibilities the zoo has to offer yet was not familiar at all with professional development offered by the

zoo. Many of these programs are used by the same classes and teachers year after year. There have even been personal observations by the researcher that when a frequent user of the program retires, the program requests from that grade level are likely to stop; making it unclear if the other teachers in that grade are uninterested or unfamiliar with the program.

Program Usage

Results of the closed-ended questions on the survey made it apparent that teachers used the Tulsa Zoo outreach program to provide engaging programs aligned with state testing standards and an opportunity for students and themselves to meet professionals from the zoo. The next two most popular resources, as indicated by the surveys and interviews, included unstructured field trips and teacher loan trunks. These results could convey two schools of thought for teachers. One, many teachers put value on bringing in other professionals to enhance their curriculum and two, teachers may put more value on seeking resources they can implement on their own adding enrichment for their students while still remaining in control of the content and message being delivered to their students. Many teachers commented on the benefit of the items and animals brought by the zoo professional or volunteer when they requested an outreach program as being a valuable part of the program but the most valuable part was the communication between the students and visitor.

A slightly surprising twist included teacher perceptions on what is most valuable to them professionally, ranking personal knowledge enhancement and professional relationship with zoo professionals as the top two choices while attending professional development opportunities by the zoo was one of the lowest ranked responses for overall

values. During the interviews, many teachers commented on willingness to participate in professional development provided by the zoo, especially classes regarding the outreach programs and resources they offer. Many commented on preferences for take-home lessons, resources and lab-based classes that can increase their personal knowledge of the content offered by the zoo outreach program. Perhaps this discrepancy is the result of a lack of knowledge about outreach program offerings so teachers are not aware and do not place as much value on this opportunity.

Program Limitations

The most noticeable limitations of the program, as seen in the surveys and interviews, were the lack of awareness of the program and scheduling difficulties. It is not entirely evident whether scheduling difficulties are more on the part of the zoo or schools. There seemed to be comments regarding both sides. Some teachers commented, as stated earlier, on difficulties scheduling resources and programs in particular holiday seasons. Others commented on limitations within their school that did not allow them to schedule programs or only schedule certain ones. Some of the comments in the survey indicated a planning process in the schools where only certain grade levels or classes could use outreach programs. These teachers were not clear as to the reasons why these grade-specific limitations existed but through personal experiences and observations from comments of teachers, these often seem to stem from dynamics of teachers and testing objectives for the particular grade levels.

Study Limitations

With every study there are limitations to the research. The target population size was acceptable but if the largest metropolitan school district in the Tulsa area was able to

participate the study would have been much stronger. The length of the study and time of the study were also limitations. This was a very short study taking place in January and February. State testing begins in April and this is the busiest time for parent-teacher conferences and testing preparation. It would probably have been much more beneficial to conduct this study in the fall when there would not be as much administrative pressure for test preparation.

These factors could have played a part in the delayed and low response rate from JPS. Although, even with the limitations, the overall responses to the survey did reach the minimum set by commonly accepted research standards but the results would have been much stronger if more teachers participated in the open-ended questions. The interviews also came very close to meeting the minimum set by the researcher but the responses from teachers who choose not to use the program were very limited. Perhaps, the lack of participation from this group is due to the fact these teachers are not interested in the zoo and therefore do not use its resources and choose not to participate in studies involving the zoo. Even with this perception, it would have been beneficial to hear their comments. The one teacher that did comment was very positive about the zoo and resources from the zoo but due to school constraints could not utilize the outreach program.

Implications for Programs

After completion of this study, it is apparent an action plan should be created that addresses some of the issues revealed in the results of this study. The following points would be beneficial to the zoo to address when restructuring their current outreach program:

- Teachers need to be aware of the outreach program. Proper steps need be taken to create a marketing strategy for the new outreach program so all teachers are aware of zoo offerings.
- Programs must be aligned to state testing standards and encourage active learning through hands-on activities.
- Opportunities must be created for teachers to gain content knowledge on outreach program curriculum prior to implementing it in the classroom.
- Materials needed for outreach programs need to be made available throughout the year. If an event needing similar items has been scheduled effort should be made to ensure there are enough materials to supply the demands of both.

It is clear a majority of teachers that are familiar with the program are return users of the program. Once a teacher begins using the program they are very likely to continue using it since there is a large gap between teachers who are repeat users and teachers who are not aware of the program.

The largest problem lies in marketing the program. Some of the repeat users commented they used the Tulsa Zoo outreach program to teach math, social studies, literature and science content. This versatility needs to be apparent in the marketing of the program to encourage other teachers to use it. As a direct result of this study, the Tulsa Zoo has created a more detailed marketing plan. This plan includes sending information directly to teachers, attending teacher meetings in the fall and speaking at state or regional curriculum conferences.

There should also be more concentration on district and administration support for the program. Many teachers commented through the survey and interviews

administrative support is the most limiting factor in implementing the outreach program in their classroom. For the program to be successful there needs to be clear documentation for the district and administration of the goals, standards addressed and focus of the Tulsa Zoo outreach program. Proper marketing may also aid in taking administrative pressure off teachers faced with not being allowed to teach science or only allowing particular classes or grade levels to use the program. All these issues were taken into account when creating the new program framework, program outlines and resources in the new outreach program which has been created using results from this study.

Connecting the Dots

As with all research, the data collection is an effort to answer questions proposed by the researcher. Although my participant responses were smaller than desired in particular areas of the research, there were similarities in answers creating a pretty homogenous sample collection. I propose the following answers to my research questions.

For the first question, to what extent, if any, are JPS, BAPS and BPS first and second grade teachers aware of outreach programs offered by the Tulsa Zoo, the answer is most participants were unaware of the Tulsa Zoo outreach program. As mentioned previously, there needs to be more focus on the marketing of the outreach program to make it successful and have a large impact on the community. Even if teachers are familiar with one aspect of the program most were unaware of others or of the entire scope of topics that could be requested as seen in the program request data.

In response to the second question, what attributes, if any, do JPS, BAPS and BPS first and second grade teachers believe to be an integral part of the Tulsa Zoo outreach program, the majority of comments received during this study revealed four integral features of the program. Programs must be PASS and CORE aligned, be engaging for students, based around activity-based learning and involve open communication between the students and/or teacher and the zoo professional or volunteer.

The last question, to what extent, if any, are the Tulsa Zoo outreach programs being used by JPS, BAPS and BPS first and second grade teachers, results from the survey indicated the majority of the teachers surveyed (52.7%) do not use the outreach program because they are unaware of its existence. Participants surveyed who do use the outreach program request between one and four times a year (32.2%) or between five and nine times a year (12.7%) responded they used it mainly to enhance their curriculum and for an opportunity for students to communicate with zoo staff.

Implications for Future Research

Future free-choice educational research would benefit in looking further into how outreach programs are being used in the schools. This study was a qualitative descriptive study examining the awareness and usage of the outreach program for practical use in creating a more effective outreach program for the Tulsa Zoo. Further insight into the attitudes of the teachers using theme analysis would provide more insight into the reasons behind using the outreach program. Studying teacher attitudes and confidence towards teaching science would help to address any reasons outreach programs are or are not being used in schools and also assist in providing evidence on the direction the programs should take. Knowing where teachers stand in their confidence and knowledge in

teaching science would help facilities to determine if more professional development for teachers is necessary or if the focus should be on creating engaging activities to use when zoo professionals or volunteers visit classrooms.

Additionally, future research should also focus on the students' perspective and knowledge about nature and science. Some studies have been conducted through non-zoo outreach groups to measure confidence, content knowledge and environmental awareness in programs (Melber, 2003). But many zoos, such as the Tulsa Zoo, have extensive educational materials that could be included in kits, programs and professional development not readily available to other free-choice educational groups. It would be interesting to see the benefits, if any the students are receiving from these unique materials and opportunities.

It would also be of interest to measure benefits, if any, of combining different forms of an outreach program. One example being, is there any gain in student content knowledge if their teacher attends a professional development course prior to teaching content out of an outreach kit or inviting an outreach program into their classroom from a zoo? There are many additional questions that need to be answered before we can fully understand the benefits of free-choice outreach and create an optimal outreach plan benefiting both teachers and students.

Lessons Learned from Teachers

With the increasing demands of school administration, standardized testing and ever-changing views on curriculum, versatility is a must in any area of teaching. Free-choice education programs such as the Tulsa Zoo outreach program have the

responsibility to change with the pressures put on the schools. In doing so the Zoo benefits though continued opportunities to engage students in conservation and science in the classroom and schools benefit from engaging programs and resources. The drive to learn is “fueled by interest. When interest is present in the learning environment, there is less need for external rewards and punishments – not only to motivate learning but to motivate behavior as well” (Falk, 2009, p. 69). To provide an environment fueled by interest the curriculum must be diverse to meet the diverse interests and abilities of the students. This includes providing opportunities such as free-choice outreach programs to enhance the curriculum to appeal to those not otherwise engaged.

As a personal observation, I have noticed in three different schools I have visited there was a group of students labeled as the “troubled students” in the class. As I set up my program and waited for the teacher’s cue to start I repeatedly saw the teacher comment to these particular students on expectations and behavioral changes that must be made in order to participate in the program. I never had any problems with these students. I actually found them to be the most enthusiastic, intelligent and engaged students in the class for the forty-five to sixty minutes I taught them. The reasoning for this apparent change in their behavior may be because this program is engaging them in a way other parts of their school environment could not. Or, it could simply be the change in speaker, change in content, but whatever the change, these students were completely engaged in learning for that moment in time.

Engaging students in learning is the common denominator of free-choice and formal education. Both strive to create opportunities for students to continue learning, continue asking questions and become literate scholars. The partnership between these

two sectors continues to grow through the years and with proper analysis of awareness and usage of programs, both sectors can ensure they are providing students with optimum educational experiences. As a French poet, journalist and novelist, Anatole France states, “Awaken people’s curiosity. It is enough to open minds, do not overload them. Put there just a spark. If there is enough good flammable stuff, it will catch fire” (n.d.). Our educational system is integral in igniting a fire in students’ minds. Whether the catalyst comes from a free-choice program or formal curriculum at a school; learning is the ultimate goal. As teachers and community members it is our duty to future generations to ensure there are ample opportunities for students to learn and to give them the best chance possible at becoming literate members of our society.

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APPENDICES

Appendix A: Letter to School Teachers

Dear First and Second Grade Teachers,

As a graduate student seeking a Master's of Science in Teaching, Learning and Leadership at Oklahoma State University, I ask for a little of your time to complete a short, 15 minute survey. Your input will be used to assess the awareness and usage of the Tulsa Zoo outreach program to aid in creating a better outreach program for you and your students. Even if you have never heard of the Tulsa Zoo outreach program, your voice is a valued contribution to this study.

There is no reward or penalty for participation. We appreciate your assistance in creating a better educational opportunity for you and your students. If you have any questions about the survey please see the attached information sheet which highlights the research details and lists contacts for the project.

You can find the survey by clicking on the following link:

<http://www.surveymonkey.com/s/zoooutreachsurvey>

Sincerely,

Emily Mortimer
Graduate Student
School of Teaching, Curriculum and Leadership
Oklahoma State University

Education Supervisor, Formal Education
Tulsa Zoo Management, Inc.

Appendix B: Survey Information Page

**PARTICIPANT CONSENT INFORMATION
OKLAHOMA STATE UNIVERSITY**

Title: Awareness and usage of the Tulsa Zoo outreach program by first and second grade public school teachers

Investigators: Emily Mortimer, MS Education, Teaching, Learning and Leadership (May, 2012) and Dr. Kathryn Castle, EdD. Curriculum & Instruction: Early Childhood Education-Child Development, MA Psychology-Educational Psychology, BS Psychology, French, & Secondary Education

Purpose: This project aims to evaluate the awareness and usage of the Tulsa Zoo Outreach Program. Your participation will give insight not previously sought to analyze the current outreach program and to help frame future outreach programs. For participation in this study, you will receive an electronic survey and will be given the chance to participate in a focus group discussing the Tulsa Zoo's outreach program. You must be 18 years or older to participate.

What to Expect: To participate in this study, you will first receive an electronic version of a survey using the program www.surveymonkey.com where you can choose their best answer or type in responses to open-ended questions. You may skip a question if you prefer not to answer it. You can expect this survey to last 15 minutes. Upon the completion of this survey you will be given the choice to participate in a focus group. This will include a small group of 9 teachers participating in a 1 hour focus group to discuss the Tulsa Zoo Outreach Program in greater detail. You will also receive a number to use when making a comment or answering a question so your responses and comments will be anonymous. During the focus group, the session will be audio taped for transcription purposes. All questions will be open to opinion and be non-judgmental in nature.

Risks: Your participation in this study will be anonymous and all information and responses will be kept confidential. All responses to survey and focus group questions will be non-judgmental and open to opinion. There are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

Benefits: The responses received as a result of your participation will be used to create an assessment of the awareness and usage of the Tulsa Zoo outreach program and assist in creating a framework for future outreach programs.

Compensation: No compensation will be given for participation in this project.

Your Rights and Confidentiality: Participation in this study is completely voluntary and you may choose to discontinue the research activity at any time without reprisal or

penalty. If your actions or comments are intentionally harmful to other participants or to the researchers, your participation may be terminated for the rest of the study.

Confidentiality: All surveys completed through this study will be kept anonymous and results will be stored using a secure program to analyze responses. During the focus group, to ensure anonymity, you will be given a number to use when answering questions or making a comment so your name will be protected. The audio from the focus group will be kept for the duration of the study and for one full year following the completion of the study in May 2012. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

Contacts: For questions or comments about this study, please contact Emily Mortimer, 918-704-8779 or by e-mail at emily.mortimer@okstate.edu. Or, you can contact Dr. Kathryn Castle at 405-744-8019 or by e-mail at kathryn.castle@okstate.edu.

If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

If you choose to participate: Please, click NEXT if you choose to participate. By clicking NEXT, you are indicating that you freely and voluntarily agree to participate in this study and you also acknowledge that you are at least 18 years of age.

It is recommended that you print a copy of this consent page for your records before you begin the study by clicking below.

Appendix C: Tulsa Zoo Outreach Teacher Survey

Tulsa Zoo Outreach Teacher Survey

Thank you for choosing to participate in this survey. Your opinions are very valuable to us. Even if you have never heard of the program, please take the survey. You are not required to answer every question, but the more answers you provide will allow us to have a more comprehensive look at the effectiveness of our program.

Program Overview. The Tulsa Zoo Outreach Program offers on-site and off-site educational opportunities for students ranging from pre-kindergarten through college. Off-site programs include teacher loan trunks with books, activities, biofacts (skulls, pelts, plants, etc.) to use in the classroom at the teachers convenience, programs at the school led by zoo staff or docents on ecology, science, animals, or another topic of the teacher's choice. On-site opportunities include professional development in the form of summer teacher institutes, staff or docent led tours in the zoo, scavenger hunts and unstructured field trips to the zoo.

1. What school district do you currently teach at?
 - Tulsa Public School
 - Other
2. What grade do you currently teach?
 - First grade
 - Second grade
 - Other grade
3. Are you male or female?
 - Male
 - Female
4. Are you White, African-American, American Indian, Alaskan Native, Asian, Native Hawaiian, Pacific Islander, or some other race?
 - White
 - African-American
 - American Indian
 - Alaskan Native
 - Asian
 - Native Hawaiian
 - Pacific Islander
 - From multiple races
 - Other
5. How many years teaching experience do you have?
6. What subject/subjects do you currently teach?
 - Language Arts
 - Fine Arts
 - Math
 - Science
 - Reading

- Social Studies
 - Self-Contained
 - Other
7. How often do you use any component of the Tulsa Zoo Outreach Program?
- Frequently (more than 10 times per year)
 - Moderate use (5-9 times per year)
 - Some use (1-4 times per year)
 - I choose not to use the Tulsa Zoo Outreach Program
 - I am not familiar with the Tulsa Zoo Outreach Program
 - Please specify a number
8. How did you become aware of the Tulsa Zoo Outreach Program?
- Another teacher told me about it
 - I learned about it from visiting the zoo
 - I saw it on the zoo website
 - other
9. Why did you start using the Tulsa Zoo Outreach Program?
10. Why do you continue to use the Tulsa Zoo Outreach Program?
11. If you are no longer using outreach programs, why did you stop?
12. What is most and least appealing about the program?
13. How do you integrate the Tulsa Zoo Outreach Program into your teaching?
- For my professional development
 - Student enrichment
 - To allow students to communicate with zoo professionals
 - To enhance what I am already teaching
 - To open a new unit
 - To close a unit
 - Other
14. How do you incorporate the Tulsa Zoo Outreach Program in your curriculum?
15. Please rank the following parts of the Tulsa Zoo Outreach Program from most important to least important. (1=most important, 6=least important)
- Docent/Zoo Staff led Programs
 - Loan Trunks
 - Professional Development Opportunities
 - Scavenger Hunts for Zoo Field Trips
 - Tours of the Zoo
 - Unstructured Field Trips to the Zoo
 - Additional Comments or Reasoning for Ranking
16. Please rank the following features of the Tulsa Zoo Outreach Program from most valuable to least valuable to you professionally. (1=most valuable, 6=least valuable)
- Books and Resources
 - Conservation Message
 - Entertainment
 - Personal Knowledge Enhancement

- Professional Development Credits
 - Professional Relationship with Zoo Professionals
 - Additional Comments or Reasoning for Ranking
17. Please rank the following features of the Tulsa Zoo Outreach Program from most valuable to least valuable to your teaching. (1=most valuable, 6=least valuable)
- Additional Activities
 - Availability
 - Books and Resources
 - Conservation Message
 - PASS/CORE Aligned Activities
 - Price
 - Additional Comments or Reasoning for Ranking
18. Please rank the following features of opportunities to provide your students from the Tulsa Zoo Outreach Program from most valuable to least valuable. (1=most valuable, 5=least valuable)
- Allowing Students to Communicate with Zoo Professionals
 - Books and Resources
 - Conservation Message
 - Entertainment
 - Live Animals
 - Additional Comments or Reasoning for Ranking
19. Why do you choose not to use the Tulsa Zoo Outreach Program?
20. Are you interested in using the Tulsa Zoo Outreach Program?
- Yes
 - No
 - If you answer no, please explain.

We would like to conduct personal interviews to discuss in more detail your opinions of the Tulsa Zoo Outreach Program. All levels of familiarity and usage are appreciated and encouraged to participate. Each session will not last longer than one hour and take place on a weekday evening in early February on the Tulsa Campus of Oklahoma State University. The exact location will be announced at a later time.

Please e-mail Emily Mortimer at emortimer@tulsazoo.org if you are interested.

21. Would you like to participate in an interview?
- Yes
 - No

Thank you

Thank you for your participation in this survey. Your input is very important to us and to this project.

Again, if you would like to participate in the focus group, please send a short e-mail to Emily Mortimer at emortimer@tulsazoo.org.

Appendix D: Personal Teacher Interviews Script

Welcome and Overview

- Study overview

Ground Rules

- There are no right or wrong answers, all answers are opinion
- All answers to the questions will be considered anonymous and confidential. Any distinguishable markers such as voices on the tape recordings will be kept in a secure location for the duration of the study then safely discarded.
- Rules for cellular phones and pagers if applicable. For example: We ask that you turn off your phones or pagers. If you cannot and if you must respond to a call, please do so as quietly as possible and rejoin us as quickly as you can.

Questions

Video Questions – subjects will watch a video of a short outreach program, about 15 minutes long

1. After watching the video how would you improve this program?
2. Could you incorporate a program like this into your curriculum?
 - a) Why would you not be able to incorporate a program like this into your curriculum?
 - b) How would you incorporate a program like this into your curriculum?

Loan Trunk Materials

1. Do you already have any of these materials in your classroom?
2. What materials are you most likely to use and why?
3. What materials are you least likely to use and why?
4. How would you improve this trunk?

Professional Development

1. What types of professional development could a zoo outreach program offer you?
2. How would you construct these opportunities?
3. Night classes, Saturday classes, web-based communication?
4. What should the goal of these classes be? Content, pedagogy, instructions on how to use the resources

Subject Matter

1. What three themes would be the most valuable to present by the Tulsa Zoo?
2. Why did you choose these subjects/themes?

Does anyone have any additional comments?

Appendix E: Informed Consent Document

INTERVIEW CONSENT FORM

Project Title: Awareness and usage of the Tulsa Zoo outreach program by first and second grade public school teachers

Investigators:

Primary Investigator	Emily Mortimer	MS Education, Teaching, Learning and Leadership (May, 2012)
Advisor	Dr. Kathryn Castle	BS Biology, Emphasis in Wildlife Biology EdD. Curriculum & Instruction: Early Childhood Education-Child Development MA Psychology-Educational Psychology BS Psychology, French, & Secondary Education

Overview:

The purpose of this interview is to ascertain the extent of the awareness and usage of outreach programs offered by the Tulsa Zoo by first and second grade Jenks Public School (JPS), Broken Arrow Public Schools (BAPS) and Berryhill Public School (BPS) teachers. There is little research to show how programs and program materials from free-choice institutions, such as zoos, are being used in formal education settings. The results from this study should provide insight comparable to other metropolitan areas with free-choice education facilities.

Procedures:

During this interview, you will be discussing your awareness and usage of the Tulsa Zoo Outreach Program. A series of open-ended questions will be asked and you may comment and answer the questions at your discretion. During the focus group, the session will be audio taped for transcription purposes. All questions will be open to opinion and be non-judgmental in nature.

Risks of Participation:

Your participation, including your responses will be kept confidential. All responses will be nonjudgmental and open to opinion. There are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

Benefits:

The responses received as a result of your participation will be used to create an assessment of the awareness and usage of the Tulsa Zoo outreach program and assist in creating a framework for future outreach programs.

Confidentiality:

During the interview, to ensure confidentiality, you will be given a number to use when answering questions or making a comment so your name will be protected. The audio

from the interview will be kept on an external hard drive for the duration of the study and for one full year following the completion of the study in May 2012. At this time, the audio recording will be permanently deleted from the external hard drive and all consent forms will be shredded. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

Compensation:

No compensation will be given to participate in this study.

Contacts:

For questions or comments about this study, please contact Emily Mortimer, 918-704-8779 or by e-mail at emortimer@tulsazoo.org. Or, you can contact Dr. Kathryn Castle at 405-744-8019 or by e-mail at kathryn.castle@okstate.edu.

If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

Participant Rights:

Participation in this study is completely voluntary and you may choose to discontinue the research activity at any time without reprisal or penalty. If your actions or comments are intentionally harmful to other participants or to the researchers, your participation may be terminated for the rest of the study.

Signatures:

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy of this form has been given to me.

Signature of Participant

Date

I certify that I have personally explained this document before requesting that the participant sign it.

Signature of Researcher

Date

Appendix F: IRB Approval Letter

Oklahoma State University Institutional Review Board

Date: Tuesday, January 24, 2012
IRB Application No ED11213
Proposal Title: The Awareness and Usage of the Tulsa Zoo Outreach Program by First and Second Grade Public School Teachers

Reviewed and Processed as: Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 1/23/2013

Principal Investigator(s):

Emily Mortimer	Kathryn Castle
11118 N. 143 E. Ave.	235 Willard
Owasso, OK 74055	Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair
Institutional Review Board

Appendix G: IRB Modification Approval Letter

Oklahoma State University Institutional Review Board

Date: Friday, February 17, 2012 Protocol Expires: 1/23/2013
IRB Application No: ED11213
Proposal Title: The Awareness and Usage of the Tulsa Zoo Outreach Program by First and Second Grade Public School Teachers

Reviewed and Processed as: Expedited
Modification

Status Recommended by Reviewer(s) **Approved**

Principal Investigator(s):

Emily Mortimer
11118 N. 143 E. Ave.
Owasso, OK 74055

Kathryn Castle
235 Willard
Stillwater, OK 74078

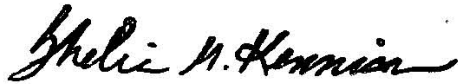
The requested modification to this IRB protocol has been approved. Please note that the original expiration date of the protocol has not changed. The IRB office **MUST** be notified in writing when a project is complete. All approved projects are subject to monitoring by the IRB.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

The reviewer(s) had these comments:

The modification request to alter the research procedures to allow for individual interviews rather than focus group discussion is approved.

Signature :



Shelia Kennison, Chair, Institutional Review Board

Friday, February 17, 2012

Date

Appendix H: Survey Results

Ex-Situ Outreach Teacher Survey

What school district do you currently teach at?

Answer Options	Response Percent	Response Count	
Broken Arrow Public Schools	64.1%	41	
Jenks Public Schools	29.7%	19	
Berryhill Public Schools	6.3%	4	
Other	0.0%	0	
			answered question
			64
			skipped question
			0

What grade do you currently teach?

Answer Options	Response Percent	Response Count	
first grade	48.4%	31	
second grade	40.6%	26	
other grade	10.9%	7	
			answered question
			64
			skipped question
			0

Are you male or female?

Answer Options	Response Percent	Response Count	
Male	0.0%	0	
Female	100.0%	47	
			answered question
			47
			skipped question
			17

Are you White, African-American, American Indian, Alaskan Native, Asian, Native Hawaiian, Pacific islander, or some other race?

Answer Options	Response Percent	Response Count
White	83.0%	39
African-American	8.5%	4
American Indian	8.5%	4
Alaskan Native	0.0%	0
Asian	0.0%	0
Native Hawaiian	0.0%	0
	0.0%	0

Pacific Islander			
From multiple races	0.0%	0	
Some other race (please specify)		1	
	<i>answered question</i>		47
	<i>skipped question</i>		17

Number	Response Date	Some other race (please specify)
--------	---------------	----------------------------------

How many years of teaching experience do you have?

Answer Options	Response Count
	45
<i>answered question</i>	45
<i>skipped question</i>	19

Number	Response Date	Response Text	Categories
1	Feb 28, 2012 7:54 PM		4
2	Feb 28, 2012 7:53 PM		4
3	Feb 28, 2012 7:51 PM		5
4	Feb 22, 2012 8:31 PM		13
5	Feb 21, 2012 6:23 PM		10
6	Feb 21, 2012 4:09 PM		8
7	Feb 21, 2012 2:07 PM		13
8	Feb 21, 2012 2:01 PM		4
9	Feb 16, 2012 3:28 PM		5
10	Feb 16, 2012 2:59 PM		1
11	Feb 15, 2012 5:45 PM		8
12	Feb 15, 2012 4:47 PM		24
13	Feb 15, 2012 3:14 PM		7
14	Feb 15, 2012 9:00 AM		8
15	Feb 14, 2012 3:11 PM		6
16	Feb 3, 2012 10:48 PM		24
17	Feb 1, 2012 8:50 PM		4
18	Feb 1, 2012 3:28 PM		34
19	Jan 31, 2012 6:22 PM		27
20	Jan 31, 2012 6:22 PM		23
21	Jan 31, 2012 5:04 PM		12
22	Jan 31, 2012 3:50 PM		10
23	Jan 31, 2012 1:41 PM		5
24	Jan 30, 2012 11:00 PM		8
25	Jan 30, 2012 9:25 PM		9
26	Jan 30, 2012 9:09 PM		45
27	Jan 30, 2012 9:00 PM		13
28	Jan 30, 2012 8:42 PM		21
29	Jan 30, 2012 8:30 PM		26
30	Jan 30, 2012 8:22 PM		22
31	Jan 30, 2012 8:14 PM		4

32	Jan 30, 2012 8:12 PM	5
33	Jan 30, 2012 8:12 PM	2
34	Jan 30, 2012 8:10 PM	7
35	Jan 30, 2012 8:04 PM	20
36	Jan 30, 2012 7:55 PM	7
37	Jan 30, 2012 7:54 PM	13
38	Jan 30, 2012 7:19 PM	18
39	Jan 30, 2012 6:44 PM	28
40	Jan 30, 2012 6:33 PM	25
41	Jan 30, 2012 6:21 PM	8
42	Jan 30, 2012 6:11 PM	6
43	Jan 30, 2012 6:11 PM	9
44	Jan 30, 2012 6:08 PM	5
45	Jan 30, 2012 2:36 PM	13

What subject/subjects do you currently teach?

Answer Options	Response Percent	Response Count
Language Arts	25.0%	13
Fine Arts	3.8%	2
Math	36.5%	19
Science	32.7%	17
Reading	34.6%	18
Social Studies	26.9%	14
Self-contained	61.5%	32
Other	3.8%	2
<i>answered question</i>		52
<i>skipped question</i>		12

Number	Response Date	Other (please specify)
1	Feb 1, 2012 3:28 PM	gifted and talented grades 1-5
2	Jan 31, 2012 3:50 PM	gifted

How often do you use Tulsa Zoo Outreach Programs?

Answer Options	Response Percent	Response Count
frequently (more than 10 times per year)	0.0%	0
moderate use (5-9 times per year)	12.7%	7
some use (1-4 times per year)	34.5%	19
I choose not to use the Tulsa Zoo	1.8%	1

5	Jan 31, 2012 6:28 PM	Resource
6	Jan 30, 2012 9:20 PM	To extend the children's knowledge of animals beyond the classroom. We have a zoo docent visit our classroom during our animal studies of hibernation, adaptation and migration
7	Jan 30, 2012 9:04 PM	I thought it was a very good resource for educators.
8	Jan 30, 2012 8:35 PM	To give more information to students about animals and their habitats and to get them more interested in our culminating visit to the zoo.
9	Jan 30, 2012 8:27 PM	Because of limited funds for field trips, we were looking for ways to reach our kids without spending money.
10	Jan 30, 2012 8:12 PM	It is a great way to engage the students in learning.
11	Jan 30, 2012 6:42 PM	Field Trips for students to learn more about animals
12	Jan 30, 2012 6:13 PM	

Why do you continue to use the Tulsa Zoo Outreach Program?

Answer Options Response Count

<i>answered question</i>	9
<i>skipped question</i>	55

Number	Response Date	Response Text
1	Feb 21, 2012 6:27 PM	We only used it once- we were not entirely satisfied and did not use them again.
2	Feb 16, 2012 3:34 PM	We continue to use the program because we have found it to be very beneficial. The students love it!
3	Jan 31, 2012 6:29 PM	Love it!
4	Jan 31, 2012 6:28 PM	Resource - Hands-on Activities
5	Jan 30, 2012 9:04 PM	It goes along with curriculum standards for the state of Oklahoma Because it is helpful and useful to classroom teachers. I do not like the idea of it not being available during Halloween activities at the zoo. We were told that due to things scheduled at night it would not be possible to have outreach activites during the daytime around halloween. I thought this was a bit sad.
6	Jan 30, 2012 8:35 PM	Excellent docents, good programs, on students' level
7	Jan 30, 2012 8:27 PM	We are able to teach objectives in a more hands on manner and reach those kids with sensory learning styles.
8	Jan 30, 2012 8:12 PM	The students enjoy it and it enriches

How do you integrate the Tulsa Zoo Outreach Program into your teaching?

Answer Options	Response Percent	Response Count
Student enrichment	81.8%	18
To enhance what I am already teaching	77.3%	17
To open a new unit	36.4%	8
To close a unit	40.9%	9
For my professional development	22.7%	5
To enhance my own knowledge	36.4%	8
To allow students to communicate with zoo professionals	63.6%	14
Other (please specify)		1
	<i>answered question</i>	22
	<i>skipped question</i>	42

Number	Response Date	Other (please specify)	Categories
1	Jan 31, 2012 2:53 PM	I haven't had a chance to yet but if I did I could see using it in any stage of the learning process, but probably using it at the close of the unit would allow to students to understand, practice, and grasp the topic best.	

How do you incorporate the Tulsa Zoo Outreach Program in your curriculum?

Answer Options	Response Count
	7
<i>answered question</i>	7
<i>skipped question</i>	57

Number	Response Date	Response Text
1	Feb 16, 2012 3:34 PM	We have a zoo docent come in to our school to corrlate with our animal units. We have arctic, rainforest, spiders/bats, pond, and insects. It is wonderful!
2	Jan 31, 2012 6:28 PM	Tie it in with the theme taught.
3	Jan 31, 2012 2:53 PM	If I had the chance I would use it throughout the year to teach science curriculum. After teaching about the different animals, the children then got to see them in person. They also were asked to look for specific characteristics for each group of animals. I also use the Zoo's Pablo program with them.
4	Jan 30, 2012 9:20 PM	

Answer Options	Response Percent	Response Count	
Yes	27.5%	14	
O	72.5%	37	
	<i>answered question</i>		51
	<i>skipped question</i>		13
7 Jan 30, 2012 6:13 PM zoo animals			

Answer Options	Most Valuable	Response Count
Availability	17.14%	22
Price	14.29%	22
Conservation Message	14.29%	22
Additional Activities	14.29%	21
PASS/CORE Aligned Activities	28.57%	22
Books and Resources	11.43%	21
Other Features or Reasoning for Ranking		
Please rank the following features of opportunities to provide your students from the Tulsa Zoo Outreach Program from most valuable to least valuable. (1=most valuable, 5=least valuable)		

Answer Options	Most Valuable	Response Count
Conservation Message	12.50%	22
Entertainment	9.38%	22
Live Animals	31.25%	22
Books and Resources	12.50%	22
Allowing Students to Communicate with Zoo Professionals	34.38%	22
Other Features or Additional Comments		0
	<i>answered question</i>	22
	<i>skipped question</i>	42

Why do you choose not to use Tulsa Zoo Outreach Programs?

Answer Options	Response Count
	0
<i>answered question</i>	0
<i>skipped question</i>	64

Are you interested in using Tulsa Zoo Outreach Programs?

Answer Options	Response Percent	Response Count
yes	96.4%	27
no	3.6%	1
If you answer no, please explain.		0
	<i>answered question</i>	28
	<i>skipped question</i>	36

Would you like to participate in the focus group?

VITA

Emily Jane Mortimer

Candidate for the Degree of

Master of Science

Thesis: AWARENESS AND USAGE OF THE TULSA ZOO OUTREACH PROGRAM BY FIRST AND SECND GRADE PUBLIC SCHOOL TEACHERS

Major Field: Education: Teaching, Learning and Leadership

Biographical:

Education:

Completed the requirements for the Master of Science in Education at Oklahoma State University, Stillwater, Oklahoma in May, 2012.

Completed the requirements for the Bachelor of Science in Biology at Missouri State University, Springfield, Missouri in 2004.

Experience:

Education Supervisor, Formal Education August 2009- Present
Tulsa Zoo and Living Museum Tulsa, OK

- Developed outreach programs including grant proposal and evaluation
- Liaison between other free-choice education departments
- Coordinated SENSEsational Science Teacher Workshop

Education Coordinator August 2004 – August 2009
Tulsa Zoo and Living Museum Tulsa, OK

- Managed 150+ docent and animal collection
- Developed programs, teacher workshops and teacher loan trunks
- Coordinated camps and educational component for special events

Professional Memberships:

- Phi Kappa Pi
- Golden Key
- Kappa Delta Pi
- National Education Association
- Association of Zoos and Aquariums

Name: Emily Mortimer

Date of Degree: May, 2012

Institution: Oklahoma State University

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Title of Study: AWARENESS AND USAGE OF THE TULSA ZOO OUTREACH
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Scope and Method of Study:

With the increasing demands placed on formal and free-choice education, proper analysis of the programs offered by free-choice educators being used in formal classrooms is an integral part of providing appropriate programs to students and teachers. This study attempts to ascertain the awareness and usage of the Tulsa Zoo outreach program in Tulsa, Oklahoma. A survey was sent to 199 first and second grade Broken Arrow Public School, Jenks Public School and Berryhill Public School teachers. The survey asked open- and closed-ended questions regarding awareness and usage of the outreach program. Teacher interviews were also conducted to gather more information on how the outreach program was being used and why or why it was not being used by teachers who were familiar, unfamiliar and nonusers of program. These forms of data collection were combined with information from a program request database used by the Tulsa Zoo to see what programs were most requested by teaches in the sampled school districts.

Findings and Conclusions:

The main finding was that first and second grade teachers are unaware about the program. Even if teachers are familiar with one aspect they were unaware of others. Findings also showed the sampled teachers prefer to use the Tulsa Zoo outreach program as a way to engage their students in hands-on learning while providing state testing aligned curriculum. Most teachers use in-class programs lead by zoo professionals or volunteers as a way to engage students in open communication about content the teacher presents.

The main issues in need of addressing regarding the Tulsa Zoo outreach program include better marketing strategies, strong correlations between engaging lessons and testing standards and ensuring programs and materials are available to teachers throughout the year, regardless of season or events occurring at the zoo.

ADVISER'S APPROVAL: Dr. Kathryn Castle
