2012

ASSESSING TEACHER EXPECTATIONS OF THE LEARNING EXPERIENCE PROGRAMS AT ZOOS VICTORIA

Assessing Teacher Expectations of the Learning Experience Programs at Zoos Victoria

An Interactive Qualifying Project Report submitted to Zoos Victoria and the faculty of Worcester Polytechnic Institute in partial fulfilment of the requirements for the Degree of Bachelor of Science by

Francis Hoey

Jean Paul Miralda

Kaleigh Tomkinson

Roxanne Tymon

May 3, 2012

Professor Kristen Billiar, Advisor

Professor Ryan Madan, Advisor

Abstract

As an integral step of becoming the leading zoo-based conservation organisation in the world, Zoos Victoria strives to increase attendance to their educational programs by ten percent in the next three years. To help Zoos Victoria achieve this objective, our goal was to present a better understanding of the teacher expectations of the Learning Experience Programs. By analysing approximately 400 interview and survey responses from teachers and zoo educators, we discovered the drivers and barriers of educational visitations. Eight major recommendations are made on how the Zoo can utilize the information to align their programs with the teacher expectations.

Acknowledgements

The WPI Zoo Team would like to take this opportunity to thank everyone that made this project possible. First, we would like to thank our sponsors, Elizabeth Caspar and Donna Livermore for being so encouraging, confident, and positive toward our team. We appreciated how available you both were to answer questions and provide support at all times. We are gracious for that you provided us crucial information for our project and drove our team to the Werribee and Healesville sites. Donna and Liz, your time spent with us is greatly appreciated, and we could not have done it without you.

Additionally, we would like to thank the education team and the corporate office for being so welcoming and the rest of the Zoos Victoria staff. The educational staff was always available to answer questions, allow our team to observe their programs, and provide helpful tips for our time in Melbourne. Your immense interest in our project helped us stay motivated throughout our research and analysis. We would especially like to thank the Zoo for letting us observe a seal training session, and for our close-up encounters with the sugar gliders, possums, snakes, turtles, and tree kangaroos. We would like to thank all the school teachers who responded to our surveys. The vast amount of responses you provided was greatly appreciated. Your input was very insightful to our project and greatly valued.

We would like to take the time to thank our WPI professors for their guidance and support throughout the entire IQP process, in both Worcester and Melbourne. Thanks to Professor Ault for providing us with the opportunity to complete our IQP in Australia. Additionally, we would like to thank Professor McCauley for his guidance in the early stages of our research, and for assisting us when identifying the scope of our project. Lastly, we would like to thank Professors Billiar and Madan for their assistance throughout the entire IQP process. We greatly appreciate the time you took to discuss our project, review our report, support our team, and planned enjoyable activities.

Authorship

Section	Primary Author
1.0 Introduction	All
2.0 Literature Review	Jean Paul
2.1 Conservation	All
2.1.1 Global Challenge	Kaleigh
2.1.2 Australian Conservation	Francis
2.1.3 The Emerging Role of Zoos in Conservation	Kaleigh
2.1.4 Environmental Education	Francis
2.2 Educational Models	Roxanne
2.2.4 Teacher Development	Jean Paul
2.3 Zoos Victoria	Jean Paul
2.4 Summary	All
3.0 Methodology	Jean Paul
3.1 Interview Strategy	Jean Paul
3.2 Observation of Educational Programs and Interactions	Roxanne
3.3 Identifying Educational Visitation Drivers	Kaleigh
3.4 Identifying Educational Visitation Barriers	Francis
3.5 Delivering Key Suggestions	Jean Paul
4.0 Findings and Analysis	All
4.1 Observation of Educational Programs and Interactions	Roxanne
4.1.1 Passive Observation	Roxanne
4.1.2 Zoo Educator Interview	Roxanne
4.1.3 Cross-Sectional Analysis	Jean Paul/Roxanne
4.2 Motivations	Kaleigh
4.3 Barriers	Francis
4.4 Non-Visiting Teachers	Kaleigh
4.5 Teacher Professional Development Programs	Jean Paul
4.6 Anticipated vs. Actual Expectations	Roxanne
5.0 Conclusions	All
6.0 Recommendations	All

Table of Contents

Table of Figures

List of Tables

Executive Summary

The endangerment of Australia's native species and habitats has led to the increased need for local conservation efforts. Many foundations around the world have discovered that only through educational programs are they able to increase conservation awareness. Modern zoos are taking on this conservation challenge and educating people worldwide about the importance of sustainability and the environment. Zoos Victoria is a pioneer in this effort. They have taken the lead by developing models like the Learning Experience Programs.

Zoos Victoria has adopted the ambitious goal of becoming the world's leading zoo-based conservation organisation. Zoos Victoria wants every child in Victoria to have a meaningful connection to wildlife and develop a passion for conservation. They have created educational programs at their three sites, the Melbourne Zoo, Werribee Open Range, and Healesville Sanctuary with the purpose of teaching students about the value of maintaining ecosystems, species, and biodiversity. Although the programs are diverse and informative, Zoos Victoria does not feel they are influencing as many students as they could.

The evolving role that zoos play in conservation education pressures them to deliver the right messages to their audience. A recent Zoos Victoria study revealed that only sixty to seventy percent of its visitors are learning about and being motivated to support conservative initiatives. Conscious of this influence, Zoos Victoria created the 2009-2029 Strategic Plan, which articulates a ten percent increase in educational visitations. This pressures the Learning Experience Programs to attract more students. Over 200000 students attend the Zoo's educational programs each year, creating the perfect opportunity to spread conservation learning. In an attempt to educate the future leaders of Australia, Zoos Victoria must address their main target population, the school teachers. Thus, they must improve their relationship with the teachers and understand their expectations.

The goal of this project was to discover and recommend improvements to better align the Learning Experience Programs at Zoos Victoria with the teacher expectations. To meet the goal we developed the following objectives:

- Understand the existing educational programs and interaction between educators and students at each of the Zoos Victoria sites
- Identify educational visitation drivers

- Identify educational visitation barriers

To understand the interaction between educators and students, our team observed sixteen separate Learning Experience programs. We interviewed three types of teachers (returning, non-returning, and non-visiting) in order to identify the drivers and barriers to educational visitation, receiving approximately 400 responses. We asked questions about visitation motivations, difficulties faced, and demographic information for categorization and comparison. All three objectives were important in understanding the expectations of the teachers. Our project helps the organisation by presenting findings through which the programs can target teachers. This way they recognize the value of the zoo programs and consider the Zoo an integral part of their lesson plan.

After performing our observations and interviews, we catalogued a series of findings to present to the Zoo. We observed Zoos Victoria's qualified educators deliver the content of their programs and proliferate the conservation initiatives at the school level. These initiatives are becoming increasingly appealing to the teachers because they give students a way to get actively involved with conservation in their own communities. We discovered that the most important driver is the nature of the zoo experience itself and the close interaction with the animals. Figure I shows the overall motivations among the three zoo sites and between educator-led and self-guided programs.

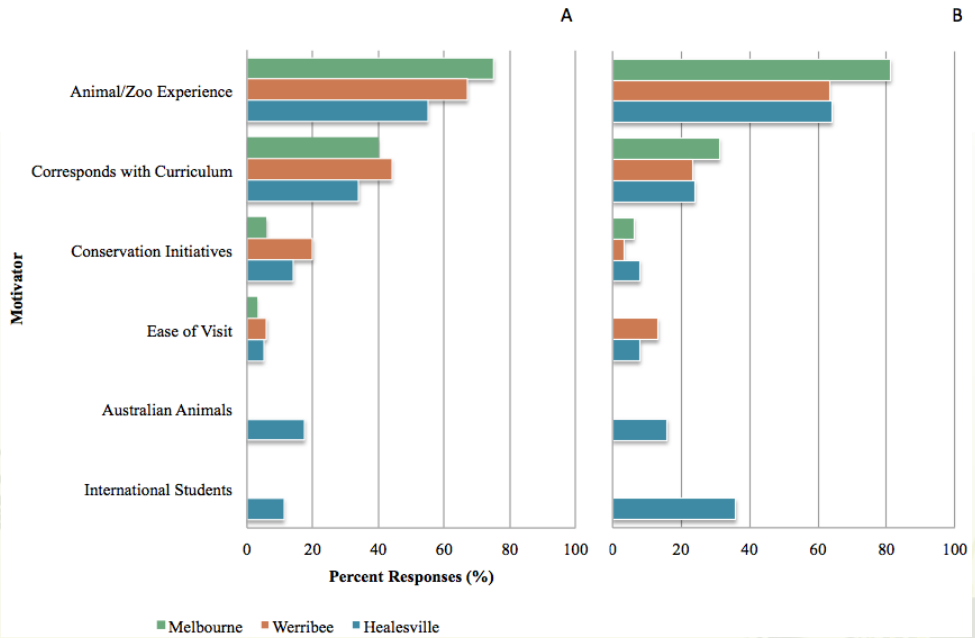


Figure I: Major Motivations for Zoo Visitation
A. Educator-Led **B.** Self-Guided

Many of the visitation barriers seem to be out of the Zoo's control such as bus cost, travel time, and weather conditions, as shown in Figure II. The problems that the Zoo can control include booking and planning, the scheduling process, and the communication with the teachers. It is crucial for the Zoo to overcome these difficulties in order to increase their educational visitations, as well as to impact a larger student population.

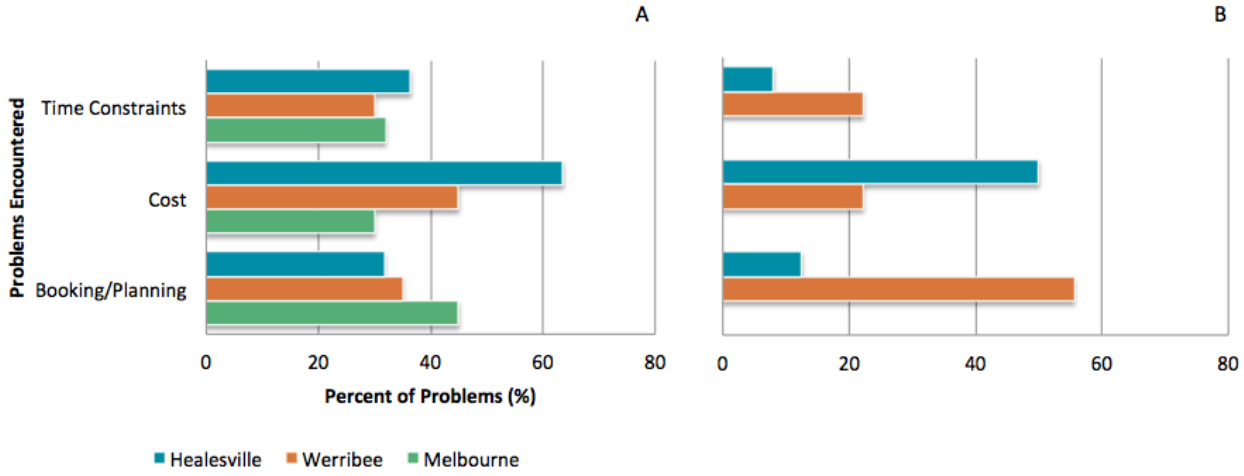


Figure II: Major Barriers of Zoo Visitation
Frequency of problem types for **A.** educator-led and **B.** self –guided visits

Only a small percent of the teachers interviewed have attended the Teacher Professional Development programs. Figure III shows the most common requests among surveyed teachers for Teacher Professional Development topics. These Professional Developments would provide an important avenue to reach teachers and overcome many of the difficulties presented as barriers to the school visitations. Furthermore, these programs can help provide the teachers with a basis of conservation knowledge that can reach beyond the walls of the Zoo and inspire them to visit the Zoo with their students.

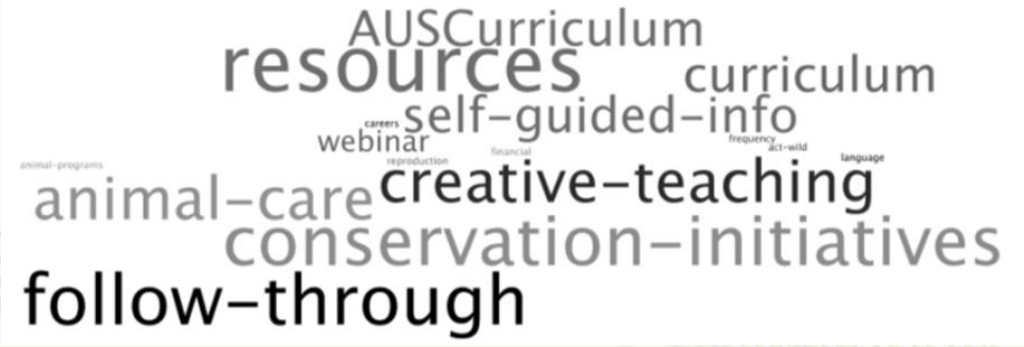


Figure III: Responses for PD interest
This word cloud presents the responses of all teachers about what they would like to see offered at the Zoo.

Our recommendations provide future steps to aid Zoos Victoria in their goal of becoming the world's leading zoo-based conservation organisation. Through our recommendations, we have identified the focus areas that can be feasibly addressed by the Zoos Victoria organisation, and from them we have developed potential improvements to maximize future educational visitation. The following recommendations represent how the organisation can more effectively reach students with their conservation programs.

Continue implementing the current Learning Experience Program model.

Teachers are coming to the Zoo because they want to get close to animals, so we encourage the foundation to continue this aspect of the educational visits. Teachers also want curricular alignment with their schoolwork, so it is important to maintain programs that fulfil part of the VELS or possibly the national curriculum. The educators are successful at exciting the teachers and students, and we recommend maintaining a passionate and knowledgeable staff for the Learning Experiences.

Focus more on communicating with the teachers.

The pre-visit phone call is often inadequate for addressing all of a teacher's needs before they arrive at the Zoo. We recommend a more detailed phone call with the teachers to ensure that they know what to expect for their visit. Teachers also want ways to incorporate the zoo visit in their classroom activities; so providing them easy access to the materials can give the excursion a more contextual relevance in the students' education.

Create video tutorials for the education page of the website.

We feel that the website could benefit by implementing a series of tutorial videos to help teachers book and plan their visits. Videos could include sample days at the Zoo, how to navigate the website and book an excursion, and pre-visit and post-visit materials for integration with their coursework. This will help increase the number of self-guided visitors because teachers will feel more comfortable leading the excursion.

Mark routes for different learning styles and levels around the Zoo sites.

To develop more effective self-guided programs and ease the time constraints for visiting schools, we recommend pre-planned routes that could be incorporated on the zoo maps. These routes could be organised by theme and content level, so that students from different

grades or interests can have a catered experience. The signs throughout the Zoo could be updated with more informative content to give self-guided visits a more meaningful experience.

Zoos Victoria should offer more Teacher Professional Development programs.

It would be useful to have more professional development programs at the three sites pertaining to how to use the Zoo as a resource. Teachers are interested in forming an active part of the conservation programs as well as learning how to use the Zoo as a resource for their classroom activities. Teacher PDs also provide a great way to market the Zoo and could provide an increase in the number of self-guided visits.

Provide more all-weather enclosures.

It would be a good idea to implement more all-weather exhibits or enclosures so that students can participate in zoo activities regardless of the weather conditions. The Keeper Kids exhibit and the AWHC are both good examples of all-weather enclosures that engage students without trying to mimic an outdoor experience. Werribee could benefit the most from this type of exhibit because it had the most weather-related complaints in our surveys.

Zoos Victoria should conduct public guided tours.

Another way to maximize the educational value of self-guided visits would be to conduct guided tours that can present information for students while avoiding the cost or time commitment of an educator-led session. A guided experience, similar to the Werribee safari tour, could be implemented at the other properties which starts periodically and could offer a great combination of visitor and student education.

Establish a partnership with a transportation company.

We suggest a partnership with a bus company that could provide schools with discounted transportation in exchange for zoo benefits. If this could be arranged, then it could be beneficial for both the Zoo and the travel company.

Through our suggestions, Zoos Victoria can establish stronger bonds with the teachers who bring their students to the Zoo, ensuring greater visitation. This way the future leaders of Australia will grow up with a greater understanding of conservation education and the ways in which the community can help.

1.0 Introduction

At the present rates of extinction, as many as twenty percent of the world's seven to fifteen million species could be gone in the next thirty years (World Wildlife Fund, 2012). Consumption of natural resources and destruction of natural habitats around the world diminish the biodiversity of the planet and threaten Earth's species with extinction. By practicing conservation through both personal techniques and political policies it is possible to ensure that a diverse variety of ecosystems will continue to exist. However, these techniques and policies will not happen unless people are educated about the critical state of these habitats and the ways in which they can be helped.

Organisations like the World Wildlife Fund (WWF), The Nature Conservatory, and other organisations around the world, such as zoos, are actively trying to conserve the most critical habitats, as well as educating the public about how they can help protect and preserve the Earth. Zoo organisations play an increasingly important role in educating the youth and the general public about wildlife conservation through active and engaging learning programs. Amidst these increasing conservation efforts, Australia and the WWF have come together in the hopes of preserving natural Australian habitats from pollution and contamination. Australia is home to a unique diversity of animal species; eighty three percent of the mammals found in Australia are endemic making it an important area to conserve (Australian Government, 2012).

Zoos Victoria has joined this effort by creating its own conservation programs. For example, Wash for Wildlife helps preserve marine wildlife such as the platypus by using phosphate-free detergents. Efforts also go into campaigns that will affect national policies. Don't Palm Us Off is a campaign to mandate the correct labelling of palm oil which is currently being labelled as vegetable oil in most products. The equivalent of 300 soccer fields are deforested every hour for palm oil plantations, and each year more than 1000 orang-utans die as a result of land clearing in this region (Xenophon, 2009). Over 55000 people signed the petition and the proposition was brought to the Australian Congress. With all these efforts, Zoos Victoria strives to become the world's leading zoo-based conservation organisation.

Zoos Victoria desires the integration of their conservation campaigns with the school programs that are offered by the organisation. The visitors are encouraged to follow in the Zoos'

eco-friendly footsteps in order to save the environment based on the organisation's conservation campaigns and educational programs. Zoos Victoria has developed thirty-two educational conservation programs that meet the priorities of The Department of Education and Early Childhood Development (DEECD), Catholic Education Office Melbourne (CEOM), and Victorian Essential Learning Standards (VELS). Each program embraces three fundamental tenets: Connect, Understand, and Act, which have been developed to create an engaging experience for the students who visit the zoo.

A recent Zoos Victoria study revealed that only sixty to seventy percent of their visitors are learning and being motivated to take conservative initiatives. Over 200000 students attend the zoo's educational programs each year, creating a perfect opportunity to spread conservation learning. In an attempt to educate the future leaders of Australia, the organisation aims to increase the number of student visitors by ten percent in the next five years. To accomplish this objective, Zoos Victoria must address their main target population, the school teachers. Thus, they must improve their relationship with the teachers and understand their expectations.

Our goal was to present Zoos Victoria with a better understanding of the teacher expectations for the educational programs at each of their three sites, Melbourne Zoo, Werribee Open Range Zoo, and Healesville Sanctuary. To do this, we conducted interviews with teachers and zoo educators to comprehend the role of the Zoo's Learning Experience Programs in the development of the students. The expectations are presented as an analysis of the factors that affect a teacher's decision to routinely participate in zoo visits, with recommendations on how the Zoo can utilize the information to align their programs with the teacher's expectations and increase their educational visitations.

2.0 Literature Review

This literature review provides a comprehensive exploration of conservation efforts that are taking place in modern zoos. We examine the state of Australia's native species and habitats to establish the need of the local conservation efforts. Many foundations around the world have discovered that only through educational programs are they able to increase conservation awareness. This has led to the development of models like the Learning Experience Programs at Zoos Victoria. We then present the structure of the educational programs and the role teachers constitute in the overall attendance of these programs. Ultimately, Zoos Victoria would like to fully comprehend what teachers look for in their educational programs.

2.1 Conservation

2.1.1 Global Challenge

Conservation worldwide has become increasingly important in maintaining the biodiversity of our planet. Since 1989, Wildlife Conservation Society (WCS) wildlife health experts and other conservation organisations have been employing a collaborative approach to address the complexities of maintaining ecosystem health (Wildlife Conservation Society, 2012). Human impacts on species habitats spiked the species loss over the last few centuries. Some scientific studies suggest that human actions may be directly influencing the Earth's climate, which could lead to an unstable global environment in the future (The Paignton Zoo, 2011). Environmental scientists, conservation planners, and educators are increasing their efforts to educate the public and encourage active conservation of the planet to ensure that a diverse species and habitat remain intact in the coming years.

Extinction is the gravest aspect of the biodiversity crisis due to the fact that it is irreversible (Conservation International, 2012). Due to the 1000 fold increase in extinction rates of the species on Earth, multiple conservation organisations worldwide target the most important "priority regions" to conserve at this time (Conservation International, 2012). These regions consist of thirty-four different biologically rich 'hotspots' in the world, which contain ninety percent of life on Earth, species that are in the most danger, high bio-diverse wildernesses, oceans and seascapes. The hotspot areas, which combined only account for 2.3 % of the Earth's

land surface, contain more species diversity than anywhere in the world and have already lost seventy percent of their natural habitat (Conservation International, 2012). Concerns like these resulted in the creation of educational programs in many different organisations worldwide, but we are still not doing enough to slow down extinction. Conservation organisations have been working hard to create cutting-edge programs that engage the public in wildlife education while teaching conservation practices. Since conservation education around the world is not a requirement in formal education, this educational necessity is not being delivered on the desired scale.

2.1.2 Australian Conservation

Conservation in Australia is important because it is home to such a wide array of unique species and habitats. In an effort to preserve their country's biodiversity, some Australians have taken the initiative to protect their endangered plant and animal species. One way in which Australians practice conservation is by establishing wildlife sanctuaries such as the Lone Pine Koala Sanctuary and Healesville Sanctuary. The koala sanctuary is home to 130 koalas and is the first and largest of such sanctuaries in the world (Mijo Consulting, 2007). Healesville Sanctuary is home to Australia's native species and is part of a program to help maintain a healthy population of Tasmanian Devils. Another way that Australians practice conservation is by educating citizens about informed choices they can make in their lives to keep preserving animal habitats. Specific individuals sometimes start such programs, but many are spearheaded by zoo organisations such as Zoos Victoria (Zoos Victoria, 2012). Australian species are at risk of extinction, but there are a lot of potential solutions for people to try, that may help restore normal population levels.

2.1.2.1 Endangered native species

Australia's wildlife represents an important part of the world's ecological collection. According to the Department of the Environment and Heritage, "about 85% of the continent's flowering plants, 84% of mammals, more than 45% of birds and 89% of inshore, temperate-

zoned fish are endemic" which means that they are found nowhere else in the world but Australia (Australian Government, 2004). Australian citizens share their home with a vast amount of unique plants and animals, so they must become well informed in conservation matters in order to make a difference in the forthcoming years. Unfortunately, many of Australia's native species are endangered and at risk of extinction. Endangered species are ranked by threat level, ranging between extinct, extinct in the wild, critically endangered, endangered, vulnerable, and conservation dependent. It is estimated that several hundred species have become extinct since the first European settlers arrived in Australia (Australian Government, 2004).

Frogs are particularly sensitive to changes in their habitat because as amphibians they are affected by both aquatic and terrestrial shifts. Their complex lifestyles involve movement between land and water throughout different stages of their lives. Frog habitats are threatened by human settlements, which can causes habitat fragmentation. Roads and house settlements are types of habitat fragmentations that intersect frog habitats and drastically reduce them (Frog Australia Network, 2006). There are several endangered frog species in Australia, including the Southern and Northern Corroboree Frogs, Spotted Tree Frog, Baw Baw Frog, and Stuttering Frog (Zoos Victoria, 2012).

Bird species often become endangered as a result of habitat destruction through deforestation. Most bird species roost in trees and have particular diets relating to the available foods in their habitat. By infringing upon their habitats during industrialization and when creating farmland, people drastically reduce the ability for bird species to properly mate and feed (Albury, 2012). Since migratory birds inhabit a variety of regions, deforestation is a greater threat to them. Some of the bird species in Australia that are at risk are the Orange-bellied Parrot, the Helmeted and Regent Honeyeaters, and the Square Tailed Kite (Zoos Victoria, 2012; Albury, 2012).

Though notoriously resilient, there are also many endangered reptile species in Australia. Ranging from pythons, to lizards, to turtles, there are many types of reptiles in need of assistance. The Woma Python is in danger from encroaching towns and bushfires, which perturb their prey and habitats (Australia Zoo, 2012). As a predatory species, this python can be endangered by anything that affects its natural prey. In addition to the python, nearly every species of aquatic turtle is endangered. Sea turtles have lived on Earth since before the dinosaurs, and it might be humans that put an end to them. Poaching is another serious problem throughout

the world, including the seas off the coast of Australia and conservation organisations are making an effort to help prevent this threat (Melbourne Aquarium, 2012).

In addition to the human-caused threats to native species, there can sometimes be external factors such as diseases that affect the animals. Tasmanian Devils suffer a condition known as Devil Facial Tumour Disease (DFTD), which is fatal for the species and is killing off the wild and captive populations (Zoos Victoria, 2012). In this case, although conservation efforts seem ineffective, there are still ways to save this species through medical advancements. Furthermore, eighteen zoos, including the Healesville Sanctuary, have bred secluded populations of Tasmanian Devils that will hopefully not come in contact with the contagious disease (Zoos Victoria, 2012). Without educated members of society taking the proper steps to protect this species, the Tasmanian Devil could have already become extinct in the wild.

There are many causes of species endangerment, but the introduction of invasive species and loss of habitat are two causes that can be slowed down through conservation education. Preventing invasive species from reaching new habitats helps the native species continue to exist without unmanageable pressure from competitors. Bushfires can be prevented if people are educated on proper fire safety, especially in urban areas located near wildlife. The introduction of wildlife sanctuaries can help prevent the destruction of a species' habitat when settlements spread. The loss of habitat can affect a number of ecosystem changes that have detrimental effects to the planet's biodiversity.

2.1.2.2 Endangered native habitats

The uniqueness of Australia's biodiversity is a reflection of its various ecosystems and habitats making it hard to maintain ecological stability. The tropical savannahs that span much of Australia's northern region are in a state of change due to the introduction of invasive weeds that increase the flammability of the region as a whole. The increase in frequency of this plant has caused the tropical savannahs to become more susceptible to bushfires, which in turn affects the local animal population. The destruction of their habitat causes these animals to die, resulting in a chain reaction of ecosystem changes (Laurance, 2011).

The coral reefs off the coast of Australia are some of the most vibrant ecosystems in the world, in both colour and species variety. Global climate change is altering ocean currents and water temperatures killing the coral. Reefs are also susceptible to changes in the nutrient content

of the water; therefore they are also at risk of damage by soil runoff from local farms in the mainland. Reefs are most threatened by rising sea temperatures, extreme weather events such as heat waves and destructive storms, ocean acidification, and pollution (Laurance, 2011). These unnatural effects can cause what is known as coral bleaching, which is when the coral expels its zooxanthellae, leaving the coral a white colour and unsuitable for life (Encyclopedia Britannica Online, 2012). Many of these causes can be prevented through conservative efforts and public awareness.

Estuarine wetlands are found at the juncture between fresh and salt water, and they play several important roles in the environment including

> Stabilizing coastal sediments, acting as nutrient and pollution traps, providing protection from storm surges and tsunamis, sustaining wildlife populations, and functioning as vital 'nurseries' for breeding fish and crustaceans (Laurance, 2011, p. 1477).

These ecosystems are susceptible to changes in water salinity and pollution. Since estuaries connect salt water and fresh water habitats, pollution seriously threatens the species that live in both these areas. Estuarine wetlands near populated areas are particularly threatened because of the proximity to chemicals and wastewater runoff (Laurance, 2011). Due to the increased risk presented to these habitats near populated areas, it is important to educate people about the importance of conservation.

2.1.3 The Emerging Role of Zoos in Conservation

Zoos worldwide, traditionally places for recreation, are evolving and pushing towards an unconventional role in teaching students about environmental issues. In the early nineteenth century, before governmental and conservation efforts were implemented, the zoo was primarily a recreational and social experience enjoyable for all ages. At this time, zoos really had only one concern, visitor attraction. The term 'traditional zoo,' defined by the English Tourism Board, refers to "a general collection of predominately wild (not domesticated nor indigenous) animals, contained in a total area of 110 acres [44.5 hectares] or less, made accessible for public observation" and characterized as a wildlife attraction (Turley, 1999). Reflected in the lack of public consciousness, the traditional zoos had no concerns about conservation or education on the protection of wildlife.

After the rise in environmental issues and high extinction rates, a ground-breaking conservation strategy was proposed by The World Association of Zoos and Aquariums (WAZA), in 1993, which outlined a vision of the role of zoos and aquariums in conservation over the next ten years. This document was updated in 2005 to place more emphasis on the need for zoos and other conservation organisations around the world to work together to help conserve wild animals and habitats. Over 600 million people visit zoos each year, giving the zoos a chance to educate about ten percent of the world's population on biodiversity conservation (The Paignton Zoo, 2011). Today, a visit to the zoo for students is often tied to supplemental information within the classroom using follow-up and pre-visit material (Melber, 1999). Students visiting zoos can learn about different animals, their habitats, and conservation efforts that can preserve them.

Almost all zoos around the world have begun to take their part in educating the public on conservation. Zoos Victoria Foundation in Melbourne, Taronga Conservation Society Australia in Sydney, and Zoo New England in Massachusetts are some of the zoo organisations that have adapted their experience to include engaging conservation education programs for children and the general public. Taronga Zoo's self-guided excursions around the zoo, supplemented with activities, help excite visitors and encourage them to participate in conservation themselves (Taronga Conservation Society Australia, 2012). Zoo New England offers summer camps for children where they can get a behind-the-scenes look at the zoo and the natural world of wildlife (Zoo New England, 2008). By learning about the specific needs and habitats of multiple animals, children create connections with wildlife and can aspire to help it flourish. With this new role, zoos have undertaken a major task in preserving the habitats around us and will take a large responsibility in helping conservation happen.

2.1.4 Environmental Education

Environmental education (EE) can be traced back to the eighteenth century where a few key influential figures stressed that it was important to focus education on the environment. Conservation education, specifically, emerged as a result of the Great Depression and focused less on natural history and more on rigorous scientific training to try and solve social, economic, environmental problems of the time. Modern EE gained significance around the late 1960's when the fallout from radiation, chemical pesticides, and air pollution inspired people to fear for their health and the health of the natural world; out of this fear rose environmentalism.

While most subjects with educational value are taught formally in schools, environmental education is often most effectively learned through hands-on experiences characterized by interactivity. Environmental education is implemented in academic settings, but is usually not taught alone until the tertiary level for students that decide to study the specific topics in environmental fields. Much of what a person discovers about their environment is learnt informally or through personal experiences. Students who see adults actively working to benefit the environment will learn through example, and develop that type of lifestyle (Smyth, 2006). Learning about the environment takes this informal route because active interaction with our surroundings is the optimal way to create this knowledge.

One way to motivate students to get interested in environmental education is to practice outdoor learning. The method of learning in an outdoor setting combines a traditional education with a sensorial learning environment. Outdoor teaching allows children to experience the subject matter first-hand, giving them a chance to enhance their personal understanding. It also provides a change of pace compared to the classroom setting, which helps the learning be more enjoyable for the students (Outdoor Learning, 2012).

2.2 Educational Models

Education can be delivered in many different ways, but the learning setting can be broken down into two general models; formal and informal. Formal education is a very structured and teacher-based mode of learning while informal education is a more creative and surroundings-based model of learning. Informal education offers important advantages, but also faces challenges in blending with formal education practices. Teachers play an important role in both educational models either as the educators or facilitators. The teacher's role is also defined by the way that they have been trained and how they elect to meet their teaching standards. The shifts in the informal educational models of the 21st century are challenging the traditional formal education and present new challenges to the way students are being taught.

2.2.1 Formal Education

Formal education is the traditional educational model based on a curriculum. This model focuses around the teacher being the main source of learning leaving little freedom to the

student's creativity. Content comprehension and memorizing facts are key elements of formal education. There is also a heavier emphasis on reading and writing within the straightforward traditional education. The students are taught to sit and listen to their teachers through passive learning (Learning Experiences Framework, 2012).

Currently Australia's curriculum is based on the approach of "Essential Learnings and Capabilities." This method is moving from a traditional formal curriculum to one focused on the students' knowledge and skills. The new system aims to prepare students to participate in an increasingly globalized world (Yates, 2010). In Australia, the curriculum is currently broken up by state. In Victoria, the curriculum follows the Victorian Essential Learning Standards (VELS). The VELS focuses on curriculum from Prep to Year 10. The framework is based on learning within the personal, social, and physical areas as well as applying skills to get the students thinking and communicating.

Another model that is closely followed is the e5 Educational Model found in Appendix A. The VELS and the e5 leave room for teachers to be open and creative through their means of educating their students (Victorian Curriculum and Assessment Authority, 2012). The Australian Curriculum, Assessment, and Reporting Authority (ACARA) has also been working to develop a national curriculum. ACARA began its work in 2008 developing a curriculum focused on Prep to Year 10. This curriculum centres on Science, English, Mathematics, and History but it is still in the process of being implemented (ACARA, 2012).

Unfortunately, conservation does not play a major role in formal education. The topics of conservation within the school's curriculum are very limited. Conservation may be only addressed within a single unit of study. For example, a unit entitled "The ins and outs of waste" touches upon topics of reducing waste and recycling (Victorian Curriculum and Assessment Authority, 2012). There is only so much a student can learn about conservation using the formal educational model, thus this subject area is better suited for informal education.

2.2.2 Informal Education

Informal education is the non-traditional educational model that embraces more creative ways of learning. Although some informal programs feature classroom settings, their engaging programs characterized more than their lecture content. In this sense, zoo programs are considered informal education even when they are educator-led and based on structured

curricular outcomes. In this model, students, instead of teachers, are the centre of learning. This type of learning has a higher retention rate, which makes it more memorable and more likely to leave a greater impact in long term learning. Informal education gives the students more freedom than formal education because visuals and hands-on experiences are more likely to leave an impression than studying in the classroom. Active learning is defined by the students' eagerness to explore in new and interesting ways. Being out of the classroom prompts the students to think differently and look at information in a new way. Projects, performances, trips to zoos or museums, and the use of technology all are examples of learning through informal education (Learning Experiences Framework, 2012).

Conservation is addressed more effectively through informal educational programs than formal programs. Zoos and aquariums are great places for students to comprehend the conservation issues at hand by learning about the animals and habitats in their natural environments. Students will be more likely to take actions to help protect their environment if they have a greater understanding of the problems the species and habitats are facing. Taking advantage of the informal context and the environment provided at zoos and aquariums is key in transmitting the conservation message to the youth.

2.2.3 Challenges of Informal Programs

Informal education requires creating successful programs for both the students and teachers to comprehend, and as a new teaching model it still presents some challenges. Sometimes class size can be an issue where the program cannot be accommodated for a large class size. Limited resources are also a challenge for the non-traditional learning programs. If teachers do not have the right content or enough materials, then the students cannot benefit from this unique experience. Additionally, creating programs in which the student is constantly engaged is also a challenge. An engaging program is an important feature of informal education that leaves the students with a memorable experience. One of the objectives of an organisation delivering an informal program is to inspire its visitors to return, which can be a challenge if the programs are not engaging enough.

A challenge of creating an informal education program is that incorporating elements of formal educations can be difficult. Zoos present the right transition of formal and informal education because their facilities have moved from the traditional zoo features into large

educational centres. Zoos have embraced in the creation of on-site classrooms and structured programs to carry out their educational goals. The students can experience a classroom setting whilst incorporating elements of interaction with animals and their habitats. If the informal programs present the curricular outcomes in a less tangible way, this presents difficulties for the teachers to integrate it to their curriculum. Teachers need to be able to incorporate the programs into their curriculum, and therefore need a mix of both formal and informal education deliverables presented through the programs.

2.2.4 Teacher Development

To better understand how the teachers are adapting to the new educational trends of informal education, it is important to understand the process of becoming a teacher. In Australia, all teachers must have a teacher registration or certification. A prospective teacher needs a senior certificate (high school diploma) or an adult equivalent, such as a Scholastic Aptitude Test score from a Technical and Further Education (TAFE) college or an adult matriculation certificate. After this, they must attend either a four-year bachelor of education (BEd) or a three-year degree, as a Bachelor of Arts (BA) or Bachelor of Science (BSc). Then, potential teachers complete a graduate educational methodology degree. Finally, a Teacher Registration Board must register them at their corresponding states (Silvestri, 2012). Therefore, each state has its own method of educating potential teachers that has an impact in their view of their teaching roles.

After their pedagogical training, teachers enter the school system by serving at private, catholic and government schools. Here they must comply with requirements by the school as well as the standards from the curriculums and the VELS (for the government schools). The pedagogical changes discovered in the way students learn have affected the way that teachers develop their teaching programs and educational models. In 2007, the Department of Education, Employment and Workplace Relations of Australia developed a study based on the qualitative and quantitative data on the recognition of informal learning in Australia. This study highlighted innovative policy initiatives and practices, issues and challenges. The insight of the study helped develop some new requirements reflected on the Victoria Institute of Teaching Standards for Graduating Teachers, which can be found in Appendix B. These standards now include characteristics and requirements like:

- Use a range of teaching practices and resources that engage students in content effective learning
- Develop opportunities for students to explore ideas that will lead them to develop skills
- Use a range of teaching approaches which foster independent and cooperative learning, cater to different learning needs and respond flexibly to the dynamics of the classroom

The new practices teachers are required to meet demonstrate that informal education is starting to play a major role in the way that students are being taught. When covering the new Sustainability Curriculum Framework required by the VELS, teachers will realize that one of the main goals is to cover the Repertoires of Practices as noted in Figure 1. The Sustainability Action Plan gives way to a new method of engagement in which the students are the main drivers and producers of the work.

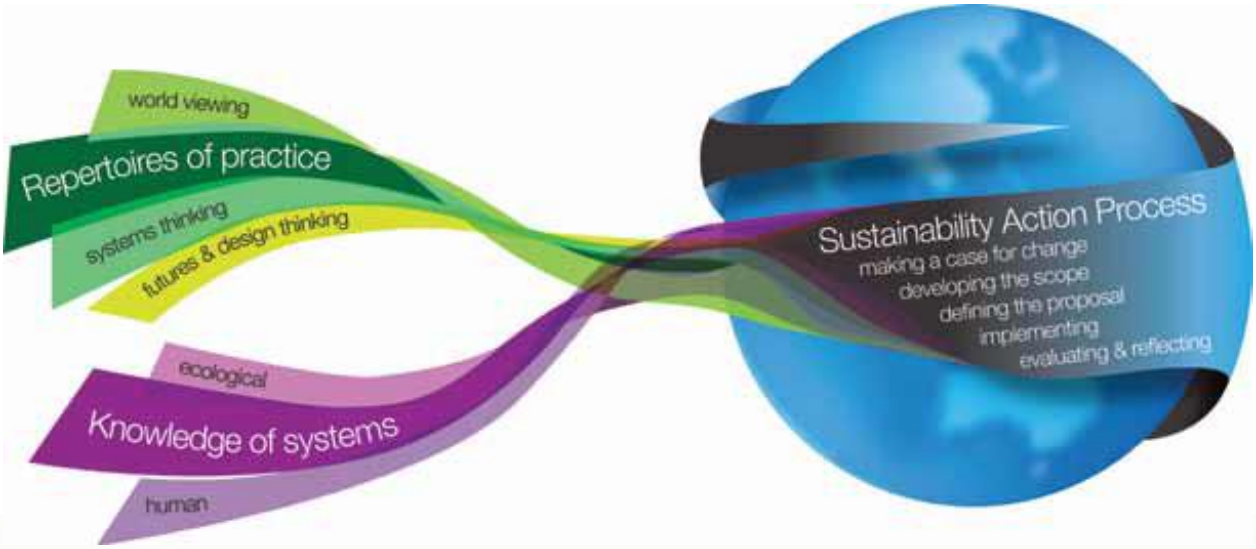


Figure 1: The Sustainability Framework
The framework shows the content structure (Dept. of Environment, Water, Heritage and the Arts, 2010)

The requirement also entails students getting a hands-on experience to understand the skills and the material that needs to be covered. Furthermore, this goal intertwines with the Knowledge System, which represents the more formal and theoretical methods of teaching. As teachers see the need to fulfil the different requirements they will apprehend the need of informal education in their teaching style.

2.3 Zoos Victoria

Zoos Victoria plays a major role in global conservation efforts by designing its conservation programs, educational programs, and marketing strategies to expose a strong message about conservation. As a zoo, they strive to preserve wildlife and create natural ambiances for animals to live content and protected. By doing so, they play a major role in sheltering endangered species as well as helping preserve natural habitats. This organisation aims to be the world's leading zoo-based conservation organisation. To achieve this ambitious goal, Zoos Victoria developed a Strategic Plan 2009-2029 and a Corporate Plan for 2011-2016. The plan is divided into five action areas:

- Conservation: focusing and strengthening the efforts to ensure tangible deliverables in conservation outcomes.
- Animals: each species at Zoos Victoria will have relevance to conservation efforts by ensuring their collection and preserving their habitats.
- Visitors: provide innovative wildlife-based recreation and learning experiences that inspire the visitor to go out and make a difference.
- People: through the support and development of their staff, Zoos Victoria will transform the mentality and approach of their organisation to be "conservation-action" oriented.
- Financial Sustainability: ensure long-term financial stability to improve the value of the Zoos assets and make meaningful investments in conservation.

The Strategic and Corporate Plans were developed based on feedback gathered in visitor surveys at the three Zoos Victoria sites. Figure 2 below shows the results of the survey in 2010. The visitors rank categories such as animal care and conservation within the Zoo in the ninety percent range, whereas the motivation to conserve and conservation knowledge categories are in the sixty percent range. The results illustrated a need to improve the way that Zoos Victoria conveyed the conservation message to its visitors so that it is more memorable.

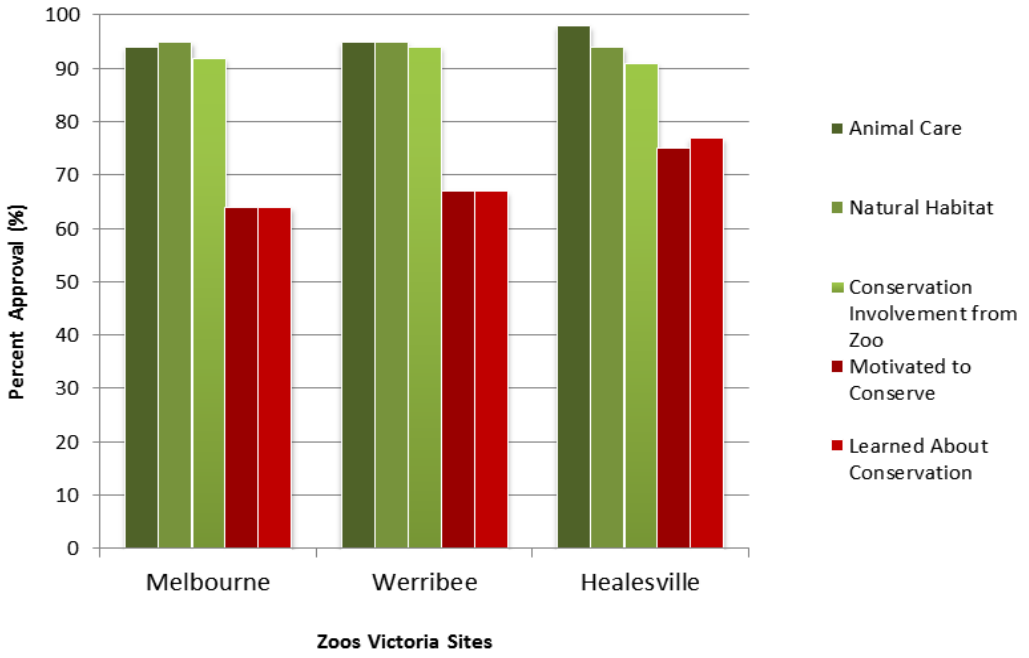


Figure 2: Zoos Victoria Visitor Opinion Survey
The survey responses show a lack of motivation and learning about conservation (Zoos Victoria Annual Report 2010).

Zoos Victoria is comprised of three sites; this diversity strengthens their potential to accomplish their vision. In the words of Zoos Victoria's CEO Jenny Gray "each of our three zoos has a unique value proposition and role to play in making this happen (Zoos Victoria, 2010)." Most importantly, the organisation will specialize in holding captive and managing threatened species at all their sites in order to influence behavioural changes of the community in support of the wildlife populations and habitats. This threatened species breeding program also includes a plan to reintroduce the animals to their natural habitat. Therefore, the sites become a portal that links the community and the animals in a way that inspires and engages people. "The unique nature of each property allows for a wide range of messages and interactions, while meeting the needs of young families, regional visitors and international tourists (Zoos Victoria, 2010)."

The organisation's three sites are the Melbourne Zoo, the Werribee Open Range Zoo, and the Healesville Sanctuary, and their distribution can be seen in Figure 3. The Melbourne Zoo was the first zoo in Australia and celebrates its 150th anniversary in 2012. It showcases 320 species from around the world to illustrate the diversity of the world's ecosystems. This zoo is only four kilometres from the centre of Melbourne and provides a relaxing escape from busy city life. The Werribee Open Range Zoo is the largest of Zoos Victoria sites, featuring 225 hectares of wild

savannah. It contains many African species and offers safari tours and walks to visitors. The Healesville Sanctuary is the most acclaimed wildlife sanctuary in Australia, and it focuses on showcasing native animals in their natural habitats. Healesville is the newest site, which opened in 1934. It is the second largest of the three sites with 30 hectares of natural Australian bushland. One of the ways that Zoos Victoria aims to communicate the interactive conservation message is accomplished by educating youth through their Learning Experience Programs at all three sites.

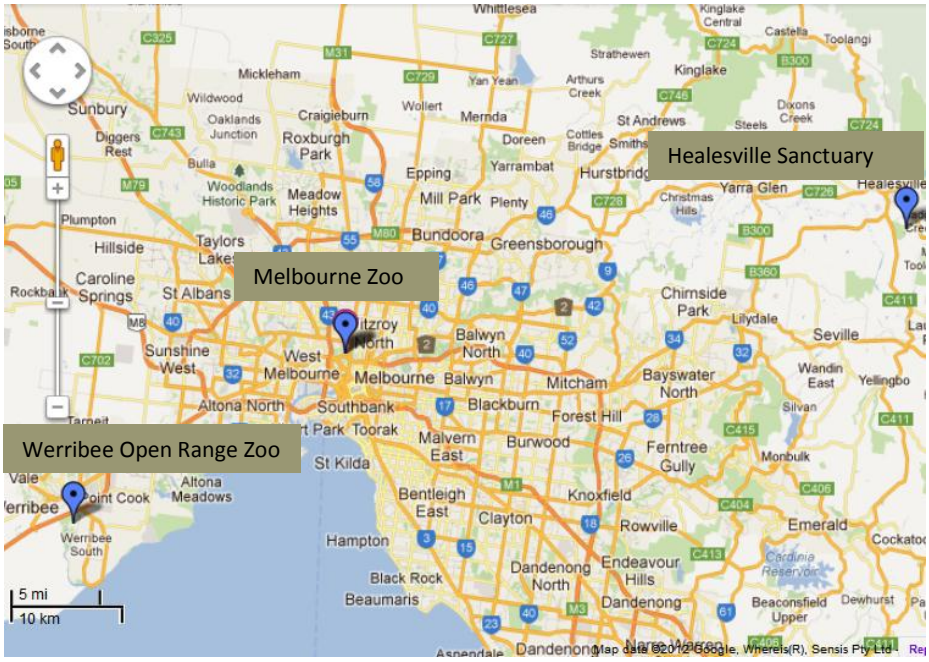


Figure 3: The Three Sites of Zoos Victoria (Google Personal Map)
The map represents the area in the state of Victoria where the Zoos Victoria properties are located.

2.3.1 The Learning Experience Program

The Learning Experience Programs are the centrepiece of Zoos Victoria's educational component. The programs are designed for students from kindergarten up to their Victorian Certificate of Education (VCE) and tertiary levels, allowing students of all ages to go beyond what they learn in the classroom. The strength of Zoos Victoria's programs is the on-site zoo experience, which includes engaging wildlife experiences in immersive landscapes. Each site offers different Learning Experience Programs depending on the age group and the curriculum requirement trying to be fulfilled by the teacher. The Learning Experience Programs are also aligned with Zoos Victoria Strategic and Corporate Plan action areas mentioned in section 2.3.

- Conservation: all learning experiences will be aligned to Zoos Victoria's conservation priorities and programs.
- Animals: the animals used at the learning experiences encounters will align with conservation and learning objectives of the programs.
- Visitors: learning programs will be innovative, inspiring and facilitate students and teachers to take measurable conservation actions.
- People: investing and nurturing the program educators to become world leading facilitators of learning and conservation action.
- Financial Sustainability: increase the student visitation to concur with visitor growth targets of the Strategic Plan.

The alignment of the programs to the vision allows Zoos Victoria to bring together the educational and public visitations under the same goal. The programs are not only designed to fulfil the Strategic Plan but also to fit the structure of the Victorian educational system.

2.3.2 Program Structure

The Learning Experience Programs at Zoos Victoria reflect the current model of teaching and learning whilst incorporating all aspects of best practice teaching and learning. The overarching purpose is to ultimately develop students that are strongly connected to nature and take action to conserve biodiversity. Through their dedicated staff, Zoos Victoria aims to influence the development of students' identities and help create passionate, active environmental citizens. The Learning Experience has direct links to conservation and research programs at both local and global levels.

The programs also provide access to unique resources such as specialized habitat designed classrooms and zoo educators who are experts in the conservation field. For the teachers, it has curricular activities that complement the zoo visit and authentic projects—all which contribute to conservation. The learning outcomes developed by the zoo's education department also fulfil VELS requirements, which make the programs more attractive for the teachers that participate in zoo programs. The overarching principles that determine the programs approach to education for sustainability and wildlife conservation at Zoos Victoria is the Connect Understand Act (CUA) model (Learning Experiences Framework, 2012):

- Connect: build emotional connections and positive attitudes between people and wildlife

• Understand: develop deeper understandings of our natural world

• Act (with hope): facilitate effective actions for a sustainable future

The CUA model was developed so that visitors and students "connect with wildlife, better understand the natural world, and be inspired to act to create a future where humans live in balance with nature (Zoos Victoria, 2012)." Figure 4 shows a Zoos Victoria educator interacting with some students in one of their Learning Experience Programs, demonstrating the engaging nature these programs have.

Figure 4: Educational Interactions
Students interacting with the Zoos Educators in a Learning Experience Program

Each of the programs can be carried out in one of two styles: educator-led visits—guided by the qualified Zoos educators, or self-guided visit—delivered by the teachers themselves. Most of the Learning Experience Programs also provide student trails and teacher notes that can be downloaded and used independently. The explicit way that Zoos Victoria structured their educational programs has made them a strong selection for school excursions.

The student visitation programs are divided into different age groups. These groups are kindergarten and early years, middle years, later years, and VCE. Each one of the programs is geared towards one of the age groups, although some of them span for several levels as seen in Figure 5. Since each of the Zoos Victoria sites is purposed differently, so are the educational programs offered at each one of them.

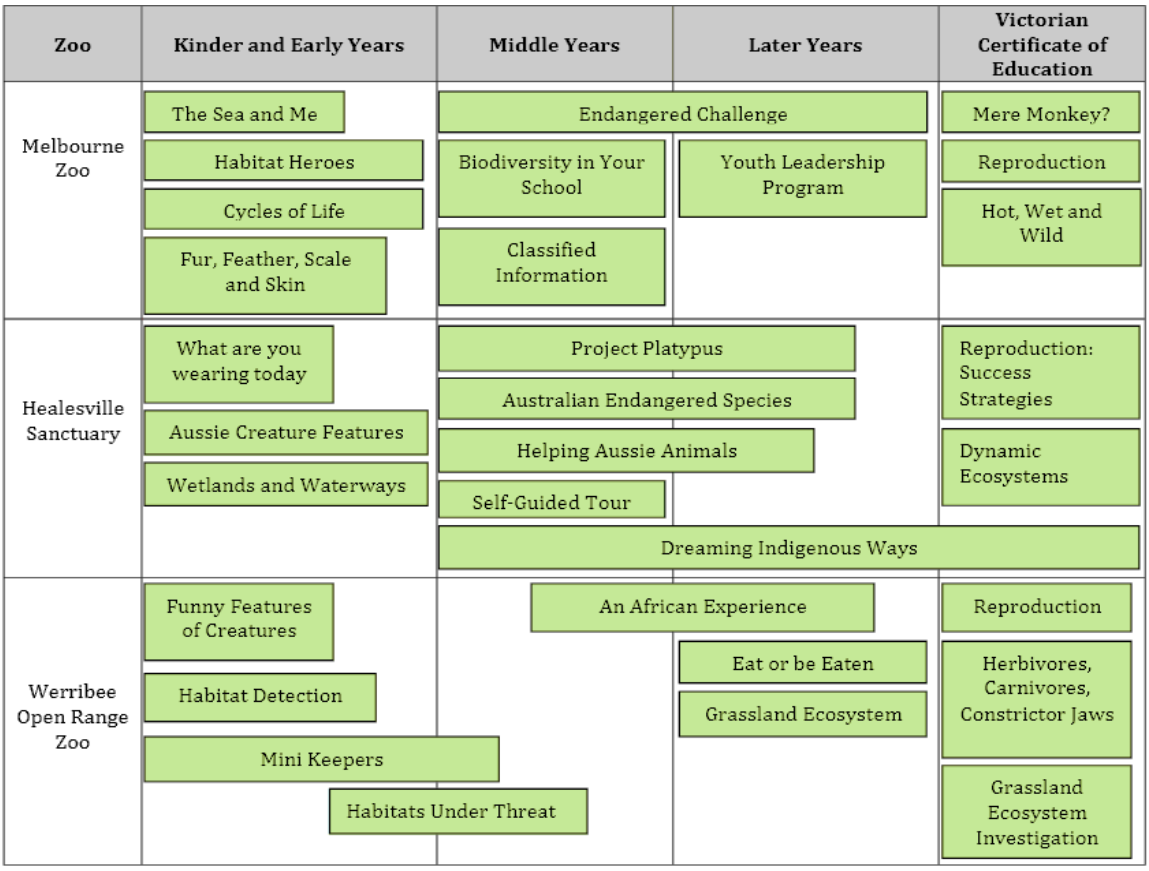


Figure 5: Distribution of Learning Experience Programs
The distribution of the Learning Experience Programs by zoo site.

2.3.3 Planning the School Visit

The Zoos Victoria webpage allows potential visitors to understand the Learning Experience Programs. All program information can be found on the website, categorized by location and age group, but all reservations must be made by phone. One of the aspects that Zoos Victoria would like to improve is their relationship with the teachers at the planning stages of their visit. The Zoos' current interaction with teachers prior to their visit is very limited.

Furthermore, the website provides resources to teachers and students for each of the thirty-two programs. The Teacher Notes provide supplemental information on the objectives and background for each of the programs and is a great resource for a self-guided visit. These notes also include appropriate activities to prepare students for the program and include the answers to the student booklets given at the site. Along with the Teacher Notes, there are resources for self-guided programs in each of the programs descriptions.

2.3.4 Teacher Professional Development

Zoos Victoria offers a number of professional development programs throughout the year aimed at building teachers that are conservation leaders in schools, so that they may lead their students to conservation awareness. These programs can be used to fulfil the Victorian Institute of Teaching Standards for Professional Practice, which requires teachers to identify their own professional learning needs and plan for and engage in professional development activities (Victorian Institute of Teaching). The Teacher Professional Development (PD) program addresses conservation theory as well as the application to the zoo experiences. The program also reinforces the practical activities for use in the classroom and pathways to link to other elements of the curricula or extra curricula activities (Zoos Victoria, 2012). Zoos Victoria can offer PDs in a variety of topics and will tailor the program to the teacher's interest.

The program costs are on an individual basis, with programs customized to each professional group. Costs range from twenty-five to ninety-nine dollars per person depending on the length of the program and the selected options. The options available include a two-hour, half-day or full-day session. Most session covers catering and a behind-the-scenes tour with the zoo educators as well as a better understanding of the educational programs Zoos Victoria can offer to their students.

2.4 Summary

Amidst increasing conservation efforts, Zoos Victoria is still looking for ways to improve their Learning Experience Programs and increase educational visitations. The evolving role that zoos play in conservation education pressures them to deliver the right message to their audiences. The goals articulated in Zoos Victoria's Strategic Plan affect the Learning Experience Programs and demonstrate the need for these programs to be improved. Educational visits are essential in the promotion of conservation strategies for students of all ages. Our project will aid the organisation by presenting findings in which the programs can target teachers so that they recognize the value of the zoo programs and consider the Zoos as an integral part of their lesson plan.

3.0 Methodology

The goal of this project was to recommend improvements to better align the Learning Experience Programs at Zoos Victoria with the teacher expectations. To accomplish this goal, we interviewed key stakeholders, which helped us understand how the programs worked and what the teachers expect as outcomes. This section presents the methods used to analyse the factors that affect a teacher's decision to visit the Zoo as well as present the strategy we used to offer key suggestions. The objectives of our project were the following:

- Observe the existing educational programs and interaction between educators and students at each of the Zoos Victoria sites
- Identify educational visitation drivers
- Identify educational visitation barriers

A graphical overview of this process is shown in Figure 6; the key suggestions were developed based on the information obtained from our three objectives. Teacher expectations were the most critical element in developing the suggestions and were the main focus of our research.

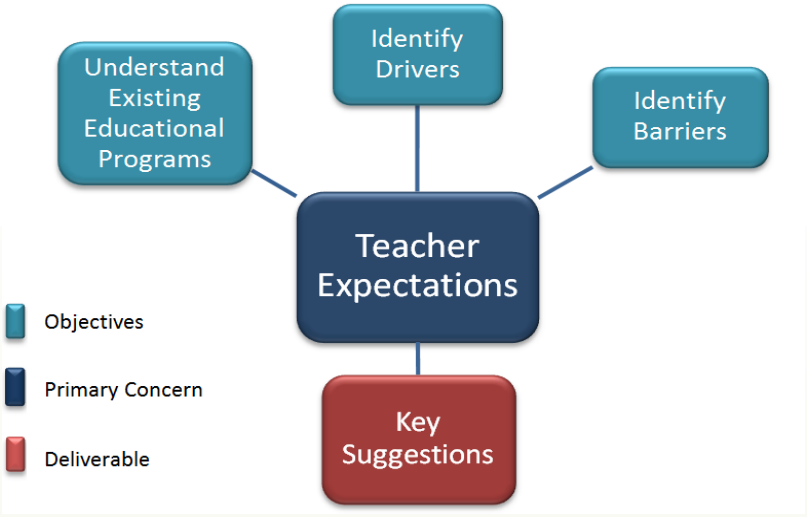


Figure 6: Project Methodology Flowchart
This flowchart shows our objectives and the process used to reach our final suggestions.

3.1 Interview Strategy

To accomplish these objectives we targeted the teachers and the zoo educators as our primary subjects. Throughout this research "teachers" were regarded as the visiting teachers and "zoo educators" as Zoos Victoria's own teaching personnel. We selected interviewing as a method of obtaining data because it was the easiest way to get the right type of information from a respondent, and we could clarify things more easily than a mailed questionnaire (Oatey, 1999).

We classified the teachers into subgroups according to their experiences regarding Zoos Victoria. The sites were then sub-classified by teachers that visit the Zoos consistently, non-returning teachers, and non-visiting teachers. Furthermore, each population was divided to educator-led and self-guided visits. We selected these groups to gain a better insight of different populations and their opinions of the Learning Experience Programs. This stratification, shown in Figure 7, helps illustrate the context of the visitations better and allowed us to make suggestions about each of the targeted groups.

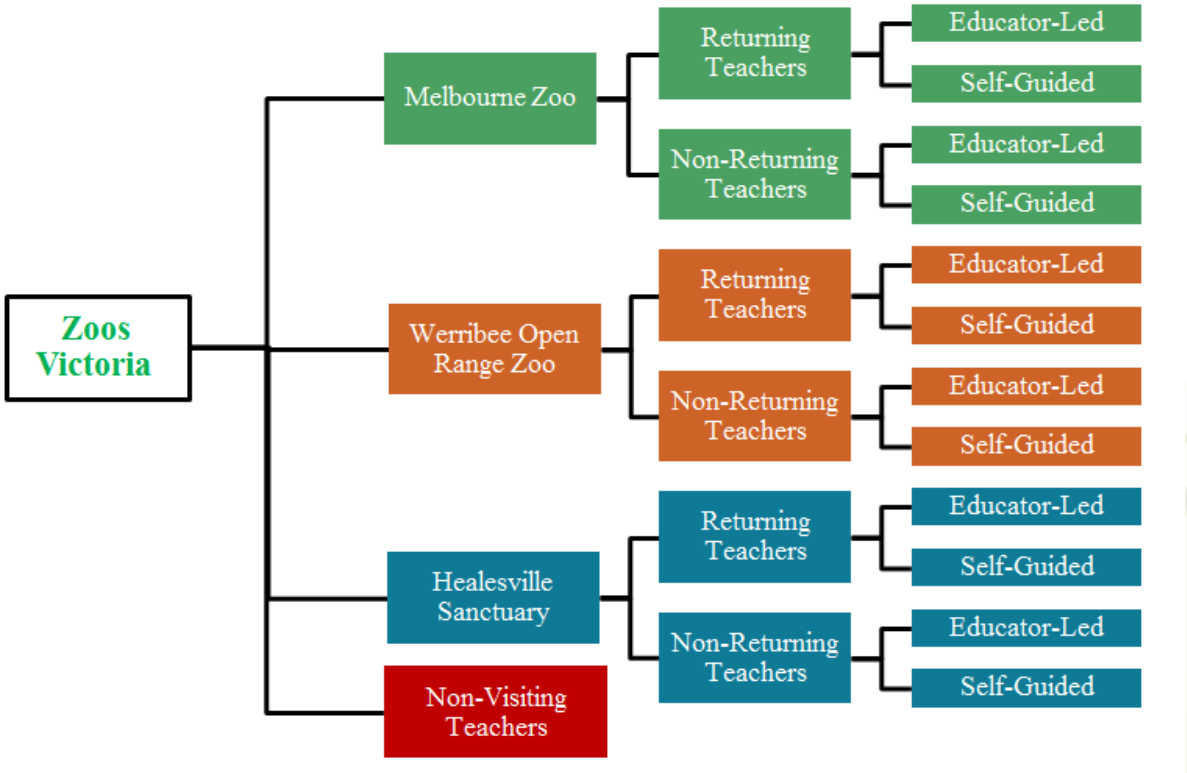


Figure 7: Teacher Groups
Breakdown of the teacher interview groups.

To facilitate fast interviews, we structured our interview questions as a survey and divided the three zoo sites amongst the team. We avoided giving teachers potential responses, so that their opinions were not biased to the choices we had created. This unique style made the information easily quantifiable while enabling affable conversation with the teachers.

These questions were tested with teachers attending the educator-led programs at the Melbourne Zoo. All teachers who had attended an educational program at any of the three zoos were then contacted via E-mail with information collected using the Zoos Victoria database. The database provided a number of details about every zoo booking that had occurred since 2009, including the school, suburb, and phone number of the teacher who booked it. A sample of the database can be found in Appendix C. There were often several bookings by the same teacher, so we had to be careful not to contact the same teacher repeatedly. The team created a tracking spread sheet on Microsoft Excel. In this sheet we filtered the names of the teachers by date, email, and program type. This allowed us to see which teachers we had already contacted and which ones had not. Samples of teacher tracking sheets can be found in Appendix D.

Phone interviews were conducted to get feedback from teachers who visited the Zoo for both educator-led and self-guided programs. The survey consisted of three sections:

- Demographic: to keep record of visitor age, location, travel method, and commute time, to group schools together when establishing drivers and barriers
- Background: information about previous educational visits to the Zoos Victoria sites, which told us how familiar the teacher was with the programs
- Opinion: this section was the primary source of the information used to identify drivers and barriers to visitation, used to direct feedback on what the teachers expected and experienced

This order of questions enabled easier conversations. A full version of the survey can be found in Appendix E. An alternative online survey was created for teachers who were unavailable for phone interviews. A similar survey was developed for non-visiting teachers; this survey can be found in Appendix F. When performing phone interviews, we entered the information to this online survey to unify our data.

Since the zoo educators are also professional teachers, we interviewed them to gain insight to both sides of the programs. The interviews with the zoo educators consisted of

understanding what they thought teachers expected from the programs and provided responses to their:

- Teaching experience
- Opinions of the programs
- Opinions of the visiting teachers
- Involvement in TPDs

These interviews were more informal than the teacher interviews, but they were all conducted in person. This resulted in a more open conversation about the zoo educators' experiences at the Zoo. A shorter set of questions was established for a more targeted response area. A complete list of interview questions for the zoo educators can be seen in Appendix G.

3.2 Observation of Educational Programs and Interactions

To understand the existing educational programs, we examined the class structure by passively observing fifteen of the Learning Experiences across the three Zoos. The Department of Psychology of Catholic University in their Appropriate Research Methods states that passive observation has the advantage that it reduces the intrusion which the user experiences (Giacoppo, 2001). This process let us assess the programs as a whole and observe the connection and interaction between the zoo educators, students, and teachers.

The observations also showed what occurs during the sessions, the animal close-up encounters and other types of hands-on activities. Results from these observations provided evidence of the current interactions throughout the programs. The continuous school visitation depends on whether the interactions meet the teacher expectations. The passive observation method was applied to the three zoo sites with multiple programs, since each site has a different atmosphere that provides a unique learning experience. The team evaluated and compared the programs to find trends in the interactions between the zoo educators, students, and teachers in the three sites. Using the conclusions from the observations we were able to understand the limitations of the current program structure.

These observations provided us with useful knowledge, which allowed us to carry out conversations with the teachers and present ourselves in a professional manner. This knowledge also gave credibility with the teachers so they saw the value in the conversation because we were

able to discuss the programs in detail. This process highlighted the presentation of the programs and how they engage the students.

3.3 Identifying Educational Visitation Drivers

Zoos Victoria's goal to become the best zoo-based conservation organisation in the world raises the question of what drives visitors, especially those with educational purposes, to the three zoo sites. In order to increase conservation awareness the zoo realizes that it needs to continue to expand educational zoo visits by identifying the drivers for teachers bringing their students to the Zoo. With this goal in mind we

- Researched teachers' curricular needs
- Interviewed teachers to discover their purpose for bringing the students to the Zoo
- Established what could be done in order to increase visitation

Since there is a great diversity of teachers and schools, there is also a wide range of possible drivers. For example, are the teachers giving the students a fun day out to interact with and experience wildlife, or are they bringing their students to the educational programs to fill certain VELS that will complement classroom activities? To identify these drivers the team decided to interview multiple teachers via phone. Phone interviews enable a researcher to collect information rapidly while still allowing for personal contact between the interviewer and respondent, making it easy to tailor the interview to each specific respondent to maximize feedback (Valenzuela). However, the two-week holiday break limited the amount of phone contact with teachers, so we also created an online survey matching our phone interview questions that the teachers could fill out during the break.

Zoos Victoria maintains a record of all teachers that have booked an educational visit in the past four years, which was used to check for the surrounding schools that visit the Zoo regularly. Interviews with those teachers provided insight to the reasons that motivate teachers to bring classes to the Zoo. A teleconference focus group with teachers from a school that routinely visits the Zoo was also arranged. This initiated a helpful discussion on positive characteristics of the Zoo's Learning Experience Programs and highlighted the visitation drivers. Based on information from the teachers, we established how the Zoo could market their educational programs to further attract the teachers and ensure teachers will want to bring their students.

3.4 Identifying Educational Visitation Barriers

The barriers to visitation, like the drivers, can be used to increase the number of students visiting the zoo sites by identifying the needs and expectations of teachers. It was important to understand the factors that prevent teachers from visiting the Zoo to highlight the barriers of visitation. We interviewed teachers from the three categories to find out what prevents them from visiting. If visitation barriers are addressed, then Zoos Victoria can potentially educate even more students each year and spread their conservation messages. When interviewing, we focused our interest on the following topics:

- Communication between the Zoos and teachers
- The marketing of programs
- Teacher-specific problems

These ideas represent the potential influences to a teacher's decision to visit or return to the Zoo. The Zoo is responsible for maintaining contact with the teachers; in our project we investigated whether the current level of communication had an effect on zoo visits. We also asked questions about what sort of problems people had when planning or executing their visit. We examined the ways in which the Zoo advertised its programs to teachers and school administrators. We relied on interviews with teachers to determine how aware they were of the Zoo's programs or how they initially heard of them.

In addition to the barriers introduced through a lack of communication, there were also barriers that were out of the Zoo's control. In this respect, the teachers may be pressured to fulfil certain requirements or limit school spending, which could prevent zoo visitation. The most valuable visitation barrier information would be gained by interviewing teachers that are non-returning to the Zoo and the non-visiting, but we also interviewed routine visitors to see if they had additional input about visitation barriers.

In order to find teachers to interview, we cross-referenced the Zoos Victoria visitor database with a self-made list of Victorian schools obtained by searching for schools within post codes on the Department of Education's website. The database given to us by the Zoo lacked the ability to track the teachers that had never visited, so we used our new database of 1700 Victorian schools to find schools to contact. We eliminated schools from our database that had visited the Zoo before, and from the remaining list we contacted the ones within twenty

kilometres of each Zoo. This area represents a reasonable distance from which almost any school should be able to afford the petrol cost and time commitment of a zoo excursion.

We structured the interview questions so that teachers would not have any biases when taking the survey. Instead of asking them to select the barriers they faced, we used open-ended questions where the teachers could provide written responses. We later coded these responses and identified themes that were visible throughout them. Major themes are discussed in further detail in the findings and analysis chapter.

3.5 Delivering Key Suggestions

Once the information was gathered from interviews, surveys, and a focus group, we provided Zoos Victoria with key suggestions they can use to improve their connection and communication with teachers. The team's findings present Zoos Victoria with an analysis of what the teachers expect from the Learning Experience Programs. The key suggestions were developed based on the information obtained while completing our three objectives. The teacher expectations are the central focus of our suggestions and will present Zoos Victoria with an understanding of what educators are expecting from their programs.

To analyse this information, we collected data through a website called Survey Monkey. The system compiles the data in different aggregate forms that could be selected between pie graphs, charts and bar graphs. For the analysis of the data, we compared the educator-led and the self-guided responses for each of the three sites. This helped demonstrate what trends are dominant on each site. We created a cross-sectional comparison of the self-guided and educator-led survey responses for all sites. This cross-sectional analysis, shown in Figure 8 below, allowed us to focus on the main results of our surveys whilst encompassing all the major feedback from the responses.

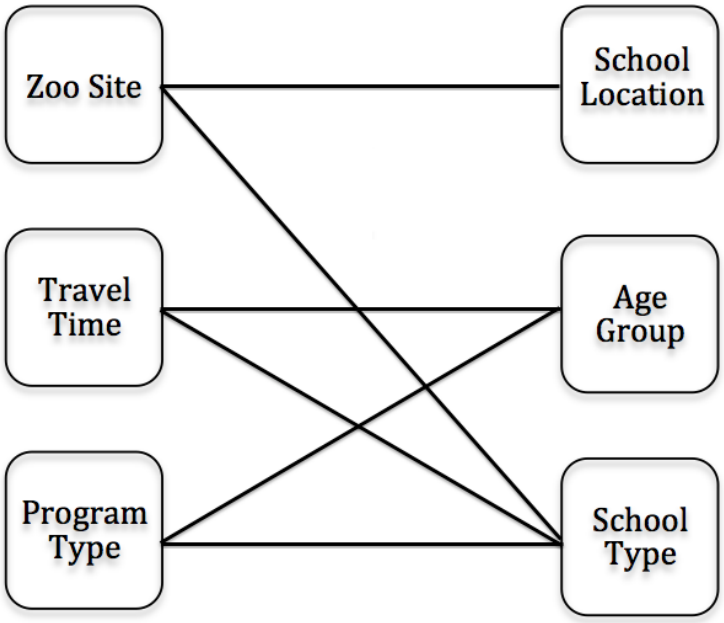


Figure 8: Cross-Sectional Analysis Comparison Chart
This chart shows the cross-sectional analysis used to analyse the different survey responses.

The topics selected in the cross-analysis were carefully selected and resulted in a combination of six major comparisons, which revealed key findings, later used to provide Zoos Victoria our major recommendations.

4.0 Findings and Analysis

The following chapter presents the data gathered through our interviews and program observations by which the objectives were fulfil. The findings show how the zoo programs affect teacher expectations as well as the major barriers and drivers of zoo visitation. Furthermore, an analysis of the differences between the teacher expectations and the zoo educators was conducted. The information obtained through these findings is the basis of the final suggestions for Zoos Victoria.

4.1 Observation of Educational Programs and Interactions

4.1.1 Passive Observation

Sixteen separate Learning Experience Programs across the three Zoos Victoria sites were observed, including both educator-led and self-guided programs. A table of the specific programs observed can be seen in Table 1 below.

Table 1: Learning Experience Program observations list

Program Name	Zoo Site	Zoo Educator	Observer(s)
Habitats Under Threat	Werribee	Michelle Howard	Kaleigh
Habitats Under Threat	Werribee	Phoebe Lynch	Roxanne
Habitats Under Threat	Werribee	Phoebe Lynch	Jean Paul & Francis
Safari Tour	Werribee	Safari Guide	Jean Paul & Francis
Safari Tour	Werribee	Safari Guide	Kaleigh & Roxanne
The Endangered Challenge	Melbourne	Andrew Eadon	Kaleigh & Roxanne
The Endangered Challenge	Melbourne	Kat Fox	Jean Paul & Francis
Cycles of Life	Melbourne	Libby Weaver	Kaleigh
Cycles of Life	Melbourne	Mel Treweek	Roxanne
Habitat Heroes	Melbourne	Libby Weaver	Jean Paul & Roxanne
Habitat Heroes	Melbourne	Ben Liu	Francis & Kaleigh
Habitat Heroes	Melbourne	Mel Treweek	Jean Paul
Fur, Feathers, Scales, and Skin	Melbourne	Tom Colcott	Roxanne
Reproduction: Strategies for Success	Healesville	Janine McCoy	All
Spirits of the sky	Healesville	Keepers	All
From Fearsome to Awesome	Healesville	Keepers	All

A combination of the provided lesson plans and observations of the programs gave a structure to the education sessions while also displaying the close interactions between the educators and the visiting students. In order for the students to get the most out of their experience at the Zoo, the programs need a solid foundation, which is provided by the lesson plan's structure. Zoos Victoria provided a series of lesson plans which the team used to follow along the educational sessions. Lesson plans cover most outcomes for the programs providing students with the potential to learn about a specific topic at hand. Examples of possible program topics are life cycles, animal habitats, homeostasis, and adaptation all which concur with the research in section 2.2 regarding the VELS.

Each of the three zoo sites has a unique theme, but the overarching model of Zoos Victoria's programs is the Connect, Understand, and Act (CUA) model detailed in section 2.3.2. The zoo educators present the students with the opportunity to connect with the animals by providing close-up encounters such as petting the animals. Students are encouraged to explore the animals on display upon entering the classroom. During the session the educators focus on three animals such as lizards, snakes, or frogs. The animals are brought around a circle of curious students waiting for a friendly pat. Additionally, each classroom is designed to showcase a specific habitat and decorated with painted walls and props to give students a more realistic experience. A picture of an example classroom can be seen in Figure 9. This environment portrays the informal setting, which results in better student engagement.

Figure 9: Classroom
Vibrant decoration and open-air exhibits provide an engaging space for students to learn.

In order for the students to understand more about the animals and their environment the educators ask questions, provide visuals, and encourage the students to use their thinking skills. For example in the Cycles of Life program, the students are presented with objects representing multiple stages of life such as an egg, a skull, an animal picture, and a snake's skin. The students work together to put the objects in the chronological order of an animal's life cycle. These objects present the students with a better understanding of nature by examining the given topics more closely. The programs then conclude by bringing all the topics discussed during the lesson together by educating the students about conservation and how the students can help the animals. A picture of an educational officer interacting with a student can be seen in Figure 10, and more images of our program observations can be found in the Appendix H.

Figure 10: Learning Experience Programs
Zoo educator interacting with students during a hands-on activity.

One zoo campaign aims to save the orang-utans by avoiding the use of palm oil, which is produced by increasing deforestation. Students are encouraged to take actions to help the animals by performing easy habitual changes such as not using products containing palm oil. This final element, therefore, completes the CUA model, providing a strong structural base for the students' lesson. Each program is centred on this model, but it is left up to the educator to take the lesson to the next level through their creative teaching. After observing the programs, it is clear that the students are eager to participate and are excited to learn. Once the students connect with what is being taught, they are enthusiastic about the ways in which they can help the animals at home. This model assists the Zoo in their goal to be the world's leading zoo-based conservation organisation.

The observations of the programs and interactions provided the team with a first-hand look at what motivates teachers to bring their students to the Zoo. From this it was concluded that Zoos Victoria should continue using close-up animal experiences and incorporating curricular needs. In addition, it was observed that throughout the lesson the teacher observes from the side, mainly there to supervise. Based on this observation, we would recommend more teacher contact during the session in order to better meet teacher expectations. Having teachers actively participate or work with the educators as assistants to the program would keep them engaged.

4.1.2 Zoo Educator Interviews

Interviews with the zoo educators and program observations determined that there is little contact between the zoo educators and teachers before their visit and during the educational program. Interviews with nine zoo educators representing each zoo site show that a brief five to ten minute conversation occurs between the teacher and zoo educator prior to the visit. During this time, the teacher can update the zoo educator on what they are learning in class and how it fits into the upcoming program. One problem is that this call does not always occur with the teacher visiting the Zoo but rather with a booking representative. This limited contact affects what the Zoo knows about teacher expectations resulting in a disconnection with the teachers. The teachers and zoo educators rarely communicate during the program, but rather the teaching focuses around the educational staff engaging the students.

The zoo educational staff can easily relate to the visiting teachers because ¾ of the zoo educators interviewed had previous teaching experience where they planned excursions with their students. Therefore, the zoo educators can sympathize with the teacher expectations because of their past teaching experience. The zoo educators believe the teachers bring their students to the Zoo for hands-on experiences outside of the classroom and for an educational experience about the animals and their environments. Similarly, the zoo educators believe the teachers anticipate expertise from the zoo staff during the lessons but these expectations also vary by age group or zoo site.

Teacher contact is limited, which hinders the alignment of teacher expectations with the Learning Experience Programs. Our recommendation to improve this issue is to provide a more detailed phone call before the visit in order to maximize what the teacher wishes to achieve during their visit.

4.1.3 Cross-Sectional Analysis

The cross-sectional analysis provides an in-depth analysis of responses that have trends and correlations of interest to Zoos Victoria. This includes comparing general categories such as travel time and age group, which resulted in interesting trends. A graph of the school type distribution of our surveyed teachers can be seen in Figure 11. Unlike the school types, there is no specific age group that visits the Zoo more frequently than others. There is an equal

distribution of age levels that attend the programs, ranging from early childhood to tertiary. This shows that the Zoo offers programs that benefit multiple age groups resulting in more opportunities for teachers to bring their students to the Zoo.

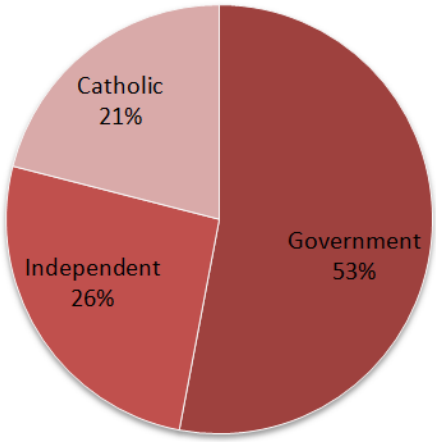


Figure 11: School Responses
Representation of school types amongst interviewed participants.

One analysis comparison examined which school type visited each zoo site most frequently. The surveys show that government schools attend the Learning Experience Programs more than the catholic or independent schools. These results are the same for all three zoo sites which demonstrate that school type is independent of zoo site. This population is based on the database provided by the Zoo, and therefore the research was constrained by which school types could be contacted for survey responses. These results can be seen in Figure 12.

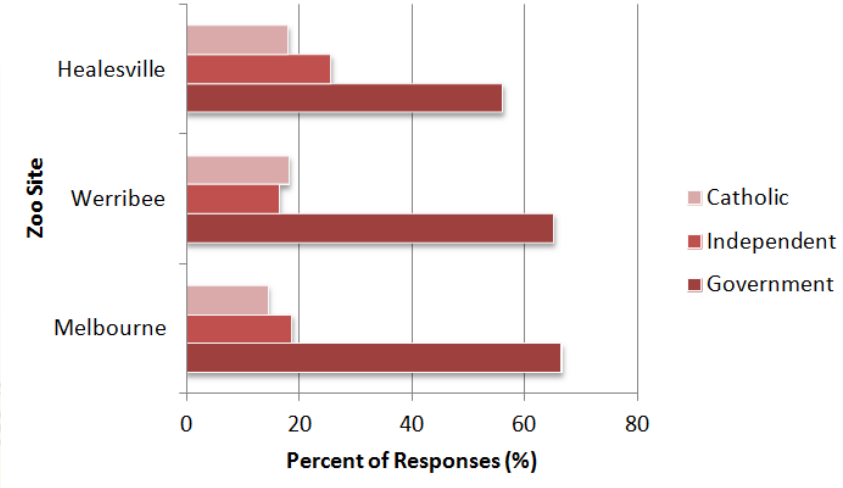


Figure 12: Zoo Site vs. School Type
Comparison of Zoos Victoria sites and school type.

Similarly, an analysis comparing school type and program type expressed that program type is unaffected by school type meaning these are two independent variables. In this case, program type refers to educator-led and self-guided programs. Overall within the surveys, schools attend educator-led programs more frequently than self-guided programs. This trend is the same throughout the catholic, independent, and government schools. Based on this trend, the Zoo does not need to target specific school types to increase visitation for particular program types. This makes the Zoo's marketing more general and easier to target. Figure 13 displays these trends.

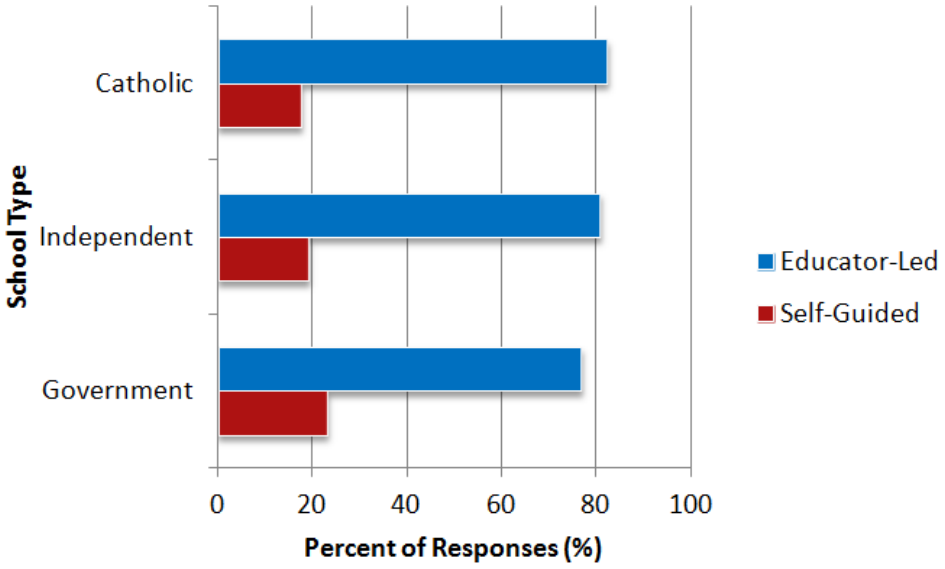


Figure 13: School Type vs. Program Type
The comparison illustrates a similar trend of programs for all school types.

Another analysis that displays similar trends compared travel time and school type. Around forty percent of each school type surveyed travels thirty minutes to an hour to get to the Zoo. Each school type shares the same commute trend therefore, school type and travel time are also independent of each other.

It is now proven that the travel time and the school type are not related, thus, the travel time and the zoo site are also compared to find other trends. This analysis provides information regarding the different sites and the school visitations. Since the project's scope covers all three sites, it was important to understand the differences these sites have with relation to the time that it takes schools to get there. Figure 14 below shows that the travel time is a right skewed normal curve in relation to each of the sites. Although this data is independent of the age groups it still shows the same trends. Healesville Sanctuary shows a more normal distribution which illustrates

those schools which are willing to travel for a longer period of time to get there. This is not a surprise since Healesville Sanctuary is the furthest site from Melbourne as seen in Figure 3 in section 2.3.

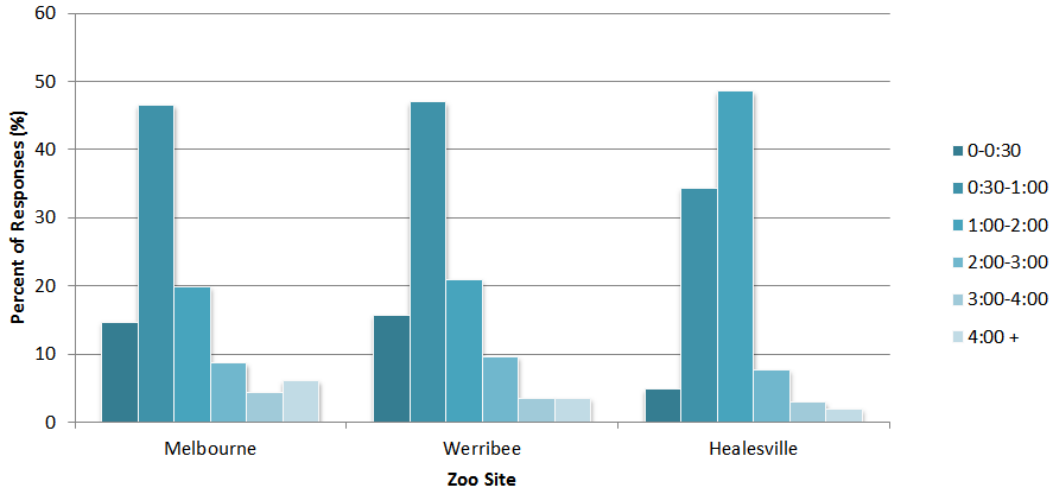


Figure 14: Travel Time vs. Zoo Site
Most responses show a right skewed time travel to the zoo sites. Note that schools are willing to travel for a longer period of time to get to Healesville Sanctuary.

The travel time also has a potential relationship to the age groups that visit the Zoo. To understand this relationship the time travelled by the school is compared to the school grades. The school years were divided into three age groups that reflect the Australian school year classification. These groups consist of the early years (Kindergarten-Year 6), the middle years (Years 7-9), and the later years (Years 10-12). In general, most survey responses show that schools travel thirty minutes to an hour to get to the Zoo—similar trend as in time travel vs. school type. The graphs based on our survey results shows that each age group displays right skewed curves, but the later years graph is closer to a normal distribution than the early and middle years. This can be seen in Figure 15 and indicates that the later years are willing to travel farther to get to the zoo sites than the early or middle years.

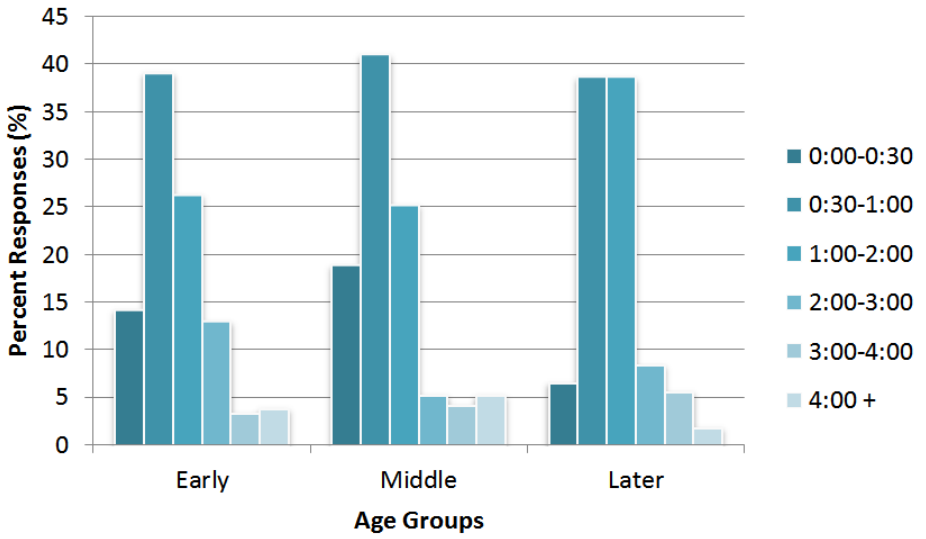


Figure 15: Age Group vs. Travel Time
The slight variation in time commute for the later years shows their willingness to travel longer to get to the zoo sites.

These results lead to the conclusion that the organisation can be less concerned about travel time being a constraint for the later years. The catchment area for the later years can be widened but the programs must also contain the appropriate content for the schools to justify the longer commute. Figure 16 reinforces this conclusion, which shows the preferences of the educator-led visits by the later years.

The relationship between the age groups and the programs that were attended by each of the school years provides information about the self-guided and the educator-led visitation. Figure 16 shows the breakdown of the age groups and the program types. It is assumed that most of the educator-led visitations would be attended by the earlier years, since it seems to be easier to have a self-guided tour with older students. However, the research shows that the older years are actually looking for specific programs that fulfil VELS and VCE requirements. Later year teachers prefer the zoo educators because it gives more credibility to the information and presents an expertise in the topic.

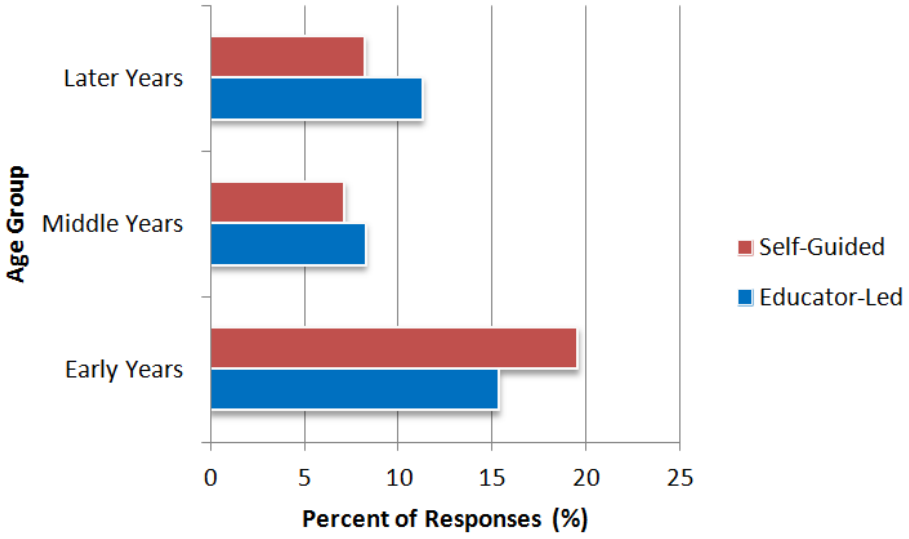


Figure 16: Age Group vs. Program Type
The results show a majority of self-guided tours at the earlier ages.

A further analysis of the age groups and program types was made which is broken down per zoo site. The breakdown of each zoo site can be found in Appendix I and shows that Werribee Open Range Zoo has the largest volume of earlier years attending the self-guided programs. From the team's observations of the programs at the three sites, it is known that Werribee is the only site that offers the Safari Tour. In the tours, the safari guide acts like an educator because he provides information about the animals and interacts with the visitors. The tours lead to this result and to further increase the self-guided visits at the other two sites a similar approach should be taken by Zoos Victoria.

4.2 Motivations

To assess the reasons for which teachers bring their students on school excursions, the team collected and analysed the teachers' motivations for school visits to the Zoo. When analysing the teacher feedback from the surveys, common threads of motivation are identified from the question, "What motivates you to bring your students to the Zoo?" Between the three different zoo sites and even across the self-guided and educator-led programs, teachers have similar motivations when planning a school visit for the children.

The distribution of motivational themes is almost identical for each zoo site, as seen in Figure 17 below. Figure 17A demonstrates the major motivators for educator-led program visits;

while Figure 17B illustrates why teachers are motivated to book self-guided visits to the Zoo. Trends across the educator-led and self-guided programs are also similar. In the following subsections each motivation is discussed by order of popularity.

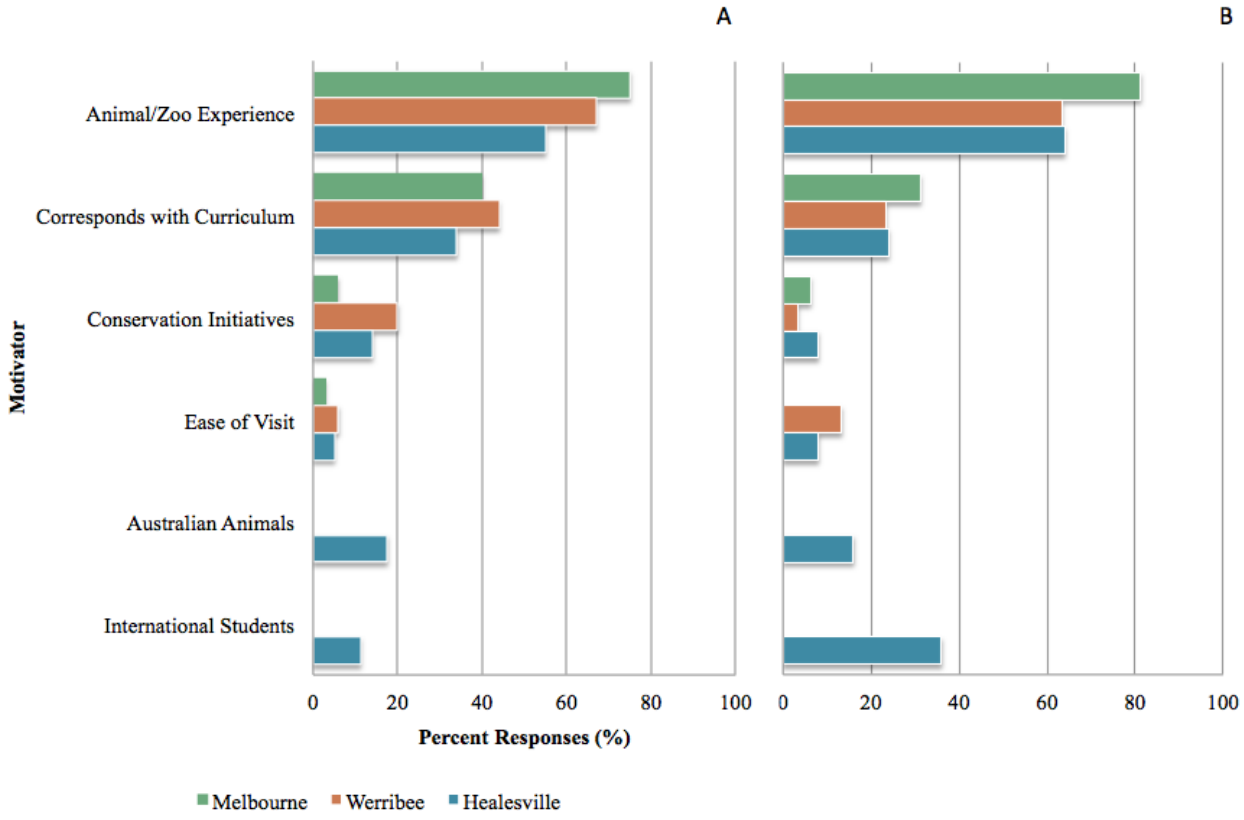


Figure 17: Major Motivations for Zoo Visitation
A. Educator-Led **B.** Self-Guided

4.2.1 Animal Experience

The most common motivator of visitation is that the Zoo offers an exciting yet engaging experience that the students cannot get in the classroom. The teachers appreciate that the Zoo provides close-up animal encounters, seen in Figure 18, and an exciting learning atmosphere. This experience differs slightly between self-guided and educator-led groups, but still acts as the major motivator for most school excursions. The atmosphere of the Zoo, educational value, close engagement with animals, and seeing the animals in their natural habitat, are all experiences the students and teachers like about the excursion.

Figure 18: Animal Encounter
This image illustrates an animal encounters in a Zoos Victoria classrooms.

Teachers who routinely book educator-led experiences tend to say that the close-up animal encounters and expertise that the educational officers provide is the best characteristic of the excursion and the reason they return. Teachers who book self-guided visits also agree that the zoo experience is the biggest motivation to bring their students to the Zoo. Since the self-guided program does not include the forty-five minute session with a zoo educator, these teachers mainly book the excursion to give the students the opportunity to come and experience the Zoo while observing animals in their natural habitat.

The teachers express that most students would not get the opportunity to come to the Zoo, and they feel it is an important part of the Australian culture. Along with the zoo experience, the teachers enjoy the fact that the zoo atmosphere promotes learning. One teacher responded, “The students always enjoy the experience and therefore learn and retain the information.” Teachers feel that material learnt in class sticks more once the students experience the animals in real life.

This result does not come as a surprise to Zoos Victoria or us. The Zoo provides a wonderful learning opportunity not just for the educational visits, but also the general public. Worldwide, people visit the zoo to experience the atmosphere of being close to animals that they would normally not see in their everyday life. The zoo experience will continue to be a major motivator for everyone as long as zoos exist.

4.2.2 Curricular Fulfilment

The second most popular reason teachers bring their students to the Zoo is because it complements their unit of study. Most schools across Victoria have a curriculum unit that is based around animals and going to the Zoo provides an excellent way for the students to see the animals that are being studied in class. Routinely visiting teachers of the educator-led programs explain that the ability for the students to receive valuable information from the zoo educators and not just see the animals close-up also has a positive reflection for the understanding of classroom information.

The curriculum relevance is not as strong of a motivator with the self-guided booking teachers as it is with the educator-led booking teachers, many of the self-guided booking visitors still feel as though the visit complements the unit of study well. Many teachers reveal that once the animal unit is finished and the class has moved on to a different topic they would no longer have contact with the Zoo until the next year. Each program at the Zoo is designed to have specific learning outcomes that do fulfil requirements of the VELS, so it is no surprise that teachers are coming to the Zoo in order to supplement their curriculum in the classroom. Educational visitation could increase if more teachers know that the programs fulfil VELS and even the forthcoming national curriculum requirements.

4.2.3 Additional Considerations

The theme of the different properties plays a role in motivating some of the teachers to plan an excursion. In the teacher feedback from all sites more teachers that routinely visit the Healesville Sanctuary are motivated by the native Australian animals theme. A large majority of these teachers taught international students and visit Healesville so that these students are introduced to the native animals of Australia. Teachers that visited other sites express that they are motivated to attend educational programs at a certain Zoo because of the savannah theme (Werribee Open Range Zoo) or because of the Indonesian path including the elephants (Melbourne Zoo).

Another important motivator is that teachers want to bring their students to learn about conserving wildlife and how to be more sustainable. Since educating children about conservation has become more important, teachers believe that a great way to get conservation topics across to

the students is visiting the Zoo, seeing the animals, and learning up-close about how they can help. More teachers respond with this in reference to Healesville Sanctuary then the other two sites, all though it is still mentioned in feedback from teachers' at all three sites. This motivator is more prevalent for teachers that visit Healesville Sanctuary since this is the only site that contains only Australian fauna. The desire to teach the students about the natural Australian animals and how to help conserve them drives many teachers to make educational visits the Healesville Sanctuary.

Zoos Victoria's properties work together to maintain the organisation's goal that no Australian vertebrate goes extinct under their watch. The 2010 survey, illustrated in the literature review section 2.3, reveals that only about sixty-five percent of visitors to the Zoo felt that they are motivated to help conserve after their visit. The teacher feedback from the surveys demonstrates a higher motivation to specifically bring their students to the Zoo to learn about the Zoo's conservation initiatives and how they could help. It would be interesting to see further studies on the importance teachers place on educating students about conservation.

Some teachers explain that they took zoo excursions because they are relatively easy, cost effective, and time efficient. In contrast, a motivator for schools who cannot regularly afford the cost of a zoo excursion is to receive a grant for the excursion. A few governmental schools replied that the reason for visiting is because they received money to cover the bus and admission cost.

4.3 Barriers

While it is important to understand the visitation drivers, it is also necessary to understand the potential factors that limit visitation so that the Zoo can continue to spread conservation education to students. The surveys ask visiting teachers the question "Did you face any difficulties when planning your visit or travelling to the Zoo?" to collect information on potential barriers to visitation. Since this question is directed towards teachers who routinely visit and non-returning teachers, the information was relevant for the retention, rather than the acquisition, of visitors. Figure 19 shows the amount of surveyed teachers who answered affirmatively to this question between Melbourne, Werribee, and Healesville, as well as the self-guided and educator-led programs.

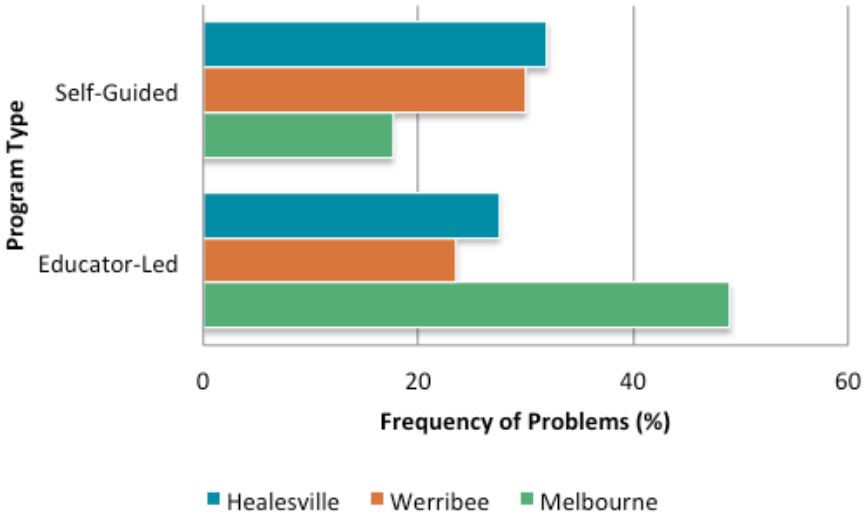


Figure 19: Teachers who Presented Difficulties
Percentage of educational visitors who had difficulty planning their visit or travelling to the Zoo.

The problems encountered by the teachers are categorized in the following themes: booking and planning of the visit, time constraints, and cost. Figure 20 shows the frequency of each of these problem types from the teachers who answer affirmatively to the survey question. The survey results for Melbourne Zoo self-guided teachers are very limited and therefore were not included in the results to avoid misleading data. An interesting phenomenon was that 65% of non-returning teachers did not have any problems planning their visit or travelling to the Zoo. The findings discussed in this section pertain to all three zoo sites, because the results do not present enough variation. In the case of a unique result, the relevant site is mentioned explicitly.

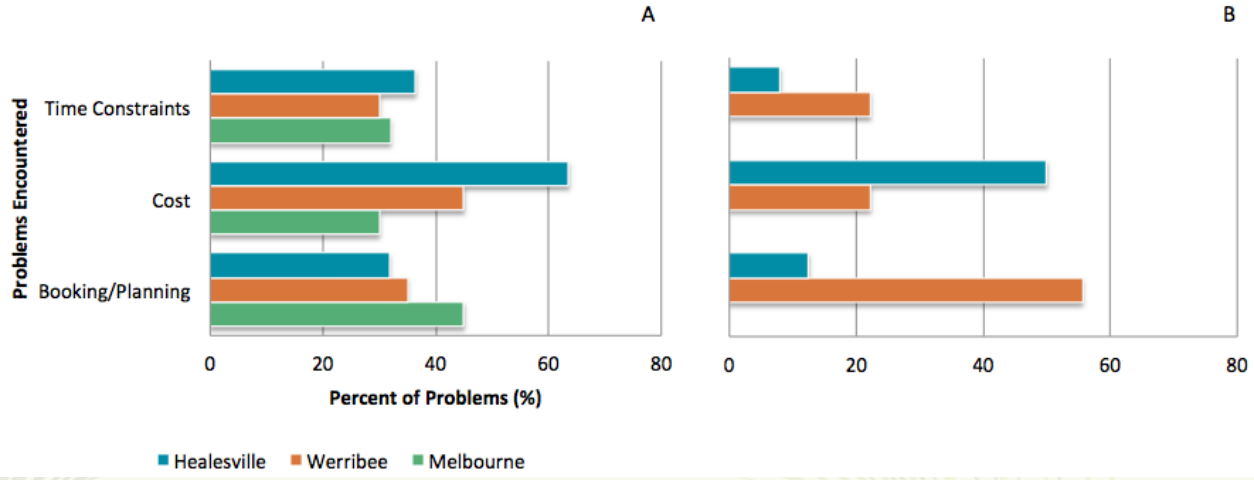


Figure 20: Major Barriers of Zoo Visitations
A. Frequency of problem types for educator-led visit **B.** Frequency of problem types for self-guided visits

4.3.1 Cost

The data shows that one of the main difficulties teachers face when planning a zoo excursion is the cost of a zoo visit. This barrier is divided into two factors: admission and transportation. Many of the respondents do not indicate which of these costs was burdensome for them, from those who did, ¼ of them felt that admission cost is excessive and ½ of them felt that the bus cost is prohibitively high. The number of visitors who thought that admission cost is too high is greater than expected. Some schools rely on grant money to make visits to the Zoo, so they could only make an excursion because they had gotten a grant that year. For some schools, if the cost per student of the zoo trip is more than twenty then it becomes financially unfeasible for many families. From the non-returning schools, thirty percent of them feel that cost has a major impact in their decision not to return.

The cost of transportation is an issue that Zoos Victoria cannot directly influence, so their visitation is limited by the distance teachers must travel to visit the Zoo. Our recommendation for this limitation is to try to reach distant schools with the new web conferencing technology as well as the ActWild website. Another consideration could be to create a partnership with a transportation company. To address the admission cost, a solution is to consider lowering entrance prices.

4.3.2 Booking and Planning of the Visit

The second most prevalent response is that teachers have difficulty when planning a visit online or by phone. Some teachers say they had to call multiple times and had trouble reaching somebody to book a visit. Teachers also have a challenging time executing their visit effectively once inside the Zoo.

One reason why teachers have difficulty when planning their visit is because their preferred zoo program was removed. The idea behind the program removal was to unify the content of many programs into a more manageable size, but some teachers feel that this decrease in variety limited the usefulness of the programs. The current program chart can be seen in Figure 5, section 2.3.2. Teachers who found that their preferred program had been removed are unhappy with the remaining choices and are unsure about what to pick for their unit of study. A similar response for this question is that the process of calling by phone and booking a visit is too

difficult or too time-consuming. For some teachers the website is confusing, and they cannot figure out how to plan their visit or book it. Teachers do not know what to expect inside the Zoo as far as facilities for bathroom and lunch breaks. Many teachers also express concern in finding a place for their students to eat comfortably or to use the restroom. Teachers also say that a problem with the booking procedure is that the education session times are often difficult to fit into certain programs or certain times of day. Issues such as these may affect a teacher's decision to return to the Zoo in future years.

Booking and planning issues are prominent at all three zoo sites, in both educator-led and self-guided visits. For educator-led visits, the Melbourne Zoo has the highest number of issues regarding booking and planning, whereas, Werribee has the most for self-guided visits. Our suggestion is to include more information on the Zoos Victoria website about the procedure for booking a visit, as well as provide detailed information on the available facilities at each Zoo for lunch times and restroom breaks. The Zoo can also investigate alternative scheduling systems for additional flexibility with teachers who have large classes or sensitive time frames.

4.3.3 Time Constraints

The next theme identified in our responses is that teachers have trouble timing their zoo visit within the school day. Some schools spend a lot of time travelling or have an increased commute time due to traffic. Teachers facing these travel time issues expressed that they often found it hard to reach the Zoo in time for the educational programs, especially for morning classes. Sometimes teachers arrive late and miss out on their schedule program, or they do not have enough time to explore the Zoo with their students. Other teachers note that the Zoo is simply too extensive to see within their allotted time. Some visitors at the Werribee Open Range Zoo note that their visit often coincides with unfortunate weather due to seasonal trends. These responses often indicate that Werribee is difficult to explore due to lack of all-weather exhibits. For Healesville, surveyed teachers say that they sometimes find it hard to make it to the different events at the sanctuary because their lesson was at the same time.

For teachers that are far from the zoo sites, travel time will always be an issue, so Zoos Victoria should focus its marketing towards schools within the catchment zones shown in Figure 21. Since teachers feel that arriving late to a learning session is a barrier to their continued visitation, Zoos Victoria can investigate a more flexible scheduling system for classes who may

be late or who encounter unexpected delays. To address seasonal weather issues, the zoo sites should prepare indoor activities for students in the case of rainy weather. We also recommend that zoo events be spread throughout the day rather than in a small time frame so that all students have a chance to see at least one during their visit.

4.3.4 Additional Considerations

There are several topics that are not mentioned very often but are noteworthy and could further improve the visitation of the Zoos Victoria sites. One interesting trend that was unique among the non-returning teachers is that they want a way for their students to see how a zoo is maintained and what the keepers do. Fortunately, the Melbourne Zoo has since implemented the "Keeper Kids" program, which allows students to do just that. The Healesville Sanctuary has the Australian Wildlife Health Centre (AWHC) which also allows students to get an inside view of what it takes to maintain animals and keep them healthy. Our suggestion is to develop a similar program at Werribee (potentially in an all-weather enclosure to satisfy the barrier described in section 4.3.2) where students can learn about the role of the keepers at Werribee Open Range Zoo on a daily basis.

Some teachers say that the handicap accessibility of the Zoo was not adequate for their students. One teacher states that the bathrooms are not large enough to accommodate students in wheelchairs. Another teacher said that some of the information signs are too high for handicapped or young children to read without help. We suggest revamping the current presentation of information in the Zoo so that it is more accessible and perhaps even more informative so that more students can gain more knowledge. Additionally, teachers express a concern that the Zoos are too large for their students to comfortably walk through without tiring significantly, especially in cases when the students are very young or handicapped. The Zoo can develop a structured walking path that is most informative and beneficial for young students so that they can get excited about conservation without wearing out by the end of the day.

With these results, Zoos Victoria can get more educational visits by addressing the most common reasons why people have difficulty visiting the Zoo. If these issues are alleviated for the visitors of the Zoos Victoria sites, then more students can learn about conservation. There are still, however, teachers who never visit the Zoo, and their issues are also investigated.

4.4 Non-Visiting Teachers

The final teacher target group for motivational feedback is teachers that have not taken excursions to the Zoo before. The research focused on schools that are within the catchment area of the three properties. When analysing travel time versus Zoos Victoria property in section 4.1.3, school groups travel longer to get to the Healesville Sanctuary compared to the Melbourne Zoo and the Werribee Open Range Zoo. With this information seen in Figure 15 the catchment area for the Healesville Sanctuary is two times as large as the other two properties. The catchment areas for each property are outlined in Figure 21 below. Schools from each catchment area that had never taken a zoo excursion were isolated and contacted for the study and twenty-four responses were received.

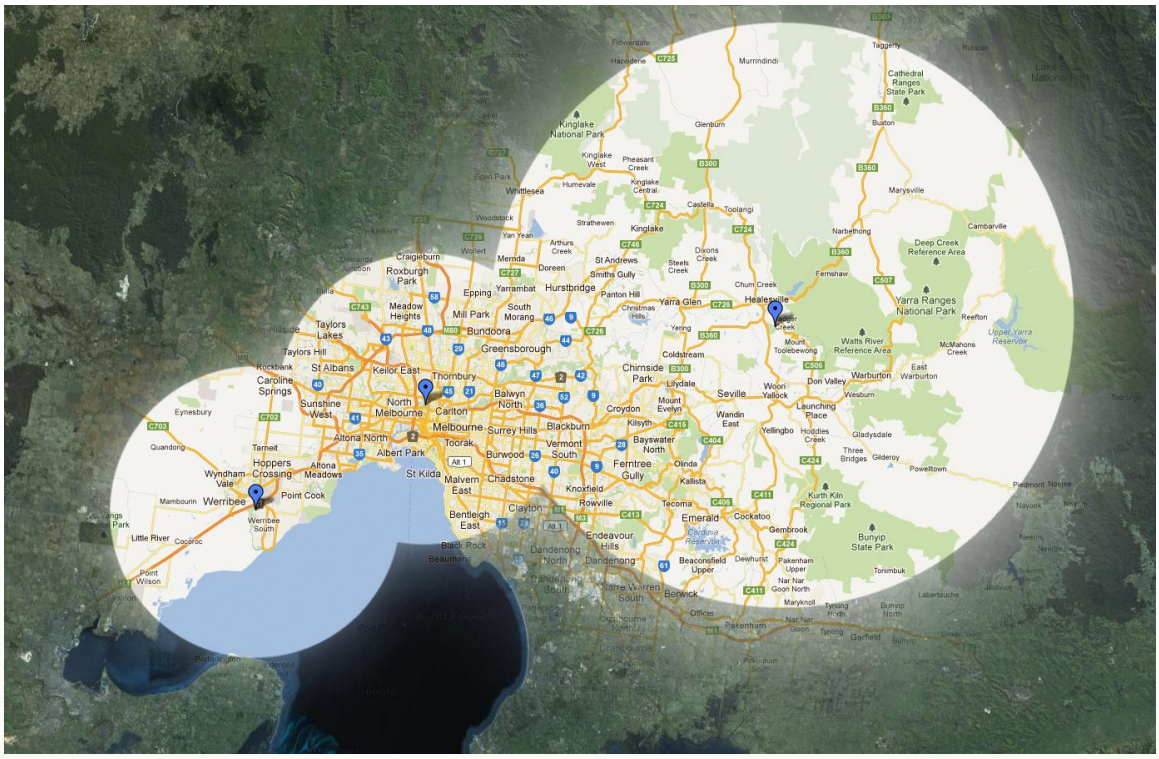


Figure 21: Catchment Map
The map shows the catchment for all three Zoos Victoria Properties. Healesville Sanctuary's catchment is two times as large as the other two sites.

Teachers are asked "What would motivate you to book an educational excursion to one of Zoos Victoria's three sites?" Among these teachers' responses there are a few trends, which included: easy planning, limited cost (bus and admission), and curriculum relevance, shown in panel A of Figure 22 by percent of responses per trend. The highest response from teachers

reveals that a majority would be motivated to take a zoo excursion if it is relevant to the material being taught in the classroom. Since all of the zoo programs are designed to be relevant to the VELS curriculum, teachers might not be aware of how the programs fulfil these curricular requirements.

Although eighty-three percent of these teachers say they are aware that the Zoo offers educational programs, the curriculum relevance response could be a result of the website not being clear enough. Another effect is the lack of communication and advertisement of the programs to all the teachers in the surrounding communities. Also, one of the teachers reveals that she tried to call for an enquiry on the programs because the website is confusing. She had to call multiple times to just get a bit of information on the different programs offered, highlighting another instance in where the website structure could be a barrier.

Another important question that had clear trends in responses is "What limits you when planning an excursion?" As illustrated in panel B in Figure 22, the biggest limitation when planning a school excursion is the cost of the trip, which includes bus and admission costs. Many teachers also express that there is not enough time in the day to plan an excursion to the Zoo for their students. The third biggest limitation expressed by the teachers is that the curriculum does not have the flexibility to support a zoo excursion. The final limitation teachers respond with is that it is too time consuming and complicated to plan an excursion in general.

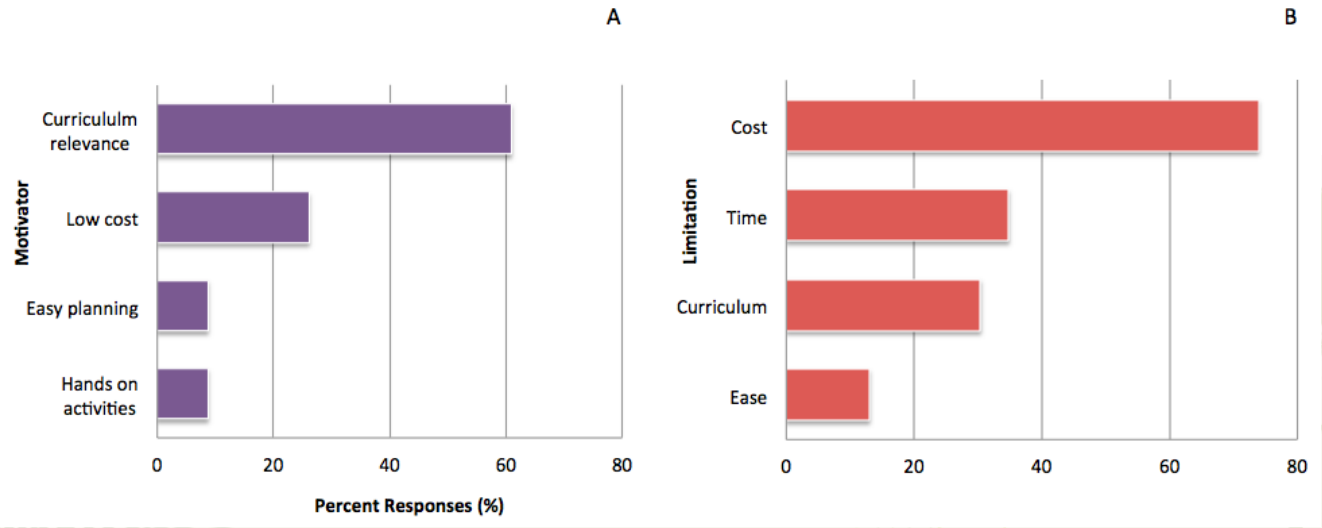


Figure 22: Responses from Non-Visiting Teacher
A. Motivations and **B.** Limitations to planning a school excursion by teachers who have never visited the Zoo.

4.5 Teacher Professional Development Programs

The Teacher Professional Development (PD) programs are aggregated across all of the zoo properties. Each property offers different PD programs that are carried out at different times through the year. The number of teachers that have attended a PD at any of the Zoos Victoria properties is very small compared to the amount that visits with their students. Teacher PDs play an integral role in the development and professionalism of teachers. As mentioned in our background, PDs are a requirement teachers must fulfil. Therefore, the PD survey question has a different result than the rest of the questionnaire because it is related to the personal experience of the teacher and not their expectation for the students. This makes the Teacher PD questions crucial to these findings. Figure 23 below shows the percentage of teachers that have previously attended a PD at one of the zoo sites.

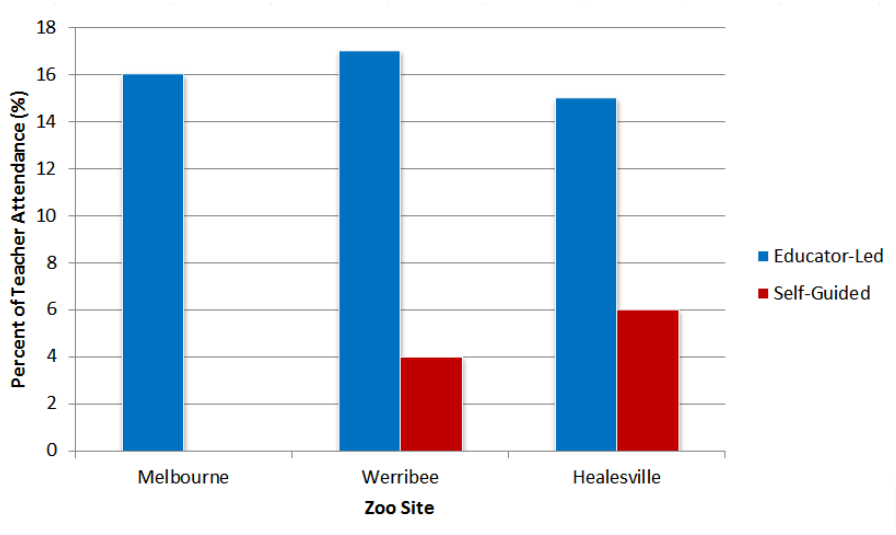


Figure 23: Attendance of Teacher Professional Development
The chart shows the attendance of Teacher Professional Development by teachers that have visited the Zoos Victoria sites. Note there are a higher percentage of teachers attending PDs that came for an educator-led visitation.

The lack of attendance to the PDs show part of the gap the research is focused on. The gap shows a link between these programs and the reason for the teachers selecting which programs to attend at Zoos Victoria. To further understand this, the teachers were inquired about what they would like to see offered at PDs. This is an open-ended question in the interviews and surveys, allowing the team to get a broad range of responses. The responses are then classified

into major topics. Figure 24 below shows the responses from teachers across all three sites, and a breakdown of the category meaning can be found in Appendix J.

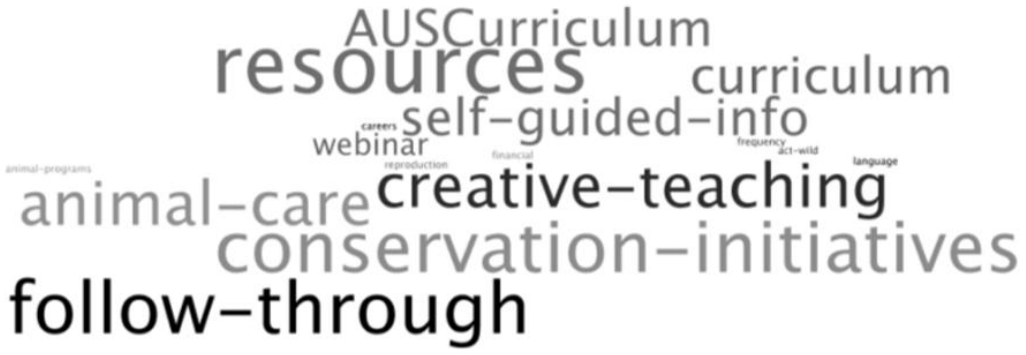


Figure 24: Responses for PD Interest
This word cloud presents the responses of all teachers about what they would like to see offered at the Zoo.

The information provided by teachers show in the word cloud as highlight areas that are a growing concern or topics that have a view on future developments. This is not a surprise to the team or the Zoo, but it provides important information for things the Zoo should start looking for in the future of their programs. Increasing the Teacher PDs the Zoo offers is an important step in getting a larger population of teachers bringing their students to the Zoo.

There is a large interest from the teachers to understand how to use the resources available by Zoos Victoria and integrate them into their visits. In other cases the petition is for PDs in which they get to understand the programs at the Zoo better so that they know how to select the one that better suits the needs of their class. They also inquired about the possibility of programs that would show them how to give a self-guided tour, what order to follow on the paths and what animals to visit first. The self-guided teachers present the desire of programs that would teach them some facts about animals so that they could share with their students once at the Zoo. It would be beneficial for Zoos Victoria to create some sort of self-guided DVD or videos that teachers could purchase with which they could learn about the Zoo and have the capacity to carry out a self-guided program from it.

Another popular trend revolves around the new Australian curriculum. Although not mentioned through the research and not a pressing issue for the Zoo at the moment, it is interesting to discover that teachers are interested in understanding how the Zoo will fit in with

this new curriculum. Not only do teachers want to know how to fit their visit to the new curriculum, but also how to apply it to their current curriculums. The PD data ranges from all ages and grade years, thus, it is a need that teachers are seeing across all ages. Some teachers want to know what to do before and after their visits to make their visit more integrated to their class work. This follow-through is important for teachers because it justifies their visit to the Zoo and also helps the visit be integrated into the curriculum.

Teachers are also starting to take action and want to find ways to get involved. This is reflected by the large amount of responses related to animal care and conservation initiatives. These categories reflect teachers that want to learn more about the conservation efforts taken by Zoos Victoria as well as ways that they can help animals in the ecosystems around their schools. A major barrier that affects the PDs is the distance that teachers would need to travel to get to the programs, as well as teachers that already feel heavily involved with other activities that would not be interested in participating. Creating videos and having webinars would help alleviate the issue by giving teachers the leisure to participate in the programs when they feel it is more adequate.

The small quantity of teachers that have participated in the Teacher PDs before gave us a different insight to the needs of these programs. Figure 25 below shows the responses from teachers that have attended the PDs before. There are slight differences between these responses and the general responses collected. They show more interest in the future trends such as conservation initiatives and the Australian curriculum. A new category, language, represents a sector of teachers interested in seeing programs that relate to different languages or programs that can be adapted to ESL students. From our findings, most ESL students attend Healesville, but there is language interest from teachers attending all three sites. The consistency of categories that are prominent on Figure 24 and 25 reflects a lack of understanding of what teachers look for in PDs. Interviews with the zoo educators that have delivered a PD before reveal that they have little information in what the teachers are looking for on the PDs and most of the topics just arise as assumptions. This finding shall aid Zoos Victoria to have a more accurate comprehension of the teacher interest for PDs.

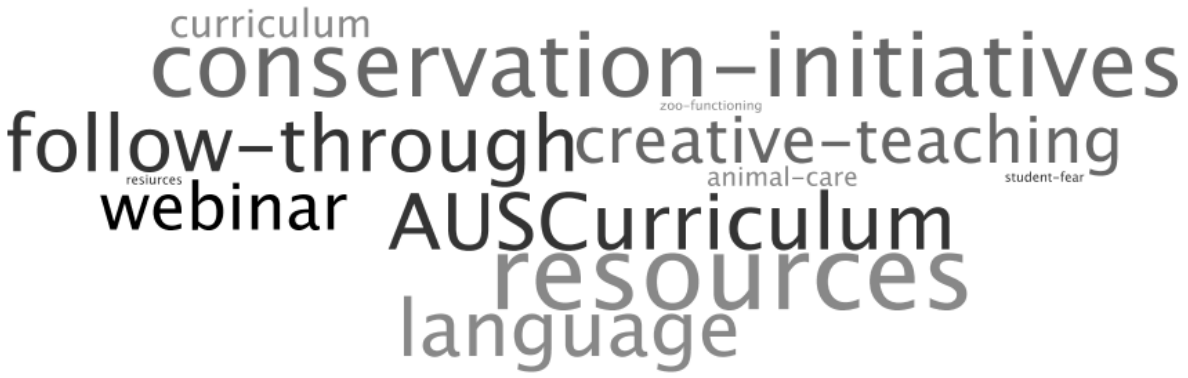


Figure 25: Responses from Attending Teachers
Teachers that have previously attended Professional Developments show an interest in very specific topics.

The final comparison of Teacher PDs is with non-visiting teachers that, shown in Figure 26. It is particularly interesting that the non-visiting teachers have very similar responses and interests as the teachers that have visited. These teachers are also more inclined for a diversification of the zoo resources. Most of them are interested in seeing how to use the Zoo in subjects that are not strictly science and conservation, but in topics like arts and creative writing. This insight demonstrates a need to develop programs that branch out of just science and conservation and offer other learning approaches to attract different sections of the visiting students and teachers.

Figure 26: Responses from Non-Attending Teachers
Teachers that have never visited Zoos Victoria responded similarly to the teachers that have when referring to their interest in the Teacher PDs.

4.6 Anticipated vs. Actual Expectations

By comparing the results from the interviews with the zoo educators and teachers, it is apparent whether the Zoo has the accurate impression of teacher expectations. Based on the

interviews with both the educational staff and the visiting teachers, the actual and anticipated teacher expectations are very similar. Zoo educators believe teachers expect their students to get a better understanding of the animals while getting a richer and more engaging experience outside of the classroom. The teacher interviews give a greater detail and understanding of their expectations, but overall give the same result. Teachers bring their students to the Zoo to fill curricular requirements, to allow the students a unique experience with the animals, and to give them a greater understanding of conservation. If the educational officers have a good idea of what the teachers' expectations are, then they can align their programs at the Zoo to target the teachers better.

5.0 Conclusions

Our team has successfully achieved its goal of understanding the Learning Experience Programs at Zoos Victoria and is recommending suggestions to increase educational visits. Research was conducted through the literature review, interviews with teachers, and interviews with zoo educators to comprehend teacher expectations of the Learning Experience Programs. From this research an analysis was performed, which highlighted the drivers and barriers of educational excursions to Zoos Victoria's three properties. Based on our results, the recommendations present ways in which the organisation can better satisfy teachers who bring their students to the Zoo.

The project consisted of extensive research on the different educational requirements and conservation initiatives across Australia, looking into the specific way that teachers are trained and the Learning Experience Programs offered at Zoos Victoria. The understanding of these topics gave us a holistic background of the project and prepared us to develop an effective methodology that would lead us to accomplishing our goal. The interview and survey system created produced nearly 400 responses, which we then used to analyse the factors that drive and limit the school visitations. We were able to observe the programs at all three sites, and the ways in which each site's programs and school visits are affected by its theme.

Zoos Victoria is confident in the programs they have developed for the Learning Experiences, which have produced pleased and reoccurring school visitors. The factors that power the retention and acquisition of the educational visits are important for Zoos Victoria to preserve in order for the programs to maintain their level of success. We discovered that the most important driver is the nature of the zoo experience itself and the close interaction students have with the animals. Additionally, the programs' outcomes match the curricular need of the teachers and the VELS requirements. Meeting these requirements helps teachers justify their excursion to the Zoo. Zoos Victoria's qualified educators deliver the content of their programs and proliferate conservation initiatives at the school level. These initiatives are becoming increasingly appealing to the teachers because they give students a way to get actively involved with conservation in their own communities.

For the Zoo to increase their visitation they need to overcome the barriers exhibited by the not-returning or non-visiting teachers to the zoo sites. Many of the problems seem to be out

of the Zoo's control such as bus cost, travel time, and weather conditions. The problems that the Zoo can control include booking and planning, the scheduling process, and communication with the teachers. It is fundamental for the Zoo to surmount these difficulties in order to increase their visitations, as well as to impact a larger student population.

In order to reach these students, Zoos Victoria needs to focus on their main audience, the teachers. We have seen that only a small percent of the teachers interviewed have attended the Teacher Professional Development programs. These PDs would provide an important avenue to reach teachers and surpass many of the difficulties presented as barriers to the school visitations. Furthermore, these programs can help provide the teachers with a foundation of conservation knowledge that can reach beyond the walls of the Zoo and inspire them to visit the Zoo with their students. Our recommendations provide future steps to aid Zoos Victoria in their goal of becoming the world's leading zoo-based conservation organisation.

6.0 Recommendations

We have identified the focus areas that can be feasibly addressed by Zoos Victoria, and from them we have developed potential improvements to maximize future educational visitation. The following recommendations represent our ideas on how the organisation can more effectively reach students with their conservation programs.

Continue implementing the current Learning Experience Program model.

Teachers are coming to the Zoo because they want to get close to animals, so we encourage the foundation to continue this aspect of the educational visits. Teachers also want curricular alignment with their schoolwork, so it is important to maintain programs that fulfil part of the VELS and the forthcoming national curriculum. We also encourage Zoos Victoria to think outside the box and try to apply this educational visitation model to other topics such as creative writing and art. This way, they will attract a broader spectrum of students and classes. The educators are successful at exciting the teachers and students, and we recommend keeping a passionate and knowledgeable staff for the Learning Experiences Programs.

Focus more on communicating with the teachers.

The pre-visit phone call is often inadequate for addressing all of a teacher's needs before they arrive at the Zoo. We recommend a more detailed phone call with the teachers to ensure that they know what to expect for their visit. The call should function as a discussion were the educator can learn the particular reasons for the excursion and its role in that teacher's class activity. In doing so, the educator can become a more personable resource for the teacher, which encourages further contact and future visits. Another way in which teacher contact could be augmented is in the amount of educational material teachers receive before and after their visit. Teachers want ways to incorporate the zoo visit with their classroom activities; so providing them with materials can give the excursion a more contextual relevance in the students' education. It would be beneficial to send them an email after their booking or directing them to a site where they can find all the information they could potentially need.

Create video tutorials for the education page of the website.

Some teachers felt that the website was too confusing to easily find booking and program information and schedule activities for their excursion. They also felt that the process of calling and booking a visit was difficult or time-consuming. We feel that the website could benefit by implementing a series of tutorial videos to help teachers overcome these obstacles. Videos could include sample days at the Zoo, how to navigate the website and book an excursion, and pre-visit and post-visit materials for integration with their coursework. This will help increase the number of self-guided visitors because teachers will feel more comfortable leading the excursion.

Mark routes for different learning styles and levels around the Zoo sites.

To develop more effective self-guided programs and ease the time constraints for visiting schools, we recommend pre-planned routes that could be illustrated on the zoo maps. This could be organised by different themes and content level so that students from different grades or nationalities can have a catered experience. For example, the increase in population of Indonesian students in Melbourne could lead to a successful Indonesian learning experience, especially with the addition of a unique Indonesian route. The signs throughout the Zoo could be updated with more informative content to give self-guided visits a more meaningful experience.

Zoos Victoria should offer more Teacher Professional Development programs.

It would be useful to have more PD programs at the three sites pertaining to how to use the zoo as a resource. Teachers are interested in forming an active part of the conservation programs as well as learning how to use the zoo as a resource for their classroom activities. Teacher PDs also provide a great way to market the zoo to the right audience and could provide an increase in the number of self-guided visits. As one of the teachers responded “The PD I did at Werribee many years ago was most successful and as a consequence, we have brought 200 students to Werribee every year since,” this proves the decisive impact that PDs have had on teachers in the past. The teachers are also showing more interest in the conservation campaigns happening at Zoos Victoria and these PDs would be a way of spreading the efforts to the community.

Provide more all-weather enclosures.

Teachers often stated that rainy weather nearly ruined their excursion, so it would be a good idea to implement more all-weather exhibits or enclosures so that students can participate in zoo activities regardless of the weather conditions. The Keeper Kids exhibit at Melbourne Zoo and the AWHC at Healesville Sanctuary are both good examples of all-weather enclosures that engage students without trying to mimic an outdoor experience. Werribee Open Range Zoo could benefit the most from this type of exhibit because it had the most weather-related complaints in our responses.

Zoos Victoria should conduct public guided tours.

Another way to maximize the educational value of self-guided visits would be to conduct guided tours that can present information for students while avoiding the cost or time commitment of an educator-led session. This recommendation is based on a trend we saw at Werribee Open Range Zoo that indicated more self-guided visits due to the safari tours. A similar guided tour could be implemented at each property that starts periodically and could offer a great combination of visitor and student education.

Establish a partnership with a transportation company.

The biggest complaint teachers had about visiting the Zoo was that the cost of buses was prohibitive. Although, we acknowledge that this is out of the Zoo's control we still believe Zoos Victoria can take actions towards resolving the issue. We suggest a partnership with a transportation company, which could provide schools with discounted transportation in exchange for zoo benefits. If this could be arranged, then it could be beneficial for the Zoo, the travel company, and the school groups.

Recommendation for Future Studies

Our team is confident in the quality of our assessment; however, there are several uncontrollable factors that limited our ability to gather unbiased and complete information. Due to the nature of the Zoo's database it was much easier to contact teachers who booked an educator-led session than a self-guided session. It was harder to contact non-visiting schools and

these had to be isolated. In order to isolate these schools we had to compare a self-made database of schools in Victoria with the visitor database provided by the Zoo. Twenty-four responses were received from these teachers, but several of them were from teachers of the same school. Our team feels it would be beneficial for the Zoo to pursue additional research in this area, possibly through another Interactive Qualifying Project. To successfully identify all the schools in a property's catchment zone that do not visit, it is necessary to compile a complete list of schools in that zone. Our team was unable to develop a complete list of these schools due to time constraints on completing our objectives.

Works Cited

Anonymous. (2009). National academy of sciences; new report on science learning at museums, zoos, other informal settings. *NewsRx Science*, 4.

Atweh, B., & Singh, P. (2011). The australian curriculum: Continuing the national conversation. *AUSTRALIAN JOURNAL OF EDUCATION*, *55*(3), 189-196.

Australia zoo. (2012). Retrieved 3/30, 2012, from http://www.australiazoo.com.au/conservation/

The australian curriculum. Retrieved January/28, 2012, from http://www.australiancurriculum.edu.au/

Broad, S., & Weiler, B. (2004). *Achieving conservation outcomes through environmental interpretation: A case study of zoos victoria* Monash University, Faculty of Business & Economics.

Conde, D., Flesness, N., Colchero, F., Jones, O., & Scheuerlein, A. (2011). An emerging role of zoos to conserve biodiversity. *Science*, *331*(6023), 1390.

Conservation International. (2012). *Where we work: Prioritiy regions.* Retrieved January 28, 2012, from http://www.conservation.org/where/priority_areas/Pages/default.aspx

Coral reef (2012). Encyclopædia Britannica Inc.

Council for Environmental Education.*About us.* Retrieved 4/30, 2012, from http://www.projectwild.org/aboutus.htm

Dapzury Valenzuela, P. S.*Interview as a method for qualitative reserach.* Unpublished manuscript.

Department of the Environment and Heritage. (2004). *Threatened species and ecological communities in australia.* Retrieved 1/31, 2012, from http://www.environment.gov.au/biodiversity/threatened/publications/overview.html

Department of the Environment and Heritage. (2011). *Threatened australian plants.* Retrieved 1/31, 2012, from http://www.environment.gov.au/biodiversity/threatened/publications/pubs/plants.pdf

Elizabeth Scholl. (2010). Saving endangered species. *Ask*, *9*(3), 6.

Endangered australian bird species. (2012). Retrieved 1/31, 2012, from http://www.albury.net.au/~tim/chebird.htm

Frog australia network- habitat loss. (2006). Retrieved 1/31, 2012, from http://frogsaustralia.net.au/conservation/Habitat-loss.cfm

Giacoppo, S. A. (2001). *Development methods: User needs assessment and task analyses.* Retrieved 4/15, 2012, from http://otal.umd.edu/hci-rm/dvlpmeth.html

GLEN, A. S., DICKMAN, C. R., SOULE, M. E., & MACKEY, B. G. (2007). Evaluating the role of the dingo as a trophic regulator in australian ecosystems. *Austral Ecology, 32*(5), 492-492. doi:10.1111/j.1442-9993.2007.01721.x

Google Maps. (2012). In Jean Paul Miralda (Ed.), *Zoos victoria sites*

Gough, A. (2011). The australian-ness of curriculum jigsaws: Where does environmental education fit? *Australian Journal of Environmental Education, 27,* S9+. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA268403825&v=2.1&u=mlin_c_worpoly&it=r&p=AONE&sw=w

Hager, P. (1998). Recognition of informal learning: Challenges and issues. *Journal of Vocational Education and Training: The Vocational Aspect of Education, 50*(4), 521-35.

Halse, C. (2004). Striving for balance: Australian perspectives on the future of schooling. *International Journal of Educational Research, 41*(7), 523-533. doi:10.1016/j.ijer.2006.02.006

JEWEL TOPSFIELD EDUCATION EDITOR. (2010,). Overhaul for national curriculum: Maths and science too difficult. *The Age (Melbourne, Vic.),* pp. 1.

JEWEL TOPSFIELD, & DAN HARRISON. (2010,). Calls for national curriculum delay. *The Age (Melbourne, Vic.),* pp. 9.

JEWEL TOPSFIELD, & DAN HARRISON. (2010,). Principals fail national curriculum: 2012 'too early' for victorian start. *The Age (Melbourne, Vic.),* pp. 3.

Justine Ferrari. (2010,). Deans reject new science curriculum. *The Australian,* pp. 7.

KEVIN DONNELLY. (2010,). CONTENT DROWNS NEW CURRICULUM. *The Australian,* pp. 14.

Laurance, W. F., Dell, B., Turton, S. M., Lawes, M. J., Hutley, L. B., McCallum, H., . . . Cocklin, C. (2011). The 10 australian ecosystems most vulnerable to tipping points. *Biological Conservation, 144*(5), 1472-1480. doi:10.1016/j.biocon.2011.01.016

Leah M Melber, & Linda M Abraham. (1999). Beyond the classroom: Linking with informal education. *Science Activities, 36*(1), 3.

Lufcy, J.*Some endangered australian marsupials.* Retrieved 1/31, 2012, from http://cstl-cla.semo.edu/zeller/endangered.htm

Luke, A. (2010). Will the australian curriculum up the intellectual ante in primary classrooms?

Melbourne Aquarium.*Worldly travellers.* Retrieved 1/31, 2012, from http://www.melbourneaquarium.com.au/explore-the-aquarium/animals/animal-profile---green-sea-turtle

Mijo Consulting, e. a. (2007). *Zoos in australia.* Retrieved 1/31, 2012, from http://australia.gov.au/about-australia/australian-story/zoos-in-australia

Minnesota zoo takes education and conservation to the world of online gaming. (2006). *Endangered Species Update, 23*, 156. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA169591105&v=2.1&u=mlin_c_worpoly&it=r&p=AONE&sw=w

Misko,Josie Beddie,Francesca Smith,Larry. (2007). The recognition of non-formal and informal learning in australia: Country background report [Abstract].

Oatey, A. (1999). *The strengths and limitations of interviews as a research technique for studying television viewers.* Unpublished manuscript.

Packer, J., & Ballantyne, R. (2010). The role of zoos and aquariums in education for a sustainable future. *New Directions for Adult and Continuing Education,* (127), 25-34.

Reade, L. S., & Waran, N. K. (1996). The modern zoo: How do people perceive zoo animals? *Applied Animal Behaviour Science, 47*(1), 109-118. doi:10.1016/0168-1591(95)01014-9

Rennie, L. J., Goodrum, D., & Hackling, M. (2001). Science teaching and learning in australian schools: Results of a national study. *Research in Science Education, 31*(4), 455-98.

Sawosik,Peter C.Student author -- CM, Buffam,Julie Student author -- ME, Bridgewater,Alicia J.Student author -- CM, Ault,Holly K.Faculty advisor -- ME, & Barnett,Jonathan R.Faculty

advisor -- FP. (2007). *Zoos victoria visitation data analysis*. Worcester, MA: Worcester Polytechnic Institute.

Silvestri, E. (2012). *How to become a teacher in australia.* Retrieved, 2012, from http://www.ehow.com/how_4924305_become-teacher-australia.html

Smith, D. (2006). *Marsupial mammals.* Retrieved 1/31, 2012, from http://www.ucmp.berkeley.edu/mammal/marsupial/marsupial.html

Smyth, J. C. (2006). Environment and education: A view of a changing scene. *Environmental Education Research, 12*(3-4), 247-264.

Taronga Conservation Society Australia. (2012). *Education.* Retrieved Feburary 16, 2012, from http://www.taronga.org.au/education

The Department of the Environment, Water, Heritage and the Arts. (2010). *Sustainability curriculum framework - guide for curriculum developers and policy makers.* ().

The Paignton Zoo. (2011). *The role of zoos in conservation.* Retrieved January 27, 2012, from http://www.paigntonzoo.org.uk/UserFiles/File/the_role_of_conse

Tofield, S., Coll, R. K., Vyle, B., & Bolstad, R. (2003). Zoos as a source of free choice learning. *Research in Science and Technological Education, 21*(1), 67-99.

Tribe, A., & Booth, R. (2003). Assessing the role of zoos in wildlife conservation. *Human Dimensions of Wildlife, 8*(1), 65-74.

Turley, S. K. (1999). Exploring the future of the traditional UK zoo. *Journal of Vacation Marketing, 5*(4), 340-355.

Victoria Institute of Teaching.*Standards for graduating teachers.* (). Melbourne, Australia: Victoria Institute of Teaching.

Victorian Curriculum and Assessment Authority. (2012). *Victorian essential learning standards.* Retrieved February/14, 2012, from http://vels.vcaa.vic.edu.au/

Victorian institute of teaching. (2010). Retrieved March/23, 2012, from http://vit.vic.edu.au/Pages/default.aspx

Weaver, S. (2007). *Creating great visitor experiences: A guide for museums, parks, zoos, gardens, & libraries*. Walnut Creek, Calif: Left Coast Press.

What is outdoor learning? Retrieved 2/15, 2012, from http://www.outdoor-learning.org/Default.aspx?tabid=207

Wildlife conservation society. ().Hoover's Inc.

Wildlife Conservation Society. (2012). Retrieved 2/13, 2012, from http://www.wcs.org/

Woods, B. (2002). Good zoo/bad zoo: Visitor experiences in captive settings. *ANTHROZOOS, 15*(4), 343-360.

WWF Australia. (2012). *We need your help to stop pollution running into the great barrier reef.* Retrieved 01/16, 2012, from http://support.wwf.org.au/great-barrier-reef.html?utm_source=wwf-homepage&utm_medium=highlight&utm_campaign=appeal

Xenophon, N. (2009, 2009). Food standards amendment (truth in labelling — palm oil) bill 2009. Message posted to http://www.openaustralia.org/senate/?id=2009-11-23.46.1

Yates, L., & Collins, C. (2010). The absence of knowledge in australian curriculum reforms. *European Journal of Education, 45*(1), 89-102.

Zimmermann, A.The role of zoos in conservation. *Thanks to our Sponsors*, , 85.

Ziobron,Justine Elizabeth Student author -- ND, Maglione,Nicole Marie Student author -- CE, Kosmaczewski,Sara Guckian Student author -- BIO, Gilde,Benjamin Student author -- MAC, & Ault,Holly K.Faculty advisor -- ME. (2008). *Adapting zoos victoria educational programs for students with disabilities*. Worcester, MA: Worcester Polytechnic Institute.

Zoo New England. (2008). *Education.* Retrieved Feburary 16, 2012, from http://www.zoonewengland.org/page.aspx?pid=260

Zoos Victoria. (2009). *Zoos victoria strategic plan.* (Framework). Melbourne, Australia: Zoos Victoria.

Zoos Victoria. (2011). *Learning experiences framework.* (Framework). Melbourne, Australia: Zoos Victoria.

Zoos Victoria. (2011). *Teacher notes-project platypus.* Retrieved 02/15, 2012, from http://www.zoo.org.au/adx/aspx/adxGetMedia.aspx?DocID=26791,17064,474,39,290,Documents&MediaID=40552&Filename=Project Platypus Teacher Notes.pdf

Zoos Victoria. (2011). *Zoos victoria annual report 2010-2011* (Annual Report). Melbourne, Australia: Zoos Victoria.

Zoos Victoria. (2012). *Learning experience framework.* Unpublished manuscript.

Zoos Victoria. (2012). *Learning experience framework.* Unpublished manuscript.

Zoos Victoria. (2012). *Teacher professional development.* Retrieved 01/20, 2012, from http://www.zoo.org.au/Learning/Teacher_PD

Zoos victoria. (2012). Retrieved 2/15, 2012, from www.zoo.org.au

Appendix A: e5 Educational Model

Instructional Model

DOMAIN: engage	DOMAIN: explore	DOMAIN: explain	DOMAIN: elaborate	DOMAIN: evaluate
The teacher fosters positive relations with and between students and develops shared expectations for learning and interacting. They stimulate interest and curiosity, promote questioning and connect learning to real world experiences. The teacher structures tasks, elicits students' prior knowledge and supports them to make connections to past learning experiences. They present a purpose for learning, determining challenging learning goals and making assessment and performance requirements clear. The teacher assists students to consider and identify processes that will support the achievement of the learning goals.	The teacher presents challenging tasks to support students to generate and investigate questions, gather relevant information and develop ideas. They provide tools and procedures for students to organise information and ideas. The teacher identifies students' conceptions and challenges misconceptions. They assist students to expand their perspectives and reflect on their learning. The teacher is mindful of the learning requirements of the task, attentive to student responses and intervenes accordingly.	The teacher provides opportunities for students to demonstrate their current level of understanding through verbal and non-verbal means. They explicitly teach relevant knowledge, concepts and skills. This content is represented in multiple ways. The teacher provides strategies to enable students to connect and organise new and existing knowledge. They assist students to represent their ideas, using language and images to engage them in reading, writing, speaking, listening and viewing. The teacher explicitly teaches the language of the discipline. They progressively assess students' understanding and structure opportunities for students to practise new skills.	The teacher engages students in dialogue, continuously extending and refining students' understanding. They support students to identify and define relationships between concepts and to generate principles or rules. The teacher selects contexts from familiar to unfamiliar, which progressively build the students' ability to transfer and generalise their learning. The teacher supports students to create and test hypotheses and to make and justify decisions. They monitor student understanding, providing explicit feedback, and adjusting instruction accordingly.	The teacher supports students to continuously refine and improve their work using assessment criteria in preparation for a performance of understanding. They integrate evidence from each phase, formally recording students' progress against learning goals. The teacher provides feedback and assists students to evaluate their progress and achievements. They support students to reflect on their learning processes and the impact of effort on achievement. The teacher guides students to identify future learning goals.
CAPABILITIES				
• Develops shared norms • Determines readiness for learning • Establishes learning goals • Develops metacognitive capacity	• Prompts inquiry • Structures inquiry • Maintains session momentum	• Presents new content • Develops language and literacy • Strengthens connections	• Facilitates substantive conversation • Cultivates higher order thinking • Monitors progress	• Assesses performance against standards • Facilitates student self assessment

DOMAIN: engage	DOMAIN: explore	DOMAIN: explain	DOMAIN: elaborate	DOMAIN: evaluate
Profile Statements				
Level 1				
The teacher promotes a safe and orderly learning environment by providing the class with rules and modelling expected behaviours. They treat individuals with courtesy and promote effort and hard work. The teacher stimulates interest and curiosity in the learning, making links to students' interests. They explain the purpose for learning and assess students' prior knowledge by asking students what they know about the topic. The teacher articulates learning goals based on the expected year level standard and informs students of assessment requirements. They use tools and strategies to support students' thinking processes and to develop students' understanding of metacognition. The teacher supports students to identify what they know and what they need to know, enabling students to monitor their own learning.	The teacher uses a range of question types and encourages students to share their prior experiences to involve students in the inquiry. They ask students to explain their understanding of key concepts and ideas to identify misconceptions. The teacher selects resources relevant to the inquiry and presents examples of information in an organised format. They use guiding questions to assist students to select relevant information. The teacher contributes to a productive learning environment, presenting an outline for the session, informing students of the time frame for tasks. They refer to class rules to manage student behaviour.	The teacher supports students to develop explanations to make sense of the inquiry. They present new content based on year level standards and represent the content in different ways to enhance students' understanding. The teacher verbalises the connections between new content and past learning, and continuously prompts students to clarify their understanding. They provide opportunities for students to practise new skills and processes. The teacher identifies students' level of English language proficiency to inform their teaching. They model the use of English language conventions to develop students' language and literacy. The teacher models the language of the discipline and uses tasks that incorporate different modes of language.	The teacher provides intellectually challenging tasks and articulates the cognitive demands of the task to students. They provide examples of the concept in similar contexts to assist students to apply their learning. The teacher uses strategies to involve all students in focused conversation, facilitating the sharing of ideas. The teacher selects the topic and structures the conversation to generate student thinking about the key concepts. They monitor student understanding, providing students with feedback specific to the task and modifying instruction based on student responses.	The teacher assists students to prepare for a performance of understanding. They assess student achievement and communicate progress. The teacher presents guiding questions to enable students to reflect on their learning. They support students to frame future learning goals based on identified strengths and areas for improvement.
Level 2				
The teacher maintains a productive learning environment by conveying behavioural and learning expectations for all students which are referenced to school values. The teacher regularly engages with individual students and treats them fairly and consistently. They use stimuli to draw out what students know and support students to link their experiences to the topic. The teacher uses this information to differentiate learning goals for groups of students based on need. The teacher demonstrates a purpose for learning by linking the specific activity to the learning goals. They explain assessment criteria when communicating assessment requirements to students. The teacher models different types of thinking using labels and definitions.	The teacher uses questions to stimulate further investigation into the inquiry. They broaden students' experiences by making links between the learning focus and real world applications. The teacher observes and listens to student interactions and responds to any misconceptions. They present additional resources and provide tools to record information in response to student need. The teacher continuously monitors the students and intervenes when required to maintain student engagement in the inquiry. They provide a structure for the session, establishing routines and providing a schedule to support time management.	The teacher uses student explanation of the inquiry to determine current levels of understanding and introduces new content accordingly. They select multiple ways to represent the same content in response to student need. The teacher structures collaborative opportunities for students to share their explanations and supports students to make links between past and new learning. They provide multiple opportunities for students to consolidate the new learning using varied types of practice. They explicitly teach the conventions of English in all curriculum areas. They teach the language of the discipline and structure tasks to engage students in using multiple modes of language.	The teacher provides tasks that support the transfer of learning and assists students to apply concepts from familiar to unfamiliar contexts. The teacher models and provides thinking tools and strategies to support transfer. They incorporate wait time to support students to consider the ideas and construct their responses. The teacher structures conversation, acknowledging the value of students' ideas and using these to build individual and collective understanding. They group students according to the purpose of the conversation. The teacher gives feedback referenced to assessment criteria, when monitoring student progress. They adapt instruction based on group needs.	The teacher provides strategies for students to reflect on and refine their work in preparation for a performance of understanding. The teacher integrates evidence gathered from both formal and informal assessment to make judgements about student progress. They use examples of student learning and work samples to illustrate student progress against learning goals. The teacher models strategies for self reflection. They support students to reflect on their achievements and learning processes to frame future learning goals.

Level 3				
The teacher negotiates learning routines and protocols for interactions with students. The teacher responds to each individual student's social and emotional needs. They use a range of strategies to assess and document students' prior knowledge. The teacher uses this evidence as the starting point to determine learning goals based on curriculum standards. They provide examples of student work to demonstrate the expected standard when communicating assessment requirements. The teacher verbalises their approach to thinking and models the strategies used. They provide tools and strategies to assist students to reflect on their learning.	The teacher provides experiences to draw out students' misconceptions and frames questions to challenge students' ideas. They teach strategies for students to choose resources applicable to the inquiry, as well as processes to collect and select relevant information. The teacher explains reasons for the use of particular strategies to help students organise information. The teacher adapts routines and adjusts time allocated to maximise student learning opportunities and understanding. They reinforce shared norms and expected behaviours to maintain session momentum.	The teacher differentiates content based on the students' level of understanding of the inquiry. They adapt representations based on student need. The teacher uses analogy and metaphor to illustrate the relationship between ideas, assisting students to make connections between new and existing knowledge to clarify understanding. They structure opportunities for students to strengthen specific skills and processes through focused practice. The teacher responds to students' English language proficiency, providing students with strategies to meet the literacy demands of the task. They explain the reasons for selecting particular modes of language and expect students to use the language of the discipline.	The teacher structures tasks that require students to manipulate information and ideas to generate rules and principles. They support students to test these rules and principles in unfamiliar contexts. The teacher negotiates conversational protocols which support all students to make meaningful contributions, build on and challenge one another's ideas. The teacher asks questions, probes student thinking and prompts them to justify their responses. The teacher provides feedback and structures opportunities for students to give feedback to one another. They monitor student progress and intervene to address individual needs.	The teacher structures opportunities for students to individually and collaboratively assess and improve their work in preparation for a performance of understanding. They make judgements about student achievement using rubrics referenced to curriculum standards. The teacher communicates progress against learning goals based on curriculum standards. They support students to review samples of their work to identify evidence of their learning and to reflect on their overall progress. The teacher supports students to identify future learning goals and strategies to progress their learning.
Level 4				
The teacher refers to shared norms in their interactions with students and shares responsibility with them for reinforcing protocols. The teacher uses all available evidence to determine each individual student's current level of understanding. They use questions generated by students to extend the focus of learning and to connect with students' lives. The teacher supports students to use evidence to personalise their learning goals and align them with curriculum standards. The teacher provides assessment rubrics, illustrating increasing levels of proficiency based on curriculum standards. They support students to evaluate their own and others' thinking. The teacher facilitates processes for students to monitor the effectiveness of their learning.	The teacher introduces new perspectives, extending the inquiry and supporting students to reflect on their understanding. The teacher challenges misconceptions through the use of specific tasks and questions to extend student thinking. They prompt students to select tools and strategies appropriate for documenting the collected information. They teach students processes to evaluate the quality of information. The teacher attends to student's verbal and non-verbal cues, responds to individual behaviour and supports learning accordingly. They provide strategies to enable students to manage their time effectively.	The teacher assesses the student's level of understanding, selecting and introducing content at individual point of need, in response to student explanation. They assist students to select strategies to demonstrate relationships between ideas and to connect new content with prior learning. The teacher challenges students to represent their understanding in multiple ways. They guide students to establish independent practice routines to reinforce and extend the student's level of understanding. The teacher supports students to use the language of the discipline and to select the mode of language appropriate to the task. They support students to identify and use strategies to meet the literacy demands of the task.	The teacher explains the taxonomy used to structure the task and inform the assessment criteria. They support students to use evidence to challenge assumptions underpinning principles when extending the learning to new contexts. The teacher structures opportunities for students to sustain a conversation, deepening individual and collective understanding. They support students to critique one another's ideas to increase the intellectual rigour of the conversation. The teacher continuously monitors student progress and provides feedback that enables each student to understand what they need to do to improve.	The teacher moderates both within and across classes to ensure consistent judgements. They support students to reflect on their learning outcomes and evaluate strategies used. The teacher conferences with individual students using student reflection and teacher judgement to discuss progress against curriculum standards. The teacher refers to the conference and curriculum standards when facilitating an individual student's identification of future learning goals and strategies.

STANDARDS OF PROFESSIONAL PRACTICE FOR FULL REGISTRATION

Teachers in Victoria are committed to the learning and wellbeing of the students they teach and make a significant contribution to the communities in which they work. They respect the individuality, capacity and backgrounds of their students and maintain high expectations for student learning.

Teachers are committed to the continuous development of their professional knowledge and practice. They work collaboratively, using research and evidence derived from theory and practice, to improve education and build effective communities of learners.

Teachers share an essential and privileged responsibility with parents and communities to care for all young people, and to discover and develop their potential to learn independently and critically throughout their lives. Victorian teachers make a difference

STANDARDS

PROFESSIONAL KNOWLEDGE

1 Teachers know how students learn and how to teach them effectively.

- Teachers draw on the body of knowledge about learning and contemporary research into teaching and learning to support their practice;
- Teachers know the importance of prior knowledge and language for learning, and the impact of discussion, group interaction and reflection in the learning process;
- Teachers know how to engage students in active learning;
- Teachers know how classroom and program design, use of materials and resources and the structure of activities impact on learning.

2 Teachers know the content they teach.

- Teachers have a sound, critical understanding of the content, processes and skills they teach;
- Teachers can articulate the key features and relevance of their content to their students and others, and can demonstrate how it is applied;
- Teachers know the methodologies, resources and technologies which support learning of the content, processes and skills they teach;
- Teachers are familiar with curriculum statements, policies, materials and programs associated with the content they teach.

3 Teachers know their students.

- Teachers know the learning strengths and weaknesses of their students and are aware of the factors that influence their learning;
- Teachers are aware of the social, cultural, and religious backgrounds of the students they teach, and treat students equitably;
- Teachers develop an understanding and respect for their students as individuals, and are sensitive to their social needs and the way they interact with others;
- Teachers know the importance of working with and communicating regularly with students' families to support their learning.

PROFESSIONAL PRACTICE

4 Teachers plan and assess for effective learning.

- Teachers use their knowledge of students, content and pedagogy to establish clear and achievable learning goals for their students;
- Teachers plan for the use of a range of activities, resources and materials to provide meaningful learning opportunities for all their students;
- Teachers monitor student engagement in learning and maintain records of their learning progress;
- Teachers select assessment strategies to evaluate student learning, to provide feedback to students and their parents/guardians and to inform further planning of teaching and learning.

5 Teachers create and maintain safe and challenging learning environments.

- Teachers develop a positive learning environment where respect for individuals is fostered and where learning is the focus;
- Teachers provide a learning environment that engages and challenges their students and encourages them to take responsibility for their own learning;
- Teachers use and manage the materials, resources and physical space of their classroom to create a stimulating and safe environment for learning;
- Teachers establish and maintain clear and consistent expectations for students as learners and for their behaviour in the classroom.

6 Teachers use a range of teaching strategies and resources to engage students in effective learning..

- Teachers communicate effectively with students to make their learning programs explicit, to build rapport, and to support their learning;
- Teachers provide and manage opportunities for students to explore ideas and develop knowledge and skills, through discussion and group activities;
- Teachers use and manage a range of teaching and learning strategies, technologies, activities and resources;
- Teachers provide meaningful feedback to students and their parents/guardians about their developing knowledge and skills.

PROFESSIONAL ENGAGEMENT

7 Teachers reflect on, evaluate and improve their professional knowledge and practice.

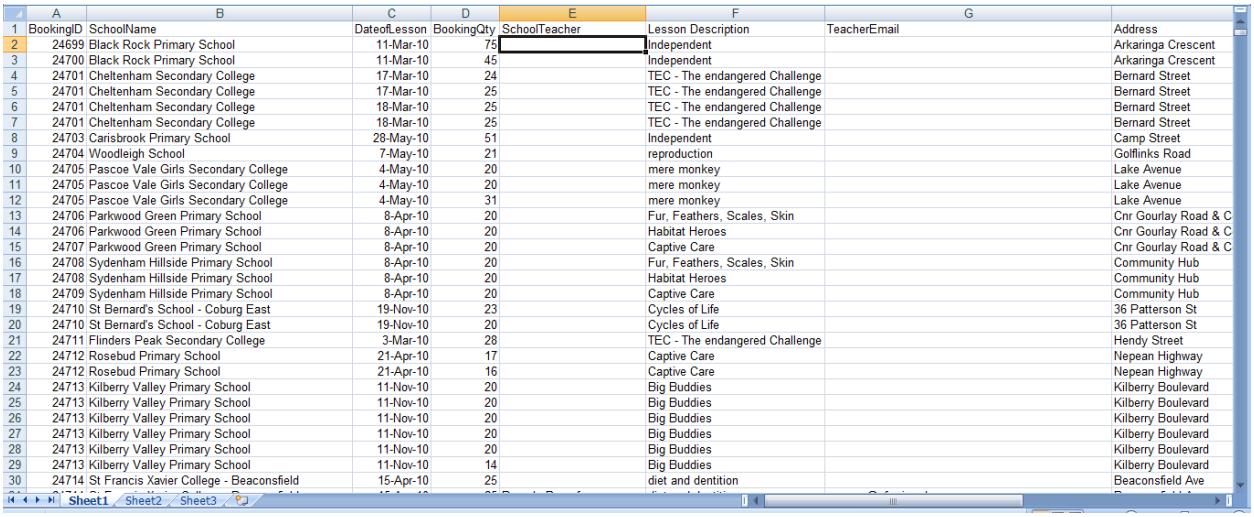
- Teachers regularly reflect on and critically evaluate their professional knowledge and the effectiveness of their teaching;
- Teachers work collaboratively with other members of the profession and engage in discussion of contemporary issues and research to improve professional practice;
- Teachers identify their own professional learning needs and plan for and engage in professional development activities;
- Teachers develop organisational and administrative skills to manage their non-teaching duties effectively.

8 Teachers are active members of their profession.

- Teachers contribute to the development of school communities that support the learning and wellbeing of both students and fellow teachers;
- Teachers work effectively with other professionals, parents/guardians and members of the broader community to provide effective learning for students;
- Teachers promote learning, the value of education and the profession of teaching in the wider community;
- Teachers understand and fulfil their legal responsibilities and share responsibility for the integrity of their profession.

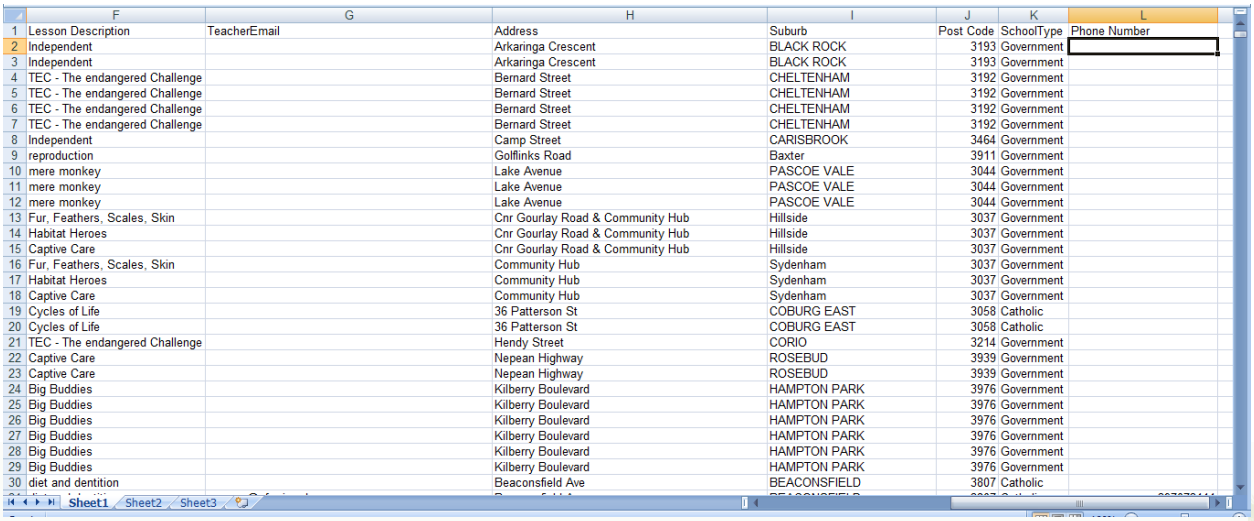
CHARACTERISTICS OF EFFECTIVE TEACHING

Appendix C: Zoos Victoria Database Sample



	A	B	C	D	E	F	G	
1	BookingID	SchoolName	DateofLesson	BookingQty	SchoolTeacher	Lesson Description	TeacherEmail	Address
2	24699	Black Rock Primary School	11-Mar-10	75		Independent		Arkaringa Crescent
3	24700	Black Rock Primary School	11-Mar-10	45		Independent		Arkaringa Crescent
4	24701	Cheltenham Secondary College	17-Mar-10	24		TEC - The endangered Challenge		Bernard Street
5	24701	Cheltenham Secondary College	17-Mar-10	25		TEC - The endangered Challenge		Bernard Street
6	24701	Cheltenham Secondary College	18-Mar-10	25		TEC - The endangered Challenge		Bernard Street
7	24701	Cheltenham Secondary College	18-Mar-10	25		TEC - The endangered Challenge		Bernard Street
8	24703	Carisbrook Primary School	28-May-10	51		Independent		Camp Street
9	24704	Woodleigh School	7-May-10	21		reproduction		Golflinks Road
10	24705	Pascoe Vale Girls Secondary College	4-May-10	20		mere monkey		Lake Avenue
11	24705	Pascoe Vale Girls Secondary College	4-May-10	20		mere monkey		Lake Avenue
12	24705	Pascoe Vale Girls Secondary College	4-May-10	31		mere monkey		Lake Avenue
13	24706	Parkwood Green Primary School	8-Apr-10	20		Fur, Feathers, Scales, Skin		Cnr Gourlay Road & C
14	24706	Parkwood Green Primary School	8-Apr-10	20		Habitat Heroes		Cnr Gourlay Road & C
15	24707	Parkwood Green Primary School	8-Apr-10	20		Captive Care		Cnr Gourlay Road & C
16	24708	Sydenham Hillside Primary School	8-Apr-10	20		Fur, Feathers, Scales, Skin		Community Hub
17	24708	Sydenham Hillside Primary School	8-Apr-10	20		Habitat Heroes		Community Hub
18	24709	Sydenham Hillside Primary School	8-Apr-10	20		Captive Care		Community Hub
19	24710	St Bernard's School - Coburg East	19-Nov-10	23		Cycles of Life		36 Patterson St
20	24710	St Bernard's School - Coburg East	19-Nov-10	20		Cycles of Life		36 Patterson St
21	24711	Flinders Peak Secondary College	3-Mar-10	28		TEC - The endangered Challenge		Hendy Street
22	24712	Rosebud Primary School	21-Apr-10	17		Captive Care		Nepean Highway
23	24712	Rosebud Primary School	21-Apr-10	16		Captive Care		Nepean Highway
24	24713	Kilberry Valley Primary School	11-Nov-10	20		Big Buddies		Kilberry Boulevard
25	24713	Kilberry Valley Primary School	11-Nov-10	20		Big Buddies		Kilberry Boulevard
26	24713	Kilberry Valley Primary School	11-Nov-10	20		Big Buddies		Kilberry Boulevard
27	24713	Kilberry Valley Primary School	11-Nov-10	20		Big Buddies		Kilberry Boulevard
28	24713	Kilberry Valley Primary School	11-Nov-10	20		Big Buddies		Kilberry Boulevard
29	24713	Kilberry Valley Primary School	11-Nov-10	14		Big Buddies		Kilberry Boulevard
30	24714	St Francis Xavier College - Beaconsfield	15-Apr-10	25		diet and dentition		Beaconsfield Ave

Sheet1 Sheet2 Sheet3



	F	G	H	I	J	K	L
1	Lesson Description	TeacherEmail	Address	Suburb	Post Code	SchoolType	Phone Number
2	Independent		Arkaringa Crescent	BLACK ROCK	3193	Government	
3	Independent		Arkaringa Crescent	BLACK ROCK	3193	Government	
4	TEC - The endangered Challenge		Bernard Street	CHELTENHAM	3192	Government	
5	TEC - The endangered Challenge		Bernard Street	CHELTENHAM	3192	Government	
6	TEC - The endangered Challenge		Bernard Street	CHELTENHAM	3192	Government	
7	TEC - The endangered Challenge		Bernard Street	CHELTENHAM	3192	Government	
8	Independent		Camp Street	CARISBROOK	3464	Government	
9	reproduction		Golflinks Road	Baxter	3911	Government	
10	mere monkey		Lake Avenue	PASCOE VALE	3044	Government	
11	mere monkey		Lake Avenue	PASCOE VALE	3044	Government	
12	mere monkey		Lake Avenue	PASCOE VALE	3044	Government	
13	Fur, Feathers, Scales, Skin		Cnr Gourlay Road & Community Hub	Hillside	3037	Government	
14	Habitat Heroes		Cnr Gourlay Road & Community Hub	Hillside	3037	Government	
15	Captive Care		Cnr Gourlay Road & Community Hub	Hillside	3037	Government	
16	Fur, Feathers, Scales, Skin		Community Hub	Sydenham	3037	Government	
17	Habitat Heroes		Community Hub	Sydenham	3037	Government	
18	Captive Care		Community Hub	Sydenham	3037	Government	
19	Cycles of Life		36 Patterson St	COBURG EAST	3058	Catholic	
20	Cycles of Life		36 Patterson St	COBURG EAST	3058	Catholic	
21	TEC - The endangered Challenge		Hendy Street	CORIO	3214	Government	
22	Captive Care		Nepean Highway	ROSEBUD	3939	Government	
23	Captive Care		Nepean Highway	ROSEBUD	3939	Government	
24	Big Buddies		Kilberry Boulevard	HAMPTON PARK	3976	Government	
25	Big Buddies		Kilberry Boulevard	HAMPTON PARK	3976	Government	
26	Big Buddies		Kilberry Boulevard	HAMPTON PARK	3976	Government	
27	Big Buddies		Kilberry Boulevard	HAMPTON PARK	3976	Government	
28	Big Buddies		Kilberry Boulevard	HAMPTON PARK	3976	Government	
29	Big Buddies		Kilberry Boulevard	HAMPTON PARK	3976	Government	
30	diet and dentition		Beaconsfield Ave	BEACONSFIELD	3807	Catholic	

Sheet1 Sheet2 Sheet3

Appendix D: Teacher Tracking Sheet Samples

	A	B	C	D	E	F	G	H	I
1	School	Teacher	Frequency	Phone number	Contacted	Interview day	Interview Time	Interviewer	
2	Bungaree Primary School				Yes	3/28/2012	9:30am	Kaleigh	
3	Hillsmeade Primary School				Yes	4/18/2012	8:30am	Kaleigh/All	
4	Preston Primary School				Yes	3/29/2012	2:00pm	Kaleigh	
5									
6									
7									
8									
9									
10									
11									
12									

	A	B	C	D	E	F	G	H	I
1	School	Teacher	Frequency	Phone Number	Contacted	Interview day	Interview Time	Interviewer	
2	Holmesglen Institute of TAFE				Yes	3/28/2012	2:00pm	Roxanne	
3	Vermont Secondary College				Yes	3/29/2012	1:30pm	Roxanne	
4	Deakin University English Language Institute (DUELI)				Yes	4/2/2012	2:00pm	Roxanne	
5	Lilydale High School				Yes	4/20/2012	2:00pm	Roxanne	
6									
7									
8									
9									
10									
11									
12									

Appendix E: Routine and Not-Returning Visitor Survey Questions

Melbourne Zoo: Self-Guided Routine Visitor Survey

DEMOGRAPHIC:

1. What kind of school do you work at? (Government, Independent, Catholic)

2. What years are visiting today? _____

3. How long did it take you to get here? _____

4. How did you get here? (bus, tram, parent drivers) _____

BACKGROUND:

5. Have you ever made an educational visit to Melbourne Zoo before? Y N

6. Have you ever made an educational visit to the other sites? W H

7. Are you aware of educator-led programs here at the zoo? Y N

a. Would (have) you ever consider(ed) booking one? Y N

8. How did you hear about the zoo programs?

Website Word of Mouth Previous Visit

Conference Advertisements E-News

_____
_____
_____

9. Have you ever participated in a Teacher Professional Development program at the zoo? Y N

a. What could the zoo offer the programs on?
_____
_____
_____

OPINION:

10. What motivated you to bring your students to the zoo today?

Fun Day Curriculum Conservation

_____
_____
_____

11. Did you face any difficulties when planning your visit or travelling to the zoo?

Y N

12. Is there anything educational the zoo could provide to make your visit even better?

Curricular Fulfillment More Engaging Programs

Conservation Education Pre/post-visit Materials Content Level

_____
_____
_____

TECHNOLOGY:

13. Have you ever used the ActWild website before? Y N

a. Have you used the ActWild site with your students? Y N

14. Have you ever participated in zoo web conferences? Y N

15. What would encourage you to use web conferencing on a daily basis?

_____
_____
_____

16. Would you be interested in being a part of:

Monthly E-News Web Conferencing E-Mail: _____

Variations of this survey were used for each of the three zoo sites. The altered questions are highlighted below.

Melbourne Zoo: Educator-Led Routine Visitor Survey

Altered #7

7. Are you aware of self-guided programs here at the zoo? Y N

Werribee Open Range Zoo: Self-Guided Routine Visitor Survey

Altered #5-6

5. Have you ever made an educational visit to Werribee Open Range Zoo before? Y N

6. Have you ever made an educational visit to the other sites? M H

Werribee Open Range Zoo: Educator-Led Routine Visitor Survey

Altered #5-7

5. Have you ever made an educational visit to Werribee Open Range Zoo before? Y N

6. Have you ever made an educational visit to the other sites? M H

7. Are you aware of self-guided programs here at the zoo? Y N

Healesville Sanctuary: Self-Guided Routine Visitor Survey

Altered #5-6

5. Have you ever made an educational visit to Healesville Sanctuary before? Y N

6. Have you ever made an educational visit to the other sites? M W

Healesville Sanctuary: Educator-Led Routine Visitor Survey

Altered #5-7

5. Have you ever made an educational visit to Healesville Sanctuary before? Y N

6. Have you ever made an educational visit to the other sites? M W

7. Are you aware of self-guided programs here at the zoo? Y N

All Three Sites: Not-Returning Visitors

Altered #5-7

5. Which site(s) did you normally visit in the past? M W H

6. What program did you normally book for you students? Self-guided Educator-led

Appendix F: Non-Visiting Teachers' survey questions

All Three Sites

DEMOGRAPHICS:

1. What kind of school do you work at? (Government, Independent, Catholic)
2. What year(s) do you teach? _____

BACKGROUND:

3. Have you been to one of Zoos Victoria properties (MZ, HS, WORZ)?
4. Did you know that Zoos Victoria offers educational programs for students at all 3 sites?
    a. (If yes)How did you hear about the zoo programs?

    Website Word of Mouth Previous Visit
    Conference Advertisements E-News

    _____
    _____
    _____

OPINION:

5. Have you ever considered taking a school excursion to any of the zoos?
    Yes No

    _____
    _____

6. What limits you when planning a school excursion?
    Time Money Curriculum Not what we want

    _____
    _____

7. What would motivate you to plan an educational excursion to Zoos Victoria?
    Promotion Grant Curricular Requirements

    _____
    _____

8. The zoo also offers Teacher Professional Development Programs, these can be about any subject or topic, what material would you like to be included at the programs?

    _____
    _____

9. Is there anyone else that you think we can talk to about the programs at the zoo?

10. Have you ever used the Act Wild website?

    Yes No

Appendix G: Zoo Educator Interview Questions

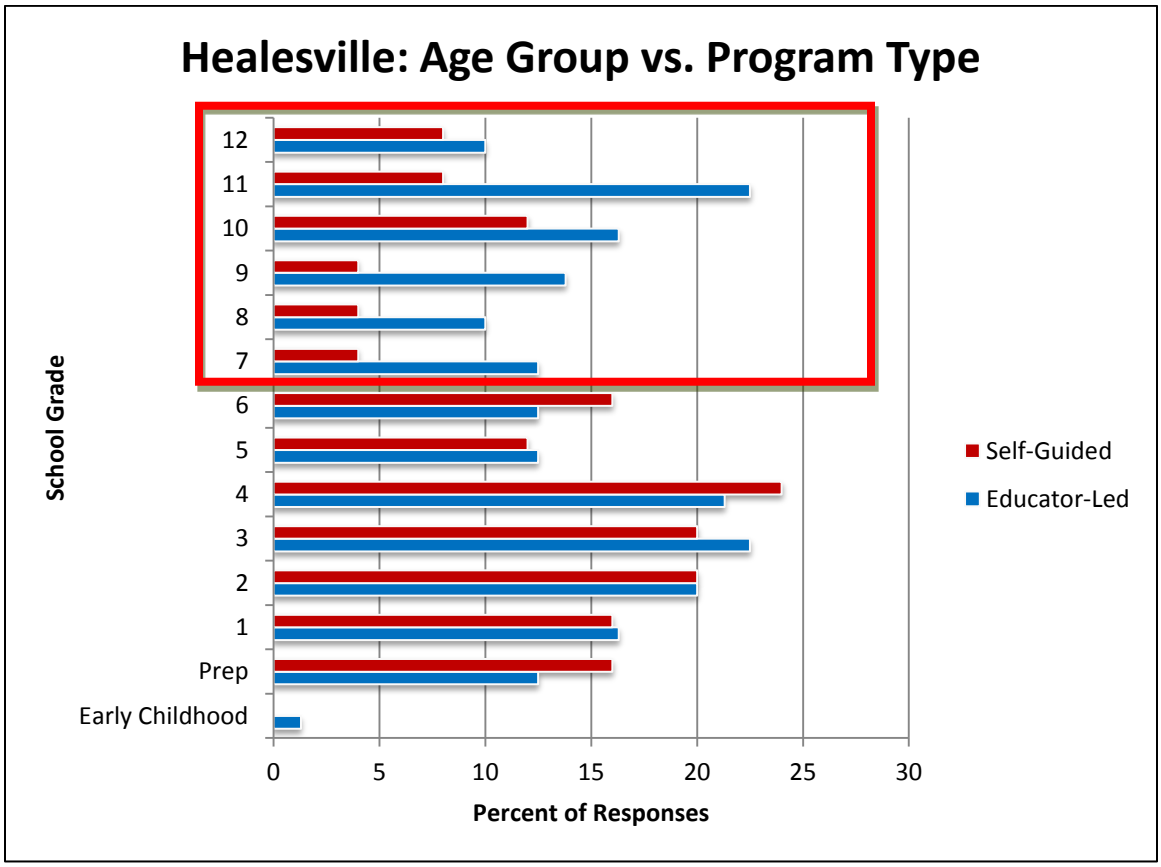
1. How long have you worked at the zoo?
2. Did you have teaching experience before being a zoo educator?
    a. If yes-did you plan excursions with students?
    b. If yes- What did you look for when planning?
3. Have you administered a TPD program here?
    a. If yes-How did you get the info for the program?
4. How much contact do you have with the teachers before they come?
5. How are the self-guided programs different educationally from the educator-led programs?
    a. Do you believe they provide the same educational value?
6. What do you believe the teachers expect from the programs?

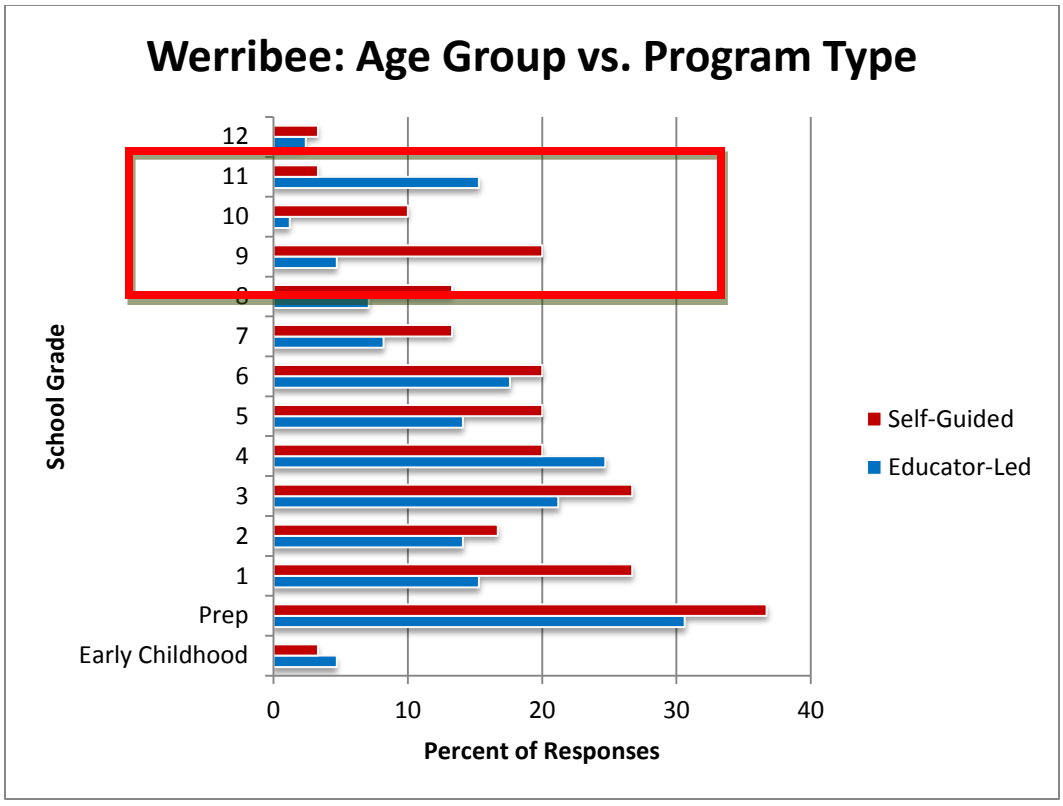
Appendix H: Learning Experience Program Pictures

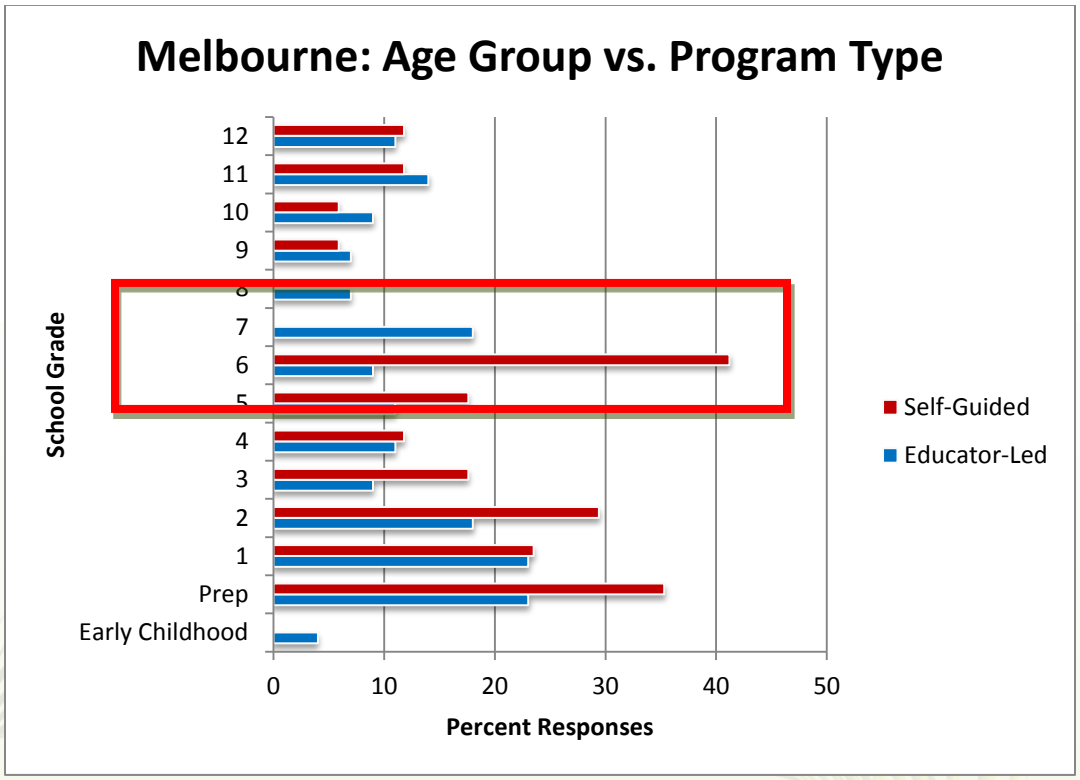
Werribee Open Range Zoo

Melbourne Zoo

Appendix I: Zoo Site Analysis of Age Group and Program Type




Werribee: Age Group vs. Program Type
School Grade
12
11
10
9
8
7
6
5
4
3
2
1
Prep
Early Childhood
0
10
20
30
40
Percent of Responses
Self-Guided
Educator-Led


Melbourne: Age Group vs. Program Type
School Grade
12
11
10
9
8
7
6
5
4
3
2
1
Prep
Early Childhood
0
10
20
30
40
50
Percent Responses
Self-Guided
Educator-Led

Appendix J: Teacher PD Category Descriptions

The following table shows the description of the Teacher Professional Development categories as represented in the word clouds.

Category	Description
Act-wild	Interest in how to use this new feature and application as well as its integration to the school visits and student programs.
Animal-care	How to take care of animals at their own schools or communities. How to create animal enclosures for their classrooms and integrate it to their teaching.
Animal-programs	Interested in how Zoos Victoria has developed its animal programs, what the strategy are used to take care of them at the Zoo.
AUSCurriculum	How the Learning Experiences Programs are aligning with the forthcoming National Curriculum.
Careers	How students and teachers can learn more about careers within the conservation field.
Conservation-initiatives	Want to learn about the threatened species breeding and releasing programs. Also showed interest in the conservation campaigns Zoos Victoria participates in.
Creative-teaching	Give teachers ideas on how to run their own conservation and animal programs and how to get the message across to students in a more effective manner.
Curriculum	Teachers want to understand how the current VELS curriculum is being met by the Learning Experiences Programs.
Financial	Better explanation of how the Zoos work as a foundation and on the financial aspect.
Follow-through	Use of the pre-visit and post-visit materials. How to follow-up with the Zoo and integrate the visit more to their current teaching topics.
Frequency	Teachers expressed the desire of PDs being offered on a regular basis.
Language	Information on how to use the resources and integrate students from different native languages to the zoo experience.
Reproduction	Learn about the animal reproductive techniques and breeding strategies with captive populations.

Resources	How to use the available resources provided by the Zoo. When and where are they appropriate to use and how they could optimize the time they spend at the Zoo.
Self-guided-info	Provide more information on how to lead a self-guided visit, facts and interesting places to visit while at the Zoo.
Webinar	Teachers that would like to see some or all of the PDs offered on the web or downloadable versions to be available.