

Delivering Conservation Education in a Zoo Based Conservation Organisation

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At Zoos Victoria in Australia we are clear that we exist to fight extinction, “to galvanise communities to commit to the conservation of wildlife and wild places by connecting people and wildlife”. We aim to achieve this in two ways: by increasing the population size of endangered animals through breeding and research; and decreasing human threats by influencing visitors, including students to take up sustainable behaviours to help wildlife.

Students are a key audience at Zoos Victoria. Across our three properties in Victoria: Melbourne Zoo, Healesville Sanctuary and Werribee Open Range Zoo, 150,000 students per year visit us onsite. Many more access our websites. Together with our overarching aim to influence behaviour change, the Zoos Victoria’s schools education department is also striving to help students develop the skills, knowledge and attitudes to operate effectively and thrive as citizens of the 21st century. We also aim to develop, nurture and mentor young conservation leaders and lead change in teaching and learning practice and sustainability in schools.

It has become clear that we require a paradigm shift in education delivery that requires a multi-faceted approach and a change in pedagogy.

The focus of this paper is to examine how we currently deliver school education, why there is a need to change and to discuss the results of initial research performed by tertiary students from the Worcester Polytechnic Institute, USA, and focuses on students aged 10 to 14 years old (middle years of schooling).

Current Delivery Models for Learning

There are two main delivery models at Melbourne Zoo: educator led sessions (generally 45 mins) or self-guided sessions. The session usually takes place in a ‘classroom’ like setting with the rest of the visit to the zoo being self-guided. The other option is a completely self-guided experience without any formal interaction with a zoo educator or other staff member.

Changing Delivery Models for the Middle Years of Schooling

The delivery of education, particularly at Melbourne Zoo, has been much the same since its inception over 40 years ago. While visiting teachers are generally very satisfied with their zoo visit we can identify many gaps and challenges with the current delivery models. One of the missed opportunities is the approximately 50,000 students that visit the Zoo on self-guided excursions do not formally interact with zoo staff. What are they learning? Do they leave the zoo aware of conservation

messages and do they make behavior changes to help save wildlife following their visit? One of the main aims of the new delivery model is to ensure that all visiting students and teachers learn about our conservation efforts and the ways they can take action to help save wildlife.

The new model also aims to deliver:

Learning outcomes across the curriculum

Rich learning at a deep level

Activities that encourage the development and practice of 21st Century skills such as problem-solving, critical thinking and collaboration

An approach that utilises the latest thinking in teaching and learning

The flexibility to accommodate different learning focuses depending on teacher, student and curriculum needs.

The new model will focus on the whole day experience and utilise the entire zoo as a learning space rather than restricting learning to a 45 minute classroom experience. This change in delivery should ensure that

learning at the zoo feels less ‘school like’ and very different to what students expect learning to be. Students will be given more choice in their learning as they will be aware of the outcomes required but have ownership over the pathway they take to achieve those outcomes, allowing and encouraging self-directed exploration.

The new model for education delivery was recently trialled at Melbourne Zoo and research conducted allowed us to compare the outcomes to the two existing delivery models.

The new delivery model trialled included:

Meet and greet all students as they enter the zoo. (15 minutes). 1. Set the scene to visit key ambassador species for conservation action; 2. Outline structure of the day including where to meet for the workshop; 3. Outline outcomes and how to demonstrate that they have been



achieved; 4. Distribute the map with key species to visit highlighted, with a focus / challenge question for the day and other learning resources; 5. Ability to meet with over 100 students at a time

Students Workshop (20 minutes) 1. Students can ask questions and clarify knowledge; 2. Educator can challenge students to explore a topic more deeply and at their level; 3. Creates a connection to educator.

Teacher Workshop (20 minutes) 1. Teachers can ask questions and clarify knowledge in small groups; 2. Discussion about how to use the zoo services to extend the learning at school; 3. Short professional development session to address the skills, knowledge and attitudes of teachers

Recap of the day, pledge to take action and farewell (15 minutes) 1. Educator can get feedback from students (summative assessment); 2. Get students to upload a photo / question / comment to Act Wild (embedded evaluation); 3. Ask students to pledge to take action for one of our ambassador species; 4. Set the next challenge to complete at school

The Research Goals

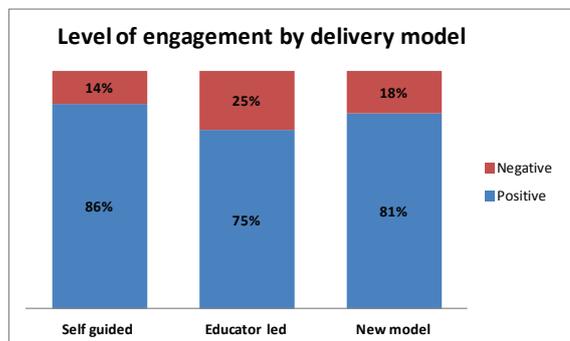
It must be strongly emphasized that the results of this research will be used as a guide to help inform the next steps in the process of redevelopment.

The Research Methodology

Data for this study was collected through direct observations, student surveys, and teacher interviews. Observations of students were used to obtain an understanding of student engagement and self-directed behaviour throughout the day. We noted if they attended face to face sessions or shows and how they explored the exhibits, particularly the five exhibits that are the focus of conservation campaigns. Surveys were administered to each class before they left the zoo to test their understanding of basic conservation concepts and conservation campaign knowledge. Three weeks following their visit the students were again surveyed and asked about actions they had taken to help save wildlife since their visit to the zoo. This was important in understanding the level of behaviour change made by the students and identifying if there is any difference between the models in delivering conservation outcomes. Lastly, teacher interviews were used as a way to understand the trends and outside factors that were unique to each school's visit such as what the students were studying at school, whether they were at the start, middle or end of their unit of work and students' prior learning.

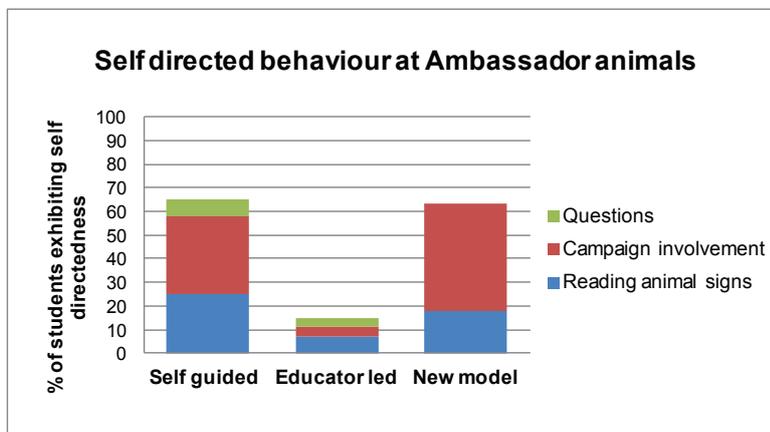
Results of the Research

Researchers found that students had a high level of engagement throughout the day independent of the model they participated in (below). This was very encouraging and specifically showed at animal exhibits, with students being positively engaged 81% of the time in the new model.



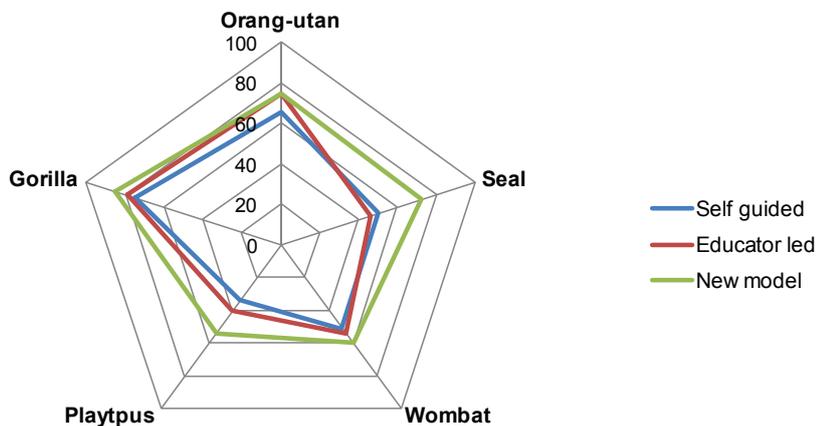
The level of self-directed learning was measured in each of the three delivery models. Students were deemed to be self-directed in their learning if they went out of their way to read animal signs, ask questions of zoo staff or were actively involved at the five ambassador animal exhibits (see below).

The graph below shows that the level of self-directed behaviour displayed by students was significantly higher in both the new and self-guided delivery models.



				
				
Gorilla Recycle old mobile phones	Platypus Switch to phosphate free cleaning products	Orang-utan Use certified sustainable palm oil	Seal Recycle plastics	Wombat Switch to 100% recycled toilet paper

Comparison of delivery model by animal question



animals were better understood than others. Several factors have been identified as possible contributors to the differences. The research indicates that when students are able to attend a keeper talk the learning and conservation outcomes are significantly higher than for those students who did not attend. The interpretive media (signage, visual and interactive displays) at animal exhibits are also important for student understanding. The signage at the gorilla exhibit is very large, noticeable and easy to connect with, and students from all models scored highest on the

The educator-led model shows that approximately 15% of students observed were self-directed toward their learning, compared to both the new model and the self-guided, which showed 65% of the students self-directed.

Knowledge Acquisition

The diagram above shows that students exposed to the new model, on average, scored higher on knowledge questions about the ambassador animals and their conservation campaign than the students participating in the self-guided and educator led models. The data indicates that there is greater knowledge acquisition when students have heard about an ambassador species from a staff member either from an educator or through a keeper talk or show. For example, students involved in the new model were able to experience the seal show, and as a result they scored very highly on the seal question.

Taking Conservation Action

A follow-up survey completed by the students up to three weeks following their visit tested level of conservation-based behavioural changes and knowledge retention. Schools exposed to the new model and those with a specific education focus to their visit were more likely to participate in the campaign actions following their visit. Due to the short time frame of the follow-up survey it is too early to determine conclusions about the new model and its ability to deliver a greater proportion of behaviour change outcomes, however the results look very positive.

Other Outcomes

For self-guided classes, the richness of the experience depends on their class teacher and the outcomes they desire. Some teachers are highly motivated and knowledgeable. One of the self-guided classes observed was studying Indonesian at their school and their teacher spent 20 minutes with them at the orang-utan exhibit discussing the palm oil issue. These students were highly engaged for their entire zoo visit and as a result scored very well in the knowledge and taking action questions. The outcomes for this class contrasted with other self-guided groups observed.

Through observations of students and survey results it was noted that particular campaigns and ambassador

gorilla conservation question.

An unexpected outcome came from a group of 14 year old students who were considered badly behaved and 'not getting anything' from their educator led experience at the zoo. When the researchers compared learning outcomes of this group with that of a 'well-behaved' group of 13 year old students, there was no difference. This result alone will cause us to rethink what we 'expect' learning to look like in a zoo environment.

The zoo educator delivering the new model noted that the experience was richer for him as he got to check in with the students several times throughout the day and developed a rapport with them that was not usually achieved in a 45 minute educator led model of delivery.

Conclusion and Next Steps

Much of what is learned and taken from a zoo experience seems to come down to expectations: teacher expectations, zoo educator expectations and student expectations. Setting the students up as soon as they arrive at the zoo and meeting them again during the day sets the expectation that the zoo experience is the whole day and that learning occurs throughout the day, not just in a defined block of time.

This research has delivered some encouraging results validating the direction we are moving with the development of a new delivery model for teaching and learning. The new model was found to be engaging, encouraged self-directed learning, delivered both learning and conservation outcomes and can be delivered to a large number of students.

This research shows that being brave and trying a new approach in delivering conservation education in a zoo based conservation organisation can achieve better learning and conservation outcomes than the traditional model and better reflects the changing needs of our students in the 21st century.

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