JZAR JOURNAL OF ZOO AND AQUARIUM RESEARCH
www.jzar.org

Research article

Zoos as a context for reinforcing environmentally responsible behaviour: the dual challenges that zoo educators have set themselves

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Keywords:
environment, education, sustainable behaviour

Article history:
Received: 1 October 2013
Accepted: 19 January 2014
Published online: 31 January 2014

Abstract

A strong focus for zoo education is inspiring visitors to care for the environment and this inevitably means reinforcing messages that relate to the adoption of sustainable lifestyles. Since lifestyle changes are likely to involve some level of personal cost or sacrifice, zoo educators are faced with the challenge of aligning this objective with the visitor expectation of a recreational day out to see the animals with the family. In order to evidence their effectiveness as education providers, zoos must also evaluate their educational activities and this represents a second challenge. The Learning Together intervention was devised specifically to address these two challenges as single parent families participated in zoo-based workshops with themes that related to environmentally responsible lifestyles. Results from focus groups in the zoo and semi-structured interviews in the community several weeks later showed that parents had gained a new understanding of the role of zoos and were motivated to make lifestyle changes that persisted over the lifetime of the project.

Introduction

The contextual framework that guides the direction of zoo education is based on the premise that modern zoos should inspire their visitors to care about the environment and instil a sense of personal responsibility for making behaviour changes that support sustainable lifestyles (WAZA 2005). A significant signpost for zoo education came from the Earth Summit in Rio in 1992, where zoos were identified as education providers for "Think Global, Act Local" – the framework that urged every citizen to take responsibility for making lifestyle changes to conserve the environment. More recently the World Association of Zoos and Aquariums pledged, on behalf of its membership, to support the Aichi Biodiversity Target 1 of the UN Decade on Biodiversity and commit to raising awareness of global issues and encourage zoo visitors to live sustainably (WAZA 2011).

In embracing this education role as a catalyst for change (Cachelin et al. 2009; Rabb and Saunders 2005; Hutchins and Smith 2003; Smith 1989), zoos have set themselves a challenge; in fact, two challenges. The first relates to how zoos attract their visitors and the effect this may have on visitors' mind-sets. The second relates to zoos providing evidence that they do indeed impact on their visitors in the way they purport to do.

To gain perspective on this first challenge, we must take into account, that unlike many museums and galleries that are publicly funded and offer free entry, zoos rely heavily on gate income to cover running costs and to fund their conservation activities. Attracting visitors in the competitive, leisure attractions' market is of prime importance. Public perception of zoos may be formed through pre-visit exposure to advertising (Falk, Moussouri and Coulson 1998; Moussouri 1997) that promotes fun, recreation and seeing the cute animals (typically mammals) that the media promote and the public find appealing (Moss and Esson 2010; Myers et al. 2003; Durham 1982; Resenbrink 1981; Bostock 1981). For many visitors the motivation to visit a zoo is not principally associated with education but recreation, particularly as a shared family experience (Hyson 2004; Pekarik 2004; Dierking et al. 2002; Turley 2001; Kellert and Dunlap 1989; Resenbrink 1981). Potentially worrying news about human impact on the environment may be in stark contrast to the family motivation for a recreational day out to see the animals (Esson and Moss 2013). Once in the zoo, visitors may not respond positively to having the agenda for their outing unsettled by challenges to their lifestyles. Contrary to facilitating a relaxing day out, raising awareness of pertinent environmental issues risks leaving visitors "in a state of anxiety about the problem and helplessness about the solution" (Sterling et al. 2007, p.44).

A number of studies in zoos, science centres, aquariums and museums have sought to shed light on the relationship between visitor self-identity and motivation to visit, compared with the impact this has on the enactment and outcome of the visit (Moussouri 1997; Packer 2006; Packer and Ballantyne 2005; Packer 2004; Packer and Ballantyne 2002; Briseño-Garzón et al. 2007; Falk et al. 2008). Broadly speaking these studies found a correlation between entry identity and motivation

to visit, and how the visit was enacted and later interpreted, including what was learned. As such, any disconnect between the anticipation of what the zoo visit promises and the reality of the educational experience once in the zoo, presents a real challenge to zoo educators who may be faced with reluctant learners and visitors who are not primed for learning. Encouragingly however, a small number of studies have demonstrated that motivation to visit zoos can include an educational focus. But is this just about the animals or is it about environmental behaviour change? For example, Morgan and Hodgkinson (1999) employed a quantitative approach and found that while recreation was the strongest motivation for a zoo visit, education was also seen as important, particularly for others in their group (namely children). Fraser (2009) describes an exploratory, qualitative study with families from a low-income background, reporting that parents saw the zoo as a valuable tool in promoting social relationships within the family and in encouraging moral development in their children, particularly related to altruism.

The second challenge for zoos is concerned with how to credibly measure impact. Zoos are asked to evidence that education that leads to behaviour change has taken place as a result of a zoo visit (Marino et al. 2010; Born Free Foundation 2011; Balmford et al. 2007; RSPCA 2006). There are inherent flaws associated with conducting research that seeks to evidence behaviour change since the research model usually relies on pledges made by the participants and not direct observations. Self-reports may be unreliable (Dierking et al. 2004) and even when it is possible to conduct a longitudinal study to witness behaviour change, the premise that the zoo could show causality for instigating that change is still fragile. Furthermore, knowledge gained as part of an educational intervention has often been conflated with corresponding changes in attitude and/or behaviour and behaviour –change researchers generally observe only limited correlations between knowledge and attitudes and behaviour (Heberlein 2012). The complexity of understanding behaviour change means that other factors can be influential. These include habit (behaviours that have become automatic), emotion (how someone might feel if they succeed or fail in performing a behaviour) and contextual factors (factors outside the control of the individual in question, such as access to information or financial restraints) (cf. Darnton 2008).

This paper describes the "Learning Together" project, a community and zoo-based educational intervention, for single parent families. A strong feature of the didactic teaching elements of the project was the delivery of specific action agendas – suggestions of how parents could alter their lifestyles to live more sustainably. The themes of the project workshops were closely aligned to Agenda 21 and Aichi Targets and were, to some extent, the generic environmental messages regularly disseminated by the broadcast media and government. Our aim was to provide a range of explicit prompts to encourage repetitive behaviours (McKenzie-Mohr 2012). Examples of themes are the effects of water pollution on wildlife and how to reduce this by choosing environmentally-friendly cleaning products, and the link between orang-utan survival, deforestation, our consumption of palm oil and value of checking food labelling before purchasing. We recognised that, for most people, infrequent zoo visits are unlikely to be life-changing events (Falk and Dierking 2000; Piper 1992) and we took the decision to contextualise the learning agenda to resonate with behaviours already promoted in the community (Adelman et al. 2000; Smith et al. 2008) in order to increase the likelihood of positively benefiting the environment. In positioning our learning agenda as a reinforcing agent, we borrowed from Prochaska and DiClemente (1986) whose model of behaviour change recognises that adhering to new behaviours over time requires maintenance in the form of positive reinforcement. This would suggest that the best opportunity zoos have to be successful in affecting behaviour change is to target their learning to resonate with behaviours already promoted in the community. Consequently our aims were to deliver a learning agenda that would reinforce positive environmental behaviours and to investigate if participants were tolerant of this context as part of a family zoo visit.

Materials and Methods

The Project

"Learning Together" was funded by the Big Lottery Family Learning programme and brought 263 single parents with 460 children into Chester Zoo. The project ran over two years and parents or guardians were recruited through a leading UK charity for single parents. The sampling criteria were single parent families with children over five years of age, living in areas of social and economic deprivation and attending Community or Children's Centres within the catchments of Chester Zoo. The data held by the charity were confidential and no record was kept of parent profiles or how many were approached or declined so it can be said that participants were self-selecting from within this demographic.

At the recruitment stage in the community centres, it was explained that parents and children would have planned educational activities and guided tours of the zoo. Participation in the project was free and an eight or nine week project cycle was devised to include a series of three, one-day visits to the zoo where we focused on flagship species to capture attention and introduce lifestyle and behaviour changes that would be considered convenient to adopt (McKenzie-Mohr 2012). Each visit had a specific theme. Visit one was called "Dangerous Beauty" and discussed how endangered animals are exploited for the illegal wildlife trade and how to avoid supporting this trade. Visit two, "Rainforests and us", focused on how we rely on rainforest products in our everyday lives and the ethical purchasing choices we can all make. Visit three, "Water and life", highlighted the precious nature of water as a resource for us all, and how we can conserve it.

Procedure

Focus groups were convened in the zoo, immediately post-experience, and semi-structured interviews were held in the community approximately six weeks later. By extending this time line we hoped that this afforded parents the opportunity to adopt rather than pledge lifestyle changes and that these would be affirmed at interview (Rennie and Johnston 2007). Some parents were lacking in confidence and exhibited low self-esteem, and some had not fully completed their formal education. We explained that participation in the study was not a prerequisite of joining "Learning Together" and informed consent was sought as part of an ethics protocol. All parents recruited to the project agreed to participate in the study. With parents who may have been lacking in confidence it was believed that the supportive setting of focus groups would encourage confidence and promote participation. A data collection approach that avoided the need for reading or providing written responses was thought to be less inhibiting for those parents who may have low levels of literacy and have had negative experiences of formal education. The additional advantage of using focus groups was that little effort was required of parents in terms of time and commitment.

A discussion framework for the focus groups was drawn up and this broadly reflected the aims of the intervention. Discussion typically commenced with opinions of zoos past and present and moved on to more specific impressions gained from "Learning Together". The framework was sufficiently loose to allow for the unexpected to emerge and the role of the focus group facilitator provided a light touch in order to keep the conversations broadly

on track, and for every voice to be heard. Since parents were from similar backgrounds, this created a powerful socialising agent which was helpful in accelerating discussion. The potential of context to bias data collection is acknowledged (Silverman, 2005), as is the possibility of willingness to please (Creswell 2003; Bryman 2001; Cohen and Manion 2007; Wragg 1984), though the alacrity with which unsolicited concerns relating to animal welfare in zoos were expressed would suggest parents felt sufficiently confident to openly express their opinions. The topic of animal welfare was an example of an unexpected topic emerging from lively focus group discussion. Focus groups were convened at the end of the third visit to the zoo and 100 parents participated in 18 focus groups. This sample represented 38% of the parents who initially agreed to participate in the project and 47% of those who attended all three zoo-based project days. There was a parent drop-out rate of 18% across the life of the project.

Discussion was recorded digitally and then transcribed. The process of coding the narrative from the transcriptions commenced as the focus groups convened in order to consider data analysis and to implement an iterative approach to data collection (Bryman 2004; Krueger and Casey 2000). As themes in the discussions began to emerge provisional descriptors for the codes were developed (Drever 2003). As transcripts were sequentially coded it became apparent over time that no new themes were emerging at which point no further focus groups were convened (Bryman, 2001). To evidence reliability, we adopted an inter-rated scoring approach to coding the transcripts; namely, the percentage agreement between two researchers scoring in isolation of one another. For this investigation, an inter-rater agreement of 91% was achieved and considered robust (Miles and Huberman 1994; Adelman et al. 2000).

As a delayed post-test component of the study, semi-structured interviews were conducted with individual parents in community centres, during their final group meetings. This allowed parents time to reflect on the zoo experience at the end point of the project (Bryman 2004). 40 parents who had previously participated in the focus groups volunteered to be interviewed. An interview framework was drawn up and interviews typically began with what parents had told family and friends about "Learning Together". We considered this relevant as participants in zoo education initiatives acting as message multipliers in the community is of benefit in reaching wider audiences (Domroese and Sterling 1999). Discussion then moved on to what parents had learned and acted upon as a result of the zoo visits. A relaxed style was adopted for interviews to encourage parents to respond in their own words (Drever 2003). The interview framework was not always followed in the same order and open-ended prompts were used to encourage expansion of answers. Conducting the interviews in community centres was viewed as a counter-balance of context to focus groups being held at the zoo.

Results

Focus groups

With the purpose of addressing the aims of the project we sought, as a priority, to capture those common conversational themes that dominated parent discussion. Four strong themes that spoke to the research questions emerged from the coding of the focus group data. These were: memories of past visits to zoos, present opinions of zoos, impressions formed from the three project days spent in the zoo and how behaviour changes can help conserve the environment. Parents were not directly asked about planned changes in behaviour. We found that in 16 of the 18 focus groups discussion moved to what parents had learned about human impact on the environment and how they could act to alleviate this.

Theme 1: Memories

The focus group discussion typically began with reminiscences of any previous zoo visits and what parents could recall. Family memories tended to be nostalgic in character as these recollections were childhood memories of spending time with their parents when they were children themselves.

> "Whenever I come back to the zoo I'm reliving my childhood. So it's all them memories of being a kid."

Parents seemed to place value on these zoo visits in terms of recollections of happy family life, broadly in line with the findings of Packer and Ballantyne (2005). In contrast, however, these happy memories were tinged with some concern and an historical association between zoos and issues of animal welfare was evidenced in the descriptive language of 11 of the 18 groups; for example, "*pens*", "*bars*", "*small and tiny cages*", "*cruel*" and "*bare concrete*".

Happy memories were associated with re-visiting zoos with their own children. This is consistent with the findings of Moussouri (1997), Packer and Ballantyne (2002) and Briseño-Garzón et al. (2007) who identified re-living past experiences as a motivation for making a visit. However, groups tended to discuss zoo visits with their own children in terms of a rather shallow, ill-planned experience, frequently using the word "just":

> "It was just a day out really, with the kids," and "It was a day out, full stop."

Parents associated the visit with seeing the animals, fun for the children and moving quickly from one exhibit to another without paying much attention. When probed about which animals they wanted to see responses typically centred around large mammals, for example: elephants, lions and tigers. Parents appeared to have had low expectations of the educational value of a zoo visit and consequently to have taken little in the way of learning from these visits in the past.

> [I saw the zoo] …"not as educational. I think we thought it was nice for the kids to see the animals."

Theme 2: Present opinions of zoos

Discussion flowed on to present opinion of zoos based on their "Learning Together" experiences and parents expressed a change of opinion when compared to past perceptions of zoos as attractions that "just" exhibited animals. They discussed the need for high standards of animal welfare, how they associated zoos with preserving endangered species and having a wider conservation role.

> "Now I'd say not only do you learn about those animals in the wild but you also learn about habitats and what can damage the environment."

There was a notable fluency in the discourse as groups demonstrated they had acquired the language of conservation; for example, "*endangered species*", "*extinction*" and "*habitat*". This provided some insight into the power of zoos to change opinion and suggested that "Learning Together" had been successful in broadening an understanding of the role of the modern zoo.

Theme 3: Impressions

Parents had a lot to say about their impressions of the "Learning Together" workshops. The understanding evidenced by the parents related to the content of all three workshops and not only from the same day that the focus groups were convened which

was encouraging, since it could be up to four weeks between their first and last zoo visit. The emotional appeal of the animals, especially the large mammals was evident.

> "Yes then we went to see the elephants, the oldest one in the zoo is 53. Then she [the educator] was saying something about its teeth. She'll have to have dentures! [Laughter] She said they can't live without their teeth."

> "She said, all the females in the herd whenever they have babies, she goes and looks after them. That made me cry."

> "That's a kind of relationship like we have isn't it?"

The discussion around time budgets and animal enrichment is an example of what appears to be depth of understanding of a zoo practice:

> "The animals have to search for their food. They're kept busy aren't they?"

Animal enrichment was a feature of one of the early zoo workshops. The degree of accuracy of what the parents discussed was impressive. There were very few instances where what was said was technically incorrect and occasionally where parents were unsure others in the group were quick to respond.

> [We learned] "where the animals come from and why they are that colour."

> "Especially the frogs - the poisonous ones and the copy-cat one."

> "And the apes put their tongue out to taste the wee to find out if the monkey's pregnant."

> "And the chimps we saw with the bums - the way the females get bigger because the male likes it like that." [Loud laughter]

Theme 4: Environmental

The mood of the focus groups often became rather collaborative when parents discussed the state of the environment and what they could do to help, often making verbal commitments as a group. Borrowing from Knapp (2000), a modified approach to transcript coding was adopted. Knapp distinguishes between three components of citizen development: gaining understanding, the ability to apply that understanding to different situations and learning to make lifestyle changes. The discussion that was first coded "Environmental" was scanned for the active verbs parents used to describe their levels of engagement and three groups of verbs emerged. These reflected degrees of action or intent:

"*Internaliser*": verbs that related to an inner understanding; for example: "realising", "taking in" and "wishing".

> "I'm starting to care more about the rainforest now because I don't want to see it getting destroyed."

"*Message Multiplier*": verbs that suggested parents felt sufficiently confident to communicate their understanding to others in different situations, for example: "passing on", "talking about" and "describing".

> "My brother - when we said you've gotta recycle. He said "why have we gotta do that?" With being here now you can see why you've gotta do it and its essential to do."

"*Eco Warrior*": verbs that represented a level of engagement where parents said they had made lifestyle changes, for example; "changing", "cutting down" and "refusing".

> "I'm not gonna buy bleach now when I go home. I'm forever doing that, just straight down the sink, clean the sink out. But now I think of the poor little frog now."

> "I've skinned about ten frogs in my life. The eco-friendly stuff, I didn't realise it smelled so nice, before when she [the zoo educator]passed them round; I thought well I'll get that then. Cos bleach reeks doesn't it."

> **"**I won't be using none of that no more"

> "I've done that [saved water] and I'm gonna get 'ECOVER' stuff 'cos it's the same price as the other stuff anyway."

The discussion above relates to the "Water and Us" workshop where the effects of damaging cleaning agents on amphibians were discussed. The discussion below was part of the topic about recycling and how wildlife can be injured by items like fishing line and plastic bags.

> "Before [the zoo workshops] you would think just stick it in the normal bin, throw it over the fence or whatever."

> "I'm recycling 'cos when I seen them pictures [turtle suffocated by plastic bag]. It's awful."

> "Yes definitely."

It may be naïve to expect parents to challenge one another's views on the need to protect the environment, so caution must be applied here in being overzealous in the desire to seek out positive opinions that evidenced the success of the project. What can be said to have been objectively witnessed was the degree to which parents adopted the Internaliser persona and appeared to be processing the information and giving the subject consideration by:

> "…becoming more [aware]…of when you're buying things", and "…thinking about… the consequences."

Thinking about the environment may have been the easiest option since this required no action and we may have predicted that passive engagement would be most frequently referred to in discussions. Encouragingly, it seems that parents felt empowered to act as Message Multipliers and to advise others how to act. This show of confidence is a particularly rewarding finding from parents considered to be lacking in confidence at the start of the project.

> "Yes. If you see someone doing something you're gonna say "hey don't be doing that"

> **"**What you do affects other parts of the planet. You can educate other people about it."

> **"**The next time someone throws away you can tell them to recycle....."

In terms of taking action themselves, parents appeared to be equally committed, discussing recycling, litter and purchasing decisions: *"There's a lot of stuff we could do without."* These were also strong themes in the workshops and, parents were often taken aback with how long it takes for some materials to degrade; that disposable nappies are not disposable and how indestructible cigarette filters and chewing gum are.

> "You don't think a cigarette and all that would take that long [to degrade]".

Interviews

Those parents who agreed to be interviewed appeared confident in expressing their opinions and this is to be expected as they were a self-selecting group. When they were asked if they had passed on any information to friends or family, ten of the 40 interviewed could recall specific instances where they had done so, including offering advice.

> "I've spoken about what we learned – cleaning products, bleach and things and what they do to the skin of a frog. I've been telling people about the plastic rings and animals getting stuck in them."

Parents talked confidently about what they had learned themselves. Our reliance on rainforest products, the need to recycle, to avoid dropping litter and polluting water, were the most widely discussed topics.

> "It's so easy to buy and so hard to get rid of. I thought everything was disposable but it stays around. Rubbish doesn't go anywhere. You don't think about it when you go shopping."

It was encouraging that 37 of the 40 parents interviewed were able to explain, often in some detail, lifestyle changes they had made that they attributed to what they had learned from their zoo visits and actions were often linked to conserving wildlife.

> "In shops I'm reluctant to accept carrier bags. I've bought several eco bags to use instead. I've changed to eco-friendly bleach and how it can cause harm to the environment and I've told other people about that. I say 'You've probably killed about 20 frogs using that stuff'."

> "I never knew about water pollution and frogs or about nappies and how much water it takes to flush a toilet. Now we never leave the tap running. We turn it off."

Discussion

The findings from this research combine to reveal a complex and challenging landscape for modern zoos. "Learning Together" provided a lens through which parents could contrast their impressions of zoos from previous visits with that formed as a result of joining "Learning Together". We evidenced some success as far as it was possible to ascertain in the time frame of the project. Parents who previously viewed zoos as "just" popular places for family outings now recognised the role of zoos for education and in conserving endangered species. It is worth reflecting, however, on the point, that it was only after intense management of the zoo experience that the educational potential of zoos appeared to be realised.

The role of the zoo as a catalyst for behaviour change also met with some success, as parents affirmed their commitment to a range of environmental actions. We recognise that there are challenges associated with conducting research that seeks to evidence behaviour change and, even with the quasi-ethnographic and longitudinal research model that was applied in this study, the measurement of behaviour change relied on self-reports. Follow up interviews several weeks after the focus group discussions did indicate further commitment to lifestyle changes. The limitation of these findings is that behaviour change was affirmed by the participants and not directly observed. The literature is quite well-populated with zoo-based studies that deal with changes in visitor knowledge and/or attitudes (for example: Marseille et al. 2012; Randler et al. 2007; Lindemann-Matthies and Kamer 2006; Spotte and Clark 2004) but much less so with studies that have directly measured behaviour; in fact, we can locate only one zoo study (Swanagan 2000). This disparity would seem to reinforce the notion of behaviour change being an elusive variable to measure.

The strongly qualitative nature of this study granted us the opportunity to gain a rich understanding of the opinions and intentions of the parents, and we recognise that these qualitative data, along with the convenience sampling utilised, somewhat limits the generalizability of the findings too much beyond the study sample.

Future research might seek to pursue a quantitative approach based on the findings generated in this, more inductive study. It is also acknowledged that pre- and post-test focus groups may have yielded more robust data in relation to shifting opinions of the role of zoos, but this proved logistically impossible with this demographic. However, we are confident that within this, normally atypical, zoo visitor demographic, we have demonstrated that zoos and zoo education can achieve outcomes that are both beneficial to the environment and to wildlife conservation. Numbers directly participating in "Learning Together" may have been small, but we should consider the message multiplier effect (Domroese and Sterling 1999).

The focus on environmental action and empowering zoo visitors to engage in sustainable lifestyle behaviours emerges as a strong role for modern zoos. Zoos would appear to be in a good position to forge connections between local action and global environmental awareness, using the appeal of the live animal, particularly large-bodied mammal species, as a conduit (cf. Moss and Esson 2010). Zoos worldwide attract hundreds of millions of visitors and claim to have huge potential to educate such large audiences (Gusset and Dick 2011). Unlike many school visits, the majority of zoo visitors are free to interpret the zoo in their own way and the premise of allowing free choice zoo visitors to construct their own meaning from the visit (Falk and Dierking 2000) appears a rather precarious position for zoos to take in terms of meeting the challenges they have set themselves. The dilemma for zoo educators is to match message and delivery to the wider visitor audience and "Learning Together" provides some direction for content. The workshops deliberately focussed on some of the most popular species in the zoo, to build empathy and create an entry point for engagement. It is that same appeal that is most frequently used in zoo promotional materials to stimulate business so, to some extent, matching the expectation of the visit to the experience. The ability of parents to commit to behaviour changes may, in part, have been due to familiarity with the workshop themes. These reinforcing messages were selected to ensure we planned for success and they offered participants achievable goals and a choice of opportunities to act. If zoo education content can be thought of as reinforcement and linked to the plight of the most popular species in the zoo, then this is a direction that all zoo educators should consider worthwhile.

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