

Live Animal Lectures Less Successful for Boys

Age, difficulty of material determines appropriateness of a program animal.
Constance Woodman, Western Washington University

Abstract

A study of 190 Boy Scouts ages 11 to 17. Examines lectures during relevant merit badge programs. Learning aids were either a live animal, a poster, or animal skins. Material was broken into major categories, easy (mammals) and difficult (birds). Boys' age, performance on a 15 question quiz immediately after the lecture, and performance on the same quiz 24 hours after were measured.

For all treatment groups, posters resulted in higher quiz scores than live animal lectures. When lectured on difficult material boys' 24 hour retention scores were significantly better ($p=0.045$) with a poster lecture than with a live animal.

In all treatments greater age correlated with greater scores. However, when a live animal is presented, the trend is that teenagers do better than younger boys when compared to poster lectures. This leads the author to believe maturity is a factor for cognitive gains: Young boys cannot ignore an animal, while teenagers know when to pay attention.

Methods

During two months 14 merit badge classes at a Boy Scouts of America Camp in Washington State were given 8 minute lectures as part of their merit badge programs. Topics were mammals (easy material), or birds (difficult material.) Quizzes followed the lecture. Lectures followed a pre-scripted outline, with minor differences to address the learning aid (live animal, skins, poster.) Quizzes were written in simple language and easy to follow. 24 hours later students were given the quiz again to test knowledge retention. All lectures were by the same instructor. Boys came from Washington, Oregon, and Alaska.

Existing Research

There is evidence that shows environmental education programs occurring in a classroom have greater influence on students' pro-environmental behavior than programs that occur outside of class (Zelezny, 1999.)

Is it known that educational programs that feature live animals strongly affect (cause emotional, or attitudinal change in) participants (Yerke, 1991; Anderson, 2003.)

Less research exists on cognitive (learning and knowledge) effects of outreach program animals. MacMillen observed significant increases in knowledge transfer when live animals were present during zoomobile classroom presentations (MacMillen, 1994.) Yerke's research showed unclear results, with scores increasing and decreasing compared to pre-program knowledge tests (Yerke, 1993.) Sherwood compared student learning between dried and live marine organisms and found that, "Results indicated that short- and long-term cognitive learning took place when students handled either live or dried animals. However, gains in short- and long-term affective learning [...] were achieved only when students handled live animals" (Sherwood, 1998.)

Citations

MacMillen, O. (1994). Zoomobile effectiveness: Sixth graders learning vertebrate classification. Annual Proceedings of the American Association of Zoological Parks and Aquariums (pp. 181-185). Bethesda, MD.
Powe, K., & Rio, J. (2005). Using interpretive animals to deliver affective messages in zoos. Proceedings of the International Association of Avian Trainers and Educators.
Sherwood Jr, K. (1989). Effects of live animals vs. preserved specimens on student learning. Zoo Biology, 8:1, 99-104.
Anderson, U.S., Kelling, A.S., et al (2003). Enhancing the zoo visitor's experience by public animal training and oral interpretation at an other exhibit. Environment and Behavior, 35, 826-841.

Yerke, R., & Burns, A. (1991). Measuring the impact of animal shows on visitor attitudes. Proceedings of the American Association of Zoological Parks and Aquariums.
Yerke, R., & Burns, A. (1993). Evaluation of the educational effectiveness of an animal show outreach program for schools. Proceedings of the American Association of Zoological Parks and Aquariums (pp. 366-368).
Zelezny, L.C. (1999). Educational interventions that improve environmental behaviors: A meta-analysis. Journal of Environmental Education, 35:1, 5-14.

Reading Statistics

N is the number of subjects.

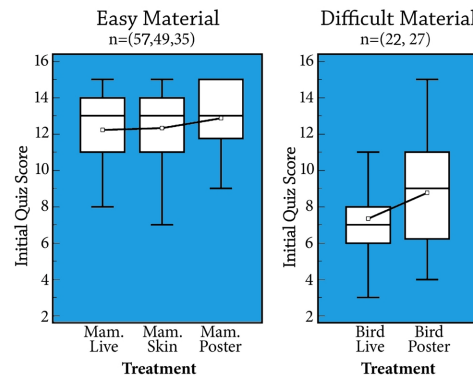
P-value is how often similar results come up if picked randomly. $P=1.0$ means always, while $P=0.05$ means 1 out of 20. If P is less than 0.05 usually it's assumed the results were not by chance. The smaller the P-value the more significant the result is.

R^2 is a measure of how strong the relationship between the data is. $R^2=1$ is very strong, $R^2=0$ is no relationship.

Slope is the steepness of the line that best represents the relationship between the data, describing what happens when the values increase.

Tables And Figures

Scores and Treatments



Data Tables

Mean Scores, Initial Quiz

Mammal Live	Mammal Skin	Mammal Poster	Bird Live	Bird Poster
12.24	12.33	13.11	7.36	8.78

Change in Score at 24 Hours

Method	Mean % Change	Number in Sample
Mammal Live	+2.75%	n=49
Mammal Skin	+2.53%	n=47
Mammal Poster	-1.44%	n=34
Bird Live	+12.64%	n=27
Bird Poster	-1.61%	n=22

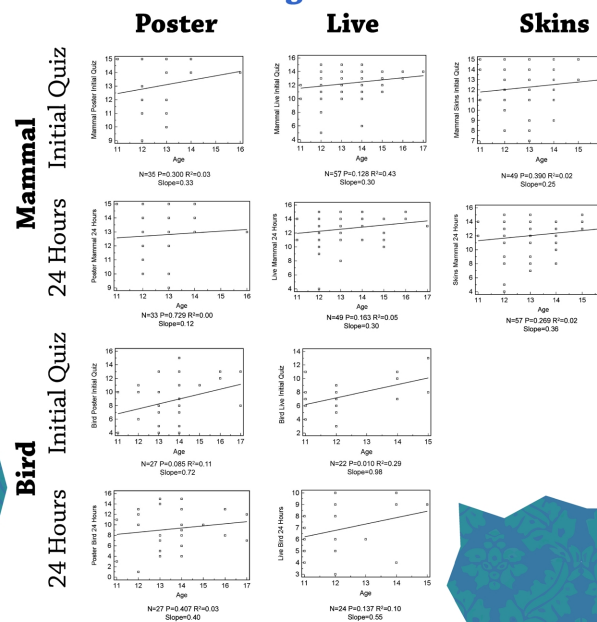
Pearson's Correlation for Age v. Score, Initial Quizzes

Mammal Live	Mammal Skin	Mammal Poster	Bird Live	Bird Poster
0.21	0.12	0.18	0.54	0.34

Mean Ages, Initial Quiz

Mammal Live	Mammal Skin	Mammal Poster	Bird Live	Bird Poster
13.16	13.1	12.97	12.2	13.64

Age vs. Score



The scouts enjoyed the live animals! A parrot flies overhead after the 24 hour quiz is finished.

Conclusions

- Adding a live animal to a relevant lecture may **decrease** test scores in boys.
- When lecture material is difficult score decrease associated with a live animal gets **worse**.
- The younger the boy, potentially, the worse their score when you add a live animal.

Advertisement of Live Animal Programs

How are programs represented on the web?

Constance Woodman, Western Washington University

For 20 AZA facilities... Methodologies

Language Use

Terms Most Common Between Websites						Biological Evolution Terms		
animal	opportunity	children	meet	explore	wild	adaptation	evolve	evolution
20	17	16	16	15	15	13	0	1

Value-Based Language							
appreciate	beautiful	care	conquer	exploit	happy	love	
2	3	11	0	0	2	2	
magnificent	majestic	opportunity	protection	respect	wonderful	wonderful world	
3	3	17	6	2	5	1	

What The Experience Entails										
craft	draw	excite	experience	explore	field trip	hands on	impact	intrigue		
10	1	14	14	15	5	11	5	2		
involving	learn	meet	observe	sketch	spark	touch	taste*	tour	up close	
1	10	16	8	1	1	8	1	13	14	

*A not uncommon aquarium activity is eating seaweeds

Environmental Science Words						
cause	conservation	cycle	manage	nature	observe	prevent
1	11	1	1	8	8	1
systems	science	scientific	survive	sustain	sustainability	
8	12	3	13	1	1	

Describing Live Animal Use					
animal	animal ambassador	animal demonstration	animal encounter	animal visitor	encounter
20	3	2	1	3	12
live animal	live animal demonstration	live animal encounter	live wildlife demonstration	up close encounter	up close and personal
10	1	2	0	0	3

Biofact Synonyms		
animal artifacts	animal-related artifacts	biofacts
1	0	6

Vague Language
"Exciting" the mind or the senses is not a direct action,

Observations

Touchy Subjects

Adaptation is not a synonym for biological evolution. The AZA world abounds with properly trained biologists, so it's not an accidental misuse. Is fear of reprisal driving evolution into the realm of swear words? No one used "global warming," either...

but a goal achieved by actions. Why not list the actions of your program so well the parents and teachers can't help but visualize the goals? Specific language helps readers understand what you're offering.

Dictionary Words

When I first presented this study, an older large animal vet in my grad class raised her hand and said "What on earth is a zoo mobile?" Biofact, zoo mobile, animal ambassador, zoocorps, zoo trunk: These terms may be total gibberish to your readers! Define them, **often**, or use dictionary words!

If You Don't Mention It, They Can't Know

Docent talks, keeper talks, free roaming animals (think peafowl) and encounters with education animals on the grounds were seldom advertised but frequently encountered when I visited. Just because a docent talk is free, doesn't mean it's less of a selling point than the giraffe feeding!

Phone Tree

Some programs are advertised on a phone tree, in printed material, but not on the web. Are all the parts of your advertisement in agreement? Are you losing out on revenue because you think no one would pay what the program is worth... so you *don't* advertise on your website?

Abstract

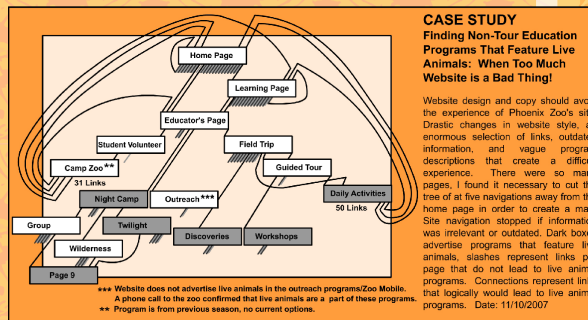
This poster is an in-depth comparison of the website available advertisement for education programs featuring live animals. Compares 20 AZA facilities that represent the best, and a few of the worst, practices. Shows how a broad range of facilities use the web to communicate about their programs to the public. Focuses on language use, topics covered, and methods of program delivery. Useful to education depts. who want to advertise and use the web more effectively. Also shows what methods facilities offer for their education programs. Compares the AZA facilities' advertisement to current trends in environmental education.

Methods

A list of 112 criteria was made based on current topics in environmental education, the web sites of 9 zoological facilities, and the author's experiences. Websites from 20 accredited facilities were then selected and thoroughly examined, their content evaluated for methodology, topics, and pop-culture references, all text related to live wildlife education programs was copied from the website and saved as a file, including content from PDF brochures and DOC files. Using Google Desktop search the files were searched for 76 terms and logical variations of those terms. For example, the words "careful" and "carefully" were queried individually but both were counted as the term "careful," while "care" and "caring" were counted as the term "care." Data was collected between November 1-25, 2007.

Topics Addressed in Programs							
biodiversity	endangered species	land use	technology	sustainable living behaviors	social issues	animal trade	
3	10	1	3	3	1	2	
the facility	deforestation	global warming	Native Americans	urban habitat	state standards	folklore	
7	1	0	1	1	9	1	
myths	pollution	sprawl	science topics	habitat loss	naturalist tradition	water	
2	1	0	7	4	0	2	

Methods Used				
on site program	outreach	classroom outreach	biofacts	exhibit encounter
18	7	6	7	5
auditorium outreach	free roaming animal	on site stage show	roaming encounter	booth
3	4	3	1	1



CASE STUDY

Finding Non-Tour Education Programs That Feature Live Animals: When Too Much Website is a Bad Thing!

Website design and copy should avoid the experience of Phoenix Zoo's site: Drastic changes in website style, an enormous selection of links, outdated information, and vague program descriptions that create a difficult experience. There were so many pages, I found it necessary to cut the line of all five navigators away from the home page in order to create a map. Site navigation stopped if information was irrelevant or outdated. Dark boxes advertise programs that feature live animals, slides represent links per page that do not lead to live animal programs. Connections represent links that logically would lead to live animal programs. Date: 11/10/2007



- Zoo Locations**
- Akron Zoo
 - Aquarium of the Pacific
 - Bronx Zoo
 - Buffalo Zoo
 - Cabrillo Marine Aquarium
 - Denver Zoo
 - Fort Worth Zoo
 - Georgia Aquarium
 - Jacksonville Zoo
 - John Ball Zoo
 - Lincoln Park Zoo
 - Montgomery Zoo
 - National Zoo
 - Phoenix Zoo
 - Point Defiance
 - San Diego WAP
 - Sedgewick County Zoo
 - Sonora Desert Museum
 - Toronto Zoo
 - Woodland Park Zoo

Text descriptions, webdesign, and word choice mean more and more as the web becomes ubiquitous.



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Education

School: Western Washington University
School: Skidmore College
Major: Enviro. Education
Major: English
Diploma: Masters in Education
Diploma: Bachelors of Arts

Relevant Employment

History

Employer: Boy Scouts of America, Mt. Vernon, WA
Job Title: Director of Conservation and Ecology **Start Date:** 6/18/07 **End Date:** 8/20/07
Duties: Management at residential camp. Manage paid and volunteer staff in area, write curricula for indoor and outdoor programs, maintain two teaching spaces, supervise 15 programs a day, build outdoor dish and relay system to bring broadband internet to remote camp location, build computer lab from donated equipment and install OS and software maintain nature lodge and animals for presentation.

Employer: Western Washington University, Bellingham, WA
Job Title: Teaching Assistant **Start Date:** 4/3/07 **End Date:** 6/15/07
Duties: Supervise one undergraduate assistant. Lecture two classes of 28 on college science topics, develop college-level materials and tests, support students through office hours, maintain lab and scientific equipment, foster an interest in the natural world, lead science experiments and other inquiry-based learning.

Employer: Hawk Creek Wildlife Center, East Aurora, NY
Job Title: Sr. Animal Handler & Educator **Start Date:** 6/11/04 **End Date:** 1/6/06
Duties: Perform live wildlife outreach programming. Recruit, train, supervise volunteers, interns, work study. Design new programs featuring live wildlife. Create ancillary material (newsletter, website, catalog,) coordinate large annual events, under license rehabilitate wildlife, raise funds (grants, adoptions, book programs, gifts, sales, pre-event ticket sales.) Licensed wildlife rehabilitation. Train animals for show behaviors and husbandry. Rotating keeper duties for 90 animal collection.

Employer: Buffalo Zoo, Buffalo, NY

Job Title: Party Host & Animal Presenter **Start Date:** 6/5/01
End Date: 9/15/01
Supervisor: Tiffany Vanderworf, Curator of Education (716) 837-3900
Duties: Provide party events for guests, present animals (birds, small mammals, herps) from education collection, Maintain event area, run children's games, lead tours, assist in shows.

Research History

Group: Western Washington University, Grad. Research, 2007.
Topic: Animal v. biofact v. poster and effects on learning and retention in 190 Boy Scouts
Group: Western Washington University, Grad. Research, 2007.
Topic: Surveyed 20 AZA facilities regarding advertisement of live wildlife programs

Group: University Of the Virgin Islands, St. Croix campus, 2007.
Topic: Short-term volunteer assistant on rain forest regeneration research using hay to prevent the regrowth of invasive around native plantings

Group: University At Buffalo, Butterfly Evolution And Behavior Lab, 2006 (now at Yale.)
Topic: Studied protective-flock behaviors in *Bicyclus anyanna* butterfly, an African nymph butterfly

Group: Skidmore College, Skidmore Psittacine Enrichment Workshop (SPEW), 2003-2005.
Topic: Ran animal behavior lab on parrot enrichment, used digital resources such as squawk activated light switches and computer interfaces to offer more control of animals over their environment.

Volunteer History

Group: Whatcom All Ages Arts and Music (WhAAM.) Bellingham, WA. 2008.
Duties: Fund raising advisor, create marketing media such as brochures, displays, videos.
Group: Americorp, Students in Service. Bellingham, WA. 2006-2007.
Duties: Students in Service Environmental Education Volunteer, 900 hours.

Group: North Cascades Institute, N. Cascades National Park, WA. 2006-2007
Duties: Six month Professional Residency on site. Led three-day overnight youth programs in wilderness, developed new program materials. (Part of graduate degree program.)

Group: Sardis Raptor Center, Ferndale, WA. Summer, 2006
Duties: Cage cleaning, wildlife rehabilitation, presenter for education programs and tours.

Group: Hawk Creek Wildlife Center, East Aurora, NY. 2004-2006
Duties: Full-time volunteer when not being paid to present programs.

Group: Tonawanda SPCA, Tonawanda, NY. 2000-2001
Duties: General volunteer. Train and supervise youth volunteers. Clean animal areas.



Poster Copy
Contact Info
Resume