The Benefits of Working with Science Fairs

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Introduction

Science Fairs are a means by which scientific ideas may be explored using scientific methods. Typically, these Science Fairs are held for junior and senior high students. Zoos are a wonderful source of information and scientific exploration. They provide exceptional educational opportunities (Davis, 2002). Zoo exhibits and resources can be used to create meaningful and pleasurable learning experiences (Davis, 2002). This paper will outline some methods to have zookeepers work with students on their projects by being judges and mentors.

Problem

There are times in the career of zookeepers when they make an observation of an animal in their care. They will make a hypothesis and create a test to determine if the hypothesis is correct. They may write a paper on these findings. However, there are times when these efforts may not be feasible. The keeper may just be too busy or have other responsibilities. Important useful information might never be documented.

Proposal

Wouldn't it be nice if there were some able and willing researchers just waiting for the opportunity to conduct a study? There is such a group of people. These are students in the 7^{th}-12^{th} grades who want to do a Science Fair project by studying at their local zoo. They will make regular observations, do library research, and interview zookeepers. Some students have been doing studies in their zoos, but without guidance. Most of these studies are very basic, since the students do not have the knowledge of a professional zookeeper.

There are benefits to helping students with their Science Fair projects. Keepers receive assistance from a student who has the time for the observations and library research. Students receive a mentor and a novel idea for a project. It would save the student the time of observing all of the animals in the zoo to find a hypothesis for the project. The students would foster lifelong curiosity, learning, and empathy about wildlife and their habitats (Davis, 2002). The student and the keeper learn as the project progresses. More questions and ideas will come to mind. The student is encouraged to continue and expand the project in subsequent years.

By helping with Science Fairs, keepers are also fulfilling the obligations of zoos:

- Think big vision
- Enlist partners
- Include people, communities
- Address the needs of the people
- Public education
- Scientific research
- Have an important role in teaching the public

Make a connection with one Student (Carr, 2002)

How does a keeper find a student researcher? A school in your local community can be contacted about its involvement in a Science Fair. Science teachers or interested students can be contacted directly.

Typical categories are:

Aerospace	Computer Science	Health Science
Astronomy	Consumer Science	Materials Science
Behavioral Science	Earth Science	Mathematics
Biochemistry	Electronics	Microbiology
Botany	Engineering	Physics
Chemistry	Environmental Science	Zoology (CNPSSE, 2003)

A keeper might want to visit the fair to see what it is like or offer to judge. The fair organizers will ask what categories and grades are of interest. Students who have investigated animals in their projects can be asked if they would want to continue with mentorship in the following year(s). Maybe they would like to pursue a keeper's idea. Keepers may also give them advice of improving their project. Students are allowed to make changes before advancing to the next step. The best of these projects will go to the school district, followed by region, state, national. At the regional and state fairs, there is special judging. These are extra awards given by private citizens, organizations, or businesses. Some of these groups give awards nationwide and have their own fairs.

In Region 2, The Chicago Non-Public Schools Science Exposition of The Illinois Junior Academy of Science (IJAS), these are the special judges:

AAZK-Lincoln Park Chapter
American Nuclear Society
Adrowski Award
American Society of Heating, Refrigeration & Air Conditioning
DeVry Institute of Technology
Nancy Diedrich
Illinois Psychological Association
Illinois Society for Microbiology
IOTA SIGMA PI, Chemistry Department, Carthrage College, Kenosha, WI
Metropolitan Water Reclamation District of Greater Chicago
Mostardi Platt Environmental
Northeastern Illinois Chapter-American Statistical Association
National Anti-Vivisection Society
Rush University, College of Nursing
Society for Technical Communication, Chicago Chapter
Society of Tribologist & Lubrication Engineers
United States Army
United States Navy & Marines (CNPSSE, 2004)

And this year, Zoos for Environmental Conservation- Lincoln Park Chapter was added to the list.

The differences between regular and special judging are that regular judges are assigned projects to judge. Their scores determine the placement of the projects and whether or not the project advances to the next level. Special judges choose their own projects to judge and determine who will win their award. Sometimes special judges will choose more winners than originally planned. Regular judges cannot do this. If there is a tie in scores, other judges will read the papers and judge the project again. The scoring of regular and special judging is independent of each other. However, a regular judge may advise a special judge of a project that they feel is deserving of the award. If special judges are unable to attend, regular judges may take their place as long as they have knowledge of the subject. Special judges may also help with regular judging if needed.

Judging and Scoring

There is instruction given before judging begins. For regular judging, judging sheets are provided for each student that the judge holds until each project is completed. The judge may have the students' papers before the actual judging. The judges can read them before listening to the students' presentation. Points are given for the quality of the project and the oral portion. Judging criteria may vary in each science fair and points are given for the quality for each of them:

Knowledge Gained
Scientific Approach
Experimental Approach: Variable
Experimental Approach: Control Group
Reliability of Data
Validity of Conclusion
Estimating Experimental Error
Originality
Presentation Quality
Dynamics

Points are also given for each of the following if present:

Abstract
Safety Sheet
Title Page/Table of Contents
Purpose and Hypothesis
Materials
Procedure
Results
Conclusion
Reference List
Conventions (Grammar and Spelling) (CPSSF, 2003)

The procedure of judging a project is simple. If the student's paper is provided, read it first. Find the student and introduce yourself. As the student goes through their presentation, do not interrupt. When this is finished, ask questions. Ask the student to give you more detail about something in the paper or to define some words from the paper. If the student has a problem with this, maybe someone else did the paper. When the discussion is complete, thank the student and walk away to score the project. If the paper is not provided before judging, ask to take it to review and then come back and ask questions. If the student did the work, it will show, and, if it was interesting to the

student, there will be a lot of enthusiasm. For special judging, the same criteria maybe used or judges may bring their own. The procedure is the same.

Conclusion

The benefit of special judging is that there is recognition of the special judge in the Science Fair community. At the awards ceremony, each special award is announced and the students receive their awards. The special judges are listed in the Science Fair guidebook, so there is much anticipation to see who will win each award. A benefit of mentoring students is that the mentor's name is listed with the acknowledgments at the beginning of the paper and, if they are interviewed, the name is listed in the references at the end of the paper. This would be a great benefit to the zoo community. The information gained by the student researchers could be very useful in the husbandry of collections. More students will increase their interest in the animal world and will potentially build a career in research or zookeeping with a better understanding of the profession from the beginning. The projects, it is hoped, will inspire them to take action locally and beyond (Davis, 2002).

References

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