

Scientific Development of a Training Curriculum for Zookeepers in Scientific Zoo Animal Management Practices

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Introduction

The zookeepers in India constitute the immediate direct managers and caretakers of all the animal inmates irrespective of their species, rather more than the zoo manager/animal owner/supervisor/management. In all other livestock species, the owners have direct control on feeding, breeding, general management, disease management, housing management, prevention and control of diseases which is not so in zoos and other captive wild animal rearing systems. As far as the zoo animals are concerned, the keepers play a vital role in carrying out these daily routines.

Under these contemporary circumstances, a zoo-keeper's thorough knowledge on scientific management practices pertaining to their animals, enhanced skills in carrying out their labour and a favourable positive attitude towards this vocation/profession will result in a healthy and better animal folk in that zoo. Keeping this in mind, an apparent analysis of the above said aspects (level of knowledge, skill, and positive attitude in the routine scientific management practices recommended by standard text books or experts in the relevant field) in zookeepers shall be useful for the welfare of the animals. Based on the ultimate results evolved, an effective training can be imparted to them for enhancement of these factors in zookeeping with a meticulous training curriculum developed.

An internationally accepted procedure for developing appropriate training curricula/syllabi (Panning for effective training, FAO, 1993) and a functional literacy based educational programme (Nadler & Leonard, 1982) shall be planned for this group. These curricula once developed shall be used as a blueprint for further management improvement, awareness and continuing education programmes for the zookeepers. The training based on these curricula shall be carried out in every year for one month or a week.

This paper focuses on the techniques for developing a specialized curriculum for zookeepers in the world. These methods are based on the general curriculum development reference available (Wulf *et al.*, 1984) which is modified appropriately for zookeepers. It also acquaints a brief outline of the steps to be carried out in preparing a successful curriculum citing appropriate examples from zoo animal management.

Methodology

The procedures for developing a training curriculum for any general target beneficiaries prepared by experts (Alexander *et al.*, 1992, Jacob 2000) were referred. A universally accepted procedure suggested by Time Wentling, (FAO 1997) were selected. The details of daily chores and management procedures in the zoo relevant to the keepers were evolved from standard textbooks, direct interviews with the experts,

experienced and learned zookeepers and also from available literatures. The relevancy of the selected practices, which are supposed to be known by zookeepers, was identified using the method of rating the relevancy by at least ten experts in this field including veterinarians, biologists, and experienced keepers.

General Scientific Zoo animal management practices of zoo keepers

The scientific management of zoo animals encompasses the following aspects:

1. General overall management of zoo animal

carried out by zookeepers: Feeding, housing, sanitation, animal identification, daily chores in the zoo, record keeping etc.

2. Disease management: Includes methods of prevention and control of animal diseases, symptom identification, ageing of animals, first aid, communicable and zoonotic disease management, primary veterinary assistance to zoo veterinarian and all other aspects related to diseases of zoo animal that are relevant to keepers.

3. Harness: The restraining and controlling methods, animal caging and all other procedures for zoo animal control.

Methodology of application of this procedures for curriculum development in zookeepers

Once the target group identified (zookeepers) the procedure starts from determining their needs for training and passes through various steps to tryout and revises the curriculum developed. Analysis of knowledge, skill and attitude, divulge any deficiency, then the next step is to prepare an independent meticulous curriculum based on these details. The internationally recommended general method of curriculum development, suggested by Tim Wentling, FAO, UN (1993) was selected which comprise of the following steps:

1. Determining training needs of the zookeepers

Conducting a need analysis among the target group of zookeepers forms the basis of determining training need. It is the process of determining the discrepancy that exists between the desired performance and actual performance of the keepers regarding better managerial skills. The entire process includes identifying and determining modules, i.e., '*what*' to be included in their training. This initial step encompasses six phases:

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(a) Identification of needs for training if any according to zookeeper's self-perspective.
Here the gap between desired and actual performance of keepers are analyzed. Desired behaviour is what we want the keepers to perform or to know or do. The essential to be known practices can be identified using relevancy-rating schedules validated by an expert group including veterinarians, learned and experienced keepers, biologists, zoo supervisors/managers etc (Mager, Robert 1975). The relevant practices that are expected to be known by the keepers as suggested by experts are compared with their actual performance. The difference, if any exists can be considered as a 'problem' in zoo management that can be measured in terms of knowledge, skill, attitude, motivation, organization and environment or *in toto*. For example if these expert group identify the latest animal control methods as to be the most known practice and if they could not be aware, it constitute a problem.

(b) Need analysis

This involves breaking down of the identified problem into its basic parts so that the training content can be identified and understood. This process could be described again under two distinct procedural phases.

(c) Job analyses (Task identification)

This is a type of dissection of routine activities of zookeepers to identify/understand what they do actually in their normal course of work. That is to reveal '**what**' is involved in their job. The various steps in this job analysis are identify precisely the job, list all tasks that might be included in this job, verify the list of job tasks, determine how frequently each task is performed, determine the relative importance of each task, assess difficulty of learning the task, tally the total score for each task and lastly discuss findings with key personnel in the training system (experts as indicated earlier) **(Table 1)**.

Using this job analysis worksheet, a

Table 1. Sample Job analysis work sheet for zoo keeper

Job: Cleaning the Shed of Tiger

Task	Frequency Performed (a)	Level of Importance (b)	Learning Difficulty (c)	Total	Priority
Preparation of hose	2	1	1	4	
Preparation of pump/tap	2	1	2	5	
Prepare cleaning items/properties	3	1	1	5	Yes
Controlling animal	3	1	2	6	Yes
Hosing and cleaning	2	1	2	5	Yes

Legends:

(a)		(b)		(c)	
1	Seldom	1	Marginally important	1	Easy
2	Occasional	2	Moderately important	2	Moderately difficult
3	Weekly to monthly	3	Extremely important	3	Difficult
4	Daily to weekly			4	Very difficult
5	Daily				

Table 2 .Sample Task analysis work sheet for zoo keeper

Job: Cleaning the tiger sheds, Task:Preparing cleaning materials

Task	Frequency Performed (a)	Level of Importance (b)	Learning Difficulty (c)	Total
Procuring equipment	2	2	1	5
Selecting detergents	4	2	3	9
Selecting disinfectants	4	1	3	8

Legends:

(a)		(b)		(c)	
1	Seldom	1	Marginally important	1	Easy
2	Occasional	2	Moderately important	2	Moderately difficult
3	Weekly to monthly	3	Extremely important	3	Difficult
4	Daily to weekly			4	Very difficult
5	Daily				

list of keeper's job tasks is identified. Since these tasks are complex in nature, a further task analysis can be conducted for simplifying and also minute details identification.

(d) Task Analysis

The job tasks identified above are broken down into steps or component parts. Each element is analyzed to determine its relative importance and criticalness in terms of accomplishing the job task. **(Table 2)**

f) Trainee skill assessment and gap analysis

The job analysis of zoo keepers helps us to identify major blocks of content to be included in training curriculum, and the task analysis helps us to analyze what response they have during this step. The knowledge, skill and attitude is

measured. Here the components identified on task analysis are compared with the zookeeper's proficiency in carrying out the work using various multiple legends. The result gives us a clear indication of **what should be taught** meticulously to the target group. **(Table 3)**

II. Fixing of training objectives

Once the training need of the zoo-keeper is assessed, it forms the basis for all further procedures. The next step is to come out with a specific objective realized from these analyzed needs. The fixed objectives for training help the trainer to develop and conduct training which supplies the knowledge and skill they need. It gives a clear understanding of what the keepers are expected to do as a

result of training. The objectives developed should serve as guides to learning, instruction and evaluation. As far as the zookeeper is concerned it is better to develop a performance objective, which fixes the standards of performance they have to show after training. It is mainly fixed using 3 criteria: condition, performance and standards (**Table 4**).

III. Identification and organization of training contents for zookeepers

The job analysis, task analysis and prepared training objectives for the zookeepers form the contents of training curriculum. The way of interpretation of objectives on the basis of underlying knowledge, skill and attitude gives a blueprint for the content. During the result interpretation of zookeepers and while organizing the training content, the following principles shall be kept in mind.

IV. Selection of Training Methods.

Oral presentation of new information to trainees, using a variety of training techniques and communication tools (Lecture/ Instructor/Presentation), trainer led Group Discussions, Demonstrations to show the correct steps for completing a task, or show an example of a correctly completed task. Giving trainees information about a situation and directing them to come to a decision or solve a problem concerning the situation. It can be brief or lengthy(Case Study). Trainees act out a real life situation in an instructional setting (Role play), and field visits/study tours, in which trainees are given the opportunity to observe and interact with the problem being solved or skill being learned forms some of the training methods. In the case of zoo keepers all the above-suggested methods can be conveniently used on an amalgamated manner or in combination. The demonstration, exercises, field visits etc. can be carried out easily for conducting an effective training. The last three steps are of less importance since they are mostly involved in implementation stage.

Table 3 (Examples)

JOB: Detecting Diseases of Lions TASK: Symptom identification

List steps and components	Proficiency rating					Check this box if proficiency is a problem	Can the problem be addressed by training? If so, check box
	1	2	3	4	5		
(see legend below)							
Decreased feed intake	1	2	3	4	5	[]	[]
No feed intake	1	2	3	4	5	[]	[]
Decreased water intake	1	2	3	4	5	[x]	[x]
Unable to get up	1	2	3	4	5	[]	[]
Not responding to commands	1	2	3	4	5	[x]	[x]
Presence of pus, secretions	1	2	3	4	5	[]	[]
Temperature hike	1	2	3	4	5	[x]	[x]
Not able to get up	1	2	3	4	5	[]	[]

Legends

1. Very High 2. High 3. Medium 4. Low 5. Very low

Table 4. Examples of knowledge skills and attitude objectives

Conditions	Performance	Standards
Knowledge-Base		
1 Referring to the list of names of diseases	The trainee will be able to classify the diseases	Into managerial , contagious, sporadic
2 Symptoms of various diseases and first aid	Carry out first aid symptom identification	Check disease spread and occurrence
Knowledge and skill-base		
1 Controlling equipments outline	the trainee will select and use	the appropriate equipment for separate animal
2 Given a number of equipment	the keeper will use and demonstrate the operation	of at least three equipment
Attitude-base		
1 After participating in demonstrations	the keepers will agree to	Use the new innovative equipment
2 After reviewing various options to use watering/ feeding equipment	the trainee will comply with	the new method that optimizes available resources utilization

The development of training support materials (printed, audiovisual), solely depends on the ability of keeper and nature of the trainers. Developing an appropriate test and revising the curriculum if needed is also the part of this technique development. The zookeepers training curricula formulated can be pretested; post tested and if needed a rethinking could be made.

The trial and revising ensures the working of procedures of this

curriculum development and provides numerous opportunities for improvement and method suggestions on how to improve. The pretesting questionnaire/ schedule/technique include a purpose statement, a set of key questions and list of methods that will be used in pretest (Gronlund, 1981).

Conclusion

The above-summarized procedure for developing an effective training curriculum could be transformed in

a complimentary pattern suitable for the zookeepers based on their nature of work. A panel of experts will be there to validate the knowledge skill and attitude level suggestive to the keepers. Statements will be framed and judged by them to measure the strength of deficiencies. The ultimate result would be an appealing international training curriculum for the zookeepers that can be put into practice periodically by the zoo authorities.

This paper highlights a brief acquaintance of how an appealing training curriculum can be developed for the zookeepers/zoo managers/those engaged with wild animal rearing. It also alludes to the further research opportunities among Indian zoos and zookeepers for all the concerned individuals. The identified methods of testing their level of knowledge, skill and attitude are at a pretesting stage among the keepers of Thrissur zoo, Kerala State, India, of which a fruitful result is expected shortly. The study also aspires at whole of South Indian Zoos and gradually to whole India depending on funding and other financial status.

These procedures, if thoroughly understood by the international expert group in zoo keeping and other stakeholders, further improvement can be made in zoo animal keeping and their welfare by periodically imparting training with the help of these curricula.

Ultimately all resources can be spared. The damage to human life, animal life and wastage of money can be made minimal in zoos and also public. In short the ultimate aim and motto of this study can be a healthy zoo animal achieved through healthy and knowledgeable zookeepers.

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Indian marine mammal network website

You are cordially invited to www.marinemammals.in, the Web site of the **Marine Mammal Conservation Network of India**.

This site has been created to provide information about the marine mammals of the seas around India. In this site you will also find details on how to help stranded animals and on how to collect valuable data. It has a searchable database of records to which anyone can contribute their observations and findings.

Closely linked to the site is the electronic group marinemammals of India. Please join this group. You will find details of how to do so on the site. Together the site and the discussion group aim to network all persons with an interest in the marine mammals of the Indian region. We look forward to your participation.

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