QUALITIES OF GOOD TEXT BOOK

Textbooks play a very important role in learning and teaching process. Therefore, it is important that these books are able to deliver knowledge to the readers. They are not mere printed materials but they enable the students to appreciate and understand the principles and concepts and their relevance in our daily life.

Functions of a science textbook

A science textbook must be in accordance with the aims of science teaching. A textbook helps in forming correct ideas regarding the concepts and principles of science. Most of the books available nowadays for primary or secondary school level are simply narrating the facts. If the teachers are repeating the same without any activity assigned to students, it implies they are defying the purpose of the textbooks.• Textbooks develop scientific attitude in the pupils and make them understanding the scientific methodology in them. They create love for science, proper attitude and the habit of solving the problems scientifically. They instigate the curiosity in them and make them investigate further into the subject.

- A textbook helps in furthering the knowledge, which students may acquire from laboratory experience and field trips.
- Textbooks supplement the understanding of the pupil.
- Textbooks help the students to proceed in a right direction and attain right conclusion of a problem or discussion.
- Textbooks are economical for the reason that they can be used for many years.
- The textbooks supply facts and develop the appreciation and understanding of concepts and principles of science. The. textbooks are authentic source books for the students as well as teachers. They provide the relevant and required information in an unambiguous way. But not many books that are written today follow the required guidelines. The books that are written

are of a low quality or of low standard. Not only the mechanical features of the book but also the method of treatment of subject matter and flow of the language are faulty. Books are written for the purpose of writing, caring a little for the knowledge they provide. Quantity is preferred over quality. Hence it has become an utmost necessity to frame criteria for developing a good science textbook.

Characteristics of a Good Science Textbook

For developing a good science textbook quality should be preferred over quantity and the authors must utilize sufficient time to **think** and write the subject. There are certain criteria for a good science textbook.

The following are the criteria for selecting a good science textbook:

- The level of the textbook must match with the intellectual level of the students.
- The writing style should be simple and lucid.
- The supplementary activities for the science topics must be suggested
- The content should be illustrative in nature.
- The textual material should possess clarity and should be organized in a systematic manner.
- The level of a student in terms of vocabulary and reading must be carefully considered before going for a book. Often it is seen that teachers uses advanced books for teaching. This may seem good for the teachers but at the same time it will be difficult for many students to follow the same.

The literary style is related to the readability of the book. Some important points to be considered are:

i) Number of concepts per sentence

ii) Length of sentence

iii) Continuity of thought

iv) Presence and absence of unrelated thoughts

Textbooks should be thoroughly analyzed before prescribing them. They are analyzed by using scoring cards. The two sample scorecards are

A) Hunter's score card and B) Vogel's score card.

Louise F. Vogel developed an evaluation scale which major criteria are grouped as given below:

- Qualification of the author
- Organization
- Content
- Presentation
- Accuracy
- Readability
- Adaptability
- Teaching Aids
- Illustration
- Appearance

Author—qualification and experience

The author who is having certain experience and qualification should be encouraged to write the textbook. Experience is very important while writing a textbook because if a person handled classes for secondary or at any other level, he will have a definite insight and depth regarding what students need from the textbook, how to make it interesting, the changing techniques in dealing with students etc.

Mechanical features of science text book

The paper, print and binding of the textbooks should be attractive. The books should have diagrams explaining the phenomena talked about. The picturesque manner of conveying

things may be incorporated to make books more attractive; at the same time it penetrates the brains of the pupil and they understand the things well.

The subject organization

- The subject should be developed in a sequential manner. Care must be taken regarding the level of maturity of the student in grasping the concepts.
- The textbook must be consistent with the objectives of science teaching. It should try to impart scientific attitudes, disciplinary and cultural values to the students. It can also suggest the various projects that can be handled by the reader.
- Chapters should begin with introduction and end with summary. This provides a fast review and insight about the chapter read. The headings and sub-heading should be self-explanatory. Each textbook should have contents at the beginning and index at the end. This provides a quick search for a topic inside the book.
- A very important aspect is the way it should be written, that is the level of language used. If the author uses some complicated words, the students may not be able to understand and they may stop reading it further. The books should be written in a simple language. The used scientific terms can be provided in glossary at the end of the book.
- Examples are important, as they make the student understand and also provide them with problem-solving techniques.

Principles of Writing Textbooks

UNESCO Planning Mission has set certain principles to write textbooks. They are as follows:

- It should be according to the requirements of the syllabus and also help in its improvement.
- The facts should be modern and comprehensive.

- Science should be correlated to the real or practical life.
- The aim of the content of the textbook should be at shaping integrated modern scientific world outlook.
- Problems of research and their results in the form of established facts should be incorporated in the contents so that students get interest in the science subject.
- Textbook should act as a tool in teaching-learning process.

The Position of Science Textbooks

The establishment of National Council of Educational Research and Training improved the position of the science textbooks.

The Central Committee for Educational Literature has set up panels and editorial boards for 13 subjects. These books are written in Hindi and English and later they are translated into regional languages by the state governments.

NCERT has also set up editorial boards and expert panels for the production of modern textbooks and supplementary educational material.

NCERT has played a very important role in past few years. It has published textbooks for biology, Physics, mathematics and chemistry for secondary classes. These books are quite cheap also.

The lshwarbhai Patel Committee Report recommends there is no need in case of language textbooks for classes One language textbook and one mathematics and one environmental studies book is must for classes III-IV/V.

For classes V-VIII it is necessary to provide textbooks for each area of study, clubbing the related fields in one. The number of pages can be reduced and the language used must be a clearly understood.

Analysis and Evaluation of a Science Textbook

The position of science textbooks was very disheartening after the independence. The establishment of NCERT has filled that I-II the lacuna as it has taken up the task of preparation of good textbooks for the school curricula.

The teacher while recommending a good textbook has to consider a number of criteria. Two score cards have been developed for rating the textbooks.

- Hunter's score card.
- Vogel's spot check evaluation scale.
- **Hunter's score card**
  - Educational rank of the author
  - Mechanical makeup of book
  - Psychological soundness
  - Subject matter
  - Exercises
  - Self-help

A- Hunter's Score Card

Sl. No.	Content	Point
1.	Educational rank of the author	50
2.	Mechanical make –up and cost	100
3.	Psychological Soundness	300
4.	Subject-matter	250
5.	Literary Style	110
6.	Learning Exercises	140
7.	Teacher's help	50
	Total	1000

- **Vogel's Spot –Check Evaluation Scale**

  The following criteria have to be taken into consideration

  Textbook – author, publisher- copyright year, and price, have to be considered.

  The detailed analysis of the following has to be carried out. That is

- **Qualifications of the author**

  The author should have experience in teaching the subject he has written.

  The author should have advanced degrees in related subjects.

  The author's view and philosophy should be in harmony the school curriculum

- **Organization of the content**

  A central theme should correlate all the topics in the textbook

  The textbooks should be organized into units

  The units should be related to one another through related topics

  The chapters should be graded in difficulty

- **Content matter**

  All the content should be linked

  Latest advancements in science should be included

  Historical developments of science should be given a place

  Social significance of science should be stressed

- **Presentation of the material**

  Introduction of a new topic should follow inductive approach

  The scientific method and problem soling approach should be stressed

  Informal and interesting way of presentation

  Important principles to set in bold or italics

- **Accuracy of the material**

  All items on the pages are in the index

The items are scientifically correct Personification is avoided

No ambiguity in the content presented

- **Readability**

  The words and sentences are simple and easy to understand.

  Applications are given for abstract principles

- **Adaptability**

  The textbook caters to individual differences It takes into consideration slow learners, average and gifted students No partial attitude towards rural and urban pupils Non-controversial treatment of all topics Fits well into the curriculum the needs of the community.

- **Teaching aids**

  Summaries, questions and problems are adequate

  References are in annotations

  The teacher's manual is very useful

  Appendix material is useful

- **Illustrations**

  The illustrations are modem

  The photographic representations are large and clear

  The diagrams are well labeled

  They are related to the learning experiences

- **Appearance**

  The appearance of the cover is attractive

  The size and shape of the textbook is handy

  The design is pleasing

  The type or print is easy to read..

SCIENCE LIBRARY

Introduction

Books are a treasure for a lifetime. They are our lifelong friends. Books widen our knowledge, they are a source of inspiration, and develop positive healthy attitudes. They 'help in proper utility of leisure. According to Ramy Kollier, "Books are a guide to the youth and an entertainment for the old age. (Research has demonstrated that good school libraries make a difference' to students learning and achievement, and the school library has been identified as the agency which, by planning an effective match of its programmes to the educational objectives of the school, can make a vital contribution to education.

Importance of School Library

Secondary Education Commission emphasizes the importance of library and states, "the library will be the hub and the center of the intellectual and literary life of the reorganized school and play the same part for all other subjects as the laboratory plays for science subjects or the workshop for the technical subjects".

According to *Oliver Lodge* "Part of education should consist in familiarity and practice, with the looking up of details, with the use of books in general, not only of books of reference".

S.R.Ranganathan writes "In a school that educates pupils for a changing world, the school library should be a live workshop".

The Role of the Library in Schools

The library plays an important role in the school set-up. The availability of books other than their course material helps the students to develop awareness of various other aspects of science other than those in the curriculum. Both students and the teacher become independent users of information and get benefited. The establishment of a science library

inculcates reading habits in the students. It supports and enhances the essential learning by providing adequate resources, library personnel and instruction.

Students are greatly benefited by the library because:

They read more and develop a greater potential for success

They develop the r e a d i n g skills, which increase their knowledge of the complex world of information.

The needs and interests of students are catered to by the access to the library.

Their learning improves when the library resources are integrated with classroom curriculum.

They utilize their leisure in a proper manner by visiting the library and developing their knowledge.

Objectives of a Science Library

To encourage the students to acquire scientific knowledge as well as general knowledge

To help the students acquire good reading and self-learning skills.

To Improve their critical thinking skills

To supplement the knowledge of classroom learning.

To train the students to obtain extensive information on the topics in their curriculum.

To teach the students proper utility of their leisure time.

The Limitations of our School Libraries

The Secondary Education Commission has pointed out that our school libraries are for the sake of name and do not help the students in any way. School libraries are not functional in our schools mainly because we are not much influenced by the latest developments in education. The lack of financial resources as well as non-recognition of the importance of the library facility in the schools by the authorities has led to a meager

development of library resources in the schools. The failure is mainly considered due to the attitude of teachers (system) and students towards it. The other reasons are:

- The acquisition of knowledge is restricted to the curriculum.
- The students study only their course books to pass the examination
- Their examination system restricts the students to their textbooks.
- It does not encourage them to know extra information.
- The teacher's importance of children and students have not understood the inculcation of the reading habits in the libraries.
- The libraries are not properly organized and maintained.
- Lack of funds hinders the development of the libraries.
- The books are beyond the comprehension of the students.
- The books are outdated and do not suit the interests of the students. Recommendations made by All India Seminar on Science
- Libraries and their role in teaching of science:
- A separate science library should be arranged in each and every school
- General science books should be kept in such libraries
- A separate section for the reference books should be allotted and the reference books should not be issued to homes.
- A separate section on teaching methodology should be kept for the teachers.
- A science library should work under the supervision of science teacher.
- A small group of student may help her in her activities.
- The teacher should encourage the students to read and ask them to prepare brief review of the reference books.
- A science library should provide a complete set of science books to the students.
- A science library should also provide for the laboratory.

Functions of a Science Library

The science library should reflect the objective of the school, through the nature of collection of the books and the services it provides. It should be the focal point of the school set up. The science library should provide individualized learning. Oopportunities to the students. It should help in the development of important skills like reading, thinking and self-learning skills.

The important functions are:

- To develop the reading habits in the students.
- To cooperate and complement the learning of the teachers and the students and supplement the classroom knowledge. Index should be maintained in which teacher and students should briefly mention the information about the books they read.
- To provide adequate facilities for proper usage of leisure time by students and teachers.
- To help the teachers in updating their knowledge.
- To store the books and other reading materials in an easily accessible and convenient way for use by the students and teachers.
- To reduce the chances of indiscipline in the school.

Organization of a Science Library

A science library should be organized under the supervision of a science teacher. It should be equipped well with the different types of books and other resources. The finances and the funds should be considered while equipping the library. The selection of the books is an important process. The books should be relevant, cheap in their cost, and simple in their language. They should cater to the needs and interests of the learners and also related to the curriculum. Some general science books may also be

kept in the library. The books should be good in quality as well as in quantity. A wise selection is required for the making of a good and

The main components in the effective organization of a school library are:

– Accommodation

-- Finance

-- Selection of books

– Arrangement of the resources

Accommodation

Accommodation or space for the science library is important. The library may be housed in the science department or near the science lab or a separate room may be provided. The space must be convenient for the students to visit the library and read the books. It should be accessible to all the students. It should be away from noisy areas. It should be properly ventilated. Adequate space should be provided for the collection of books, like textbooks, reference books, fiction, non-fiction, newspapers and magazines, journals, general knowledge books etc. Space should also be delimited for the computers and Internet facilities.

Finance

The major drawback for the organization of school libraries is non-availability of financial resources. The school managements rarely or meagerly allocate budget for the school. Science library. It is imperative on the science teacher to appraise the school authorities about the importance of the library and allocate at least a standard amount of money for the science library. Funds may also be collected from the enthusiastic public or the community resources.

Selection of the books

The library books should cater to the needs of the teaching learning process in the schools. The composition of these books must be broad enough to cover a particular subject at different, levels. Therefore, the library should provide different kinds of science books, textbooks and journals covering different branches of science like botany, zoology, physics, and chemistry as well as related disciplines like medicine and agriculture. Books on discoveries, inventions in science and books on scientific hobbies should also be placed in a science library. To encourage and inspire the students' inspirational books on a autobiographies of great scientists and philosophers could also be bought. Reference books on range of topics dealing with science and other subjects and science magazines and journals should also be kept for reference. Some standard books on methods in teaching should also be purchased. To acquaint the students with the recent developments in science and technology some books may be procured. Books dealing with other subjects like geography, environment, physiology etc. could also be kept for an interdisciplinary approach. To stimulate the scientific hobbies among the students, books on photography, computers, television etc should be provided.

Arrangement

Proper arrangement of books in the library enhances its appeal. The books should be kept in an orderly systematic manner for effective usage of the library resources. The library should be divided into different sections. Books should be categorized into various categories; they are arranged in racks or almirahs in different sections. All the books are given accession numbers and they are entered into the registers. The storage racks should be labeled. The journals and magazines should be made available to the students. The furniture should be properly organized. The entire arrangement of

the library premises should be orderly and systematic and should provide academic ambience: The science library should be a busy, active place where students should feel comfortable and make the best use of the learning resources available in the library.

Computers and the Library

The school library serves the teachers and students as a media center. Books and computer technology can combine to increase literature appreciation among the teachers and students. The usage of the Internet makes the high school library serve as an instructional center for students and teaches them how to effectively search for information, how to evaluate the vast amount of information available, and how to accurately cite the information used. As an instructional centre, the library offers the opportunity for students to learn library research skills to become self-sufficient library users and to develop individual reading habits. The advancements in the fields of computers and the information technology have resulted in the development of computerized, information in the form of virtual and digital libraries. The usage of these systems helps the students to access any amount of information from any corner of the world.

Virtual Library

The Virtual Library stands for data stored on networked hard drive, which makes up the Internet and other computer networks. It provides detailed information about any topic and provides full- text articles from number of periodicals, journals, magazines, and the thousands of classics and academic textbooks such as e-books online. They provide the global databases on any book ever printed. (This includes encyclopedias and almanacs, including the world's leading interactive science encyclopedias; as well as, dictionaries on science). Students get an access to these libraries and gain wider

knowledge. They get exposure to the huge amount of knowledge and improve their learning efficiency.

Digital Libraries

The electronic versions of the textbook libraries are Digital Libraries. These libraries occupy a very important place in the schools. Digital libraries offer a unique and unprecedented resource through which teachers can facilitate access to any amount of scientific information and data. Digital libraries can provide teachers with a feasible way to let students pursue their own interests within the bounds of the curriculum and without creating an enormous amount of extra work in providing students with materials to support their investigations. The ready availability of material information makes it feasible for students to conduct meaningful investigations using digital library resources as part of their classroom activities and doing research in the classroom.

SCIENCE MUSEUM

By science Museum, we mean a suitable place in the school campus, where different objects and specimen collected from natural or physical environment or constructed and improvised by the students may be placed, preserved and displayed safely and systematically in such a way as to help the students to learn about the related scientific facts and processes through a simple process of observation.

Science clubs, Investigatory Science Projects and Science Fairs are triangularly related. Investigatory Science Projects may be one of the important activities of science clubs and these Investigatory science projects may be displayed in science fairs. Investigatory Project should be preferred, and you, as science teachers, should recognize and practice your role as science teachers club sponsor, as a guide in investigatory science projects and as a consultant in organizing science fairs. This will facilitate in better science teaching.

Science is a type of subject, the knowledge and skill of which cannot be acquired only through telling or reading. It requires active experimentation, careful observation and demonstration of the scientific facts and principles within their natural surroundings and occurrence for their proper assimilation and application. What is to be learned in the sciences, can be properly learned through direct experiences with the available facts and processes going on in the natural environment. However it is not always feasible to take the students in the natural surroundings for observing and experimenting with the facts and principles of science. Hence, the collection of the natural objects of scientific interests in the form of science museum may prove quite effective and beneficial for studying the related scientific facts and processes.

ADVANTAGES OF SCIENCE MUSEUM

1. It has its worth as valuable aid in the teaching-learning process.

2. The organization of science museum in the school acts as a great source of inspiration for the budding scientists.

3. It helps the students to get properly acquainted with their physical and social environment.

4. The students come across some rare phenomena or objects of scientific interest which are otherwise not seen in normal circumstances.

5. They get chance to observe and study those objects and phenomena whichever and whenever, they want to do so.

6. The study of scientific facts and principles becomes quite Interesting and easy by the close observation of specimens and models available in the museum.

7. It helps in the creation of genuine interest and developing positive attitude towards the study of science.

8. It helps in developing love for nature study among the students.

9. Opportunity to collect scientific objects and specimens according to their own interest and taste provided through the organization of science museum helps the students in the proper satisfaction of their hoarding instinct.

10. It helps in the proper development of the observation facilities of the children.

11. As a result of getting practice in the task of observation their power of comprehension and drawing inference is properly developed.

12. The instinct of curiosity is properly satisfied by observing quite new and rare objects and phenomena.

13. This also adds to their funds of knowledge and the atmosphere in the school for the learning of science is greatly improved.

14. Active participation of children in organizing the activities of museum helps them in developing their organizational abilities science museum as well as safe related to the systematic placing, preservation and proper use of the various objects.

15. It helps in developing scientific attitude among the students and in creating a healthy spirit of learning and knowing new things.

CHOICE OF PROPER ACCOMMODATION

One has to take care of following in the selection of suitable site and accommodation for the science museum—

1. It should be at a reasonable distance from the classes and science laboratories.

2. It should be big enough as to accommodate objects and materials to do the different branches of physical and life sciences.

3. All the articles and objects collected should be in a position kept and demonstrated quite safe and sound without getting spoiled or image for a long period of time.

4.The objects should be kept in such a way as to provide a full view from all angles and, thus, enabling the maximum number of viewers to view the things jointly at a single occasion.

ITEMS TO BE KEPT IN SCIENCE MUSEUM

(A) Life Science Section

1. Different kinds of rocks e.g., igneous-rocks, stratified rocks, metamorphic rocks, etc.
2. Different kinds of soils.

3 Different kinds of leaves, roots, stems and flowers.

4. Different kinds of insects-both useful and harmful.Ex.. butterflies, Beetles, White ant (full life history) in all stages, housefly (Life history), mosquito (full Iife history) in all stages, etc-

5. Different kinds of cereals, fruits, vegetables, seeds, etc.

6. Different kinds of reptiles preserved in dilute formaldehyde

7. Different kinds of birds properly stuffed and preserved.

8.Articulated skeletons of human beings and other mammals.

9. Models of digestive, respiratory and other systems.

10. Models of human eye, ear, heart, lungs, etc.

(B) *Chemistry Section*

1. Specimens of all types of meals and their ores.

2. Samples of different chemicals with descriptive charts.

3. Models of atoms showing their structure.

4. Charts and models concerning manufacturing and laboratory preparation of different gases, acids and other chemical substances.

5. Models of fire-extinguishers.

6. Specimens of various types of fertilizers and their process of manufacturing shown with the help of charts, etc.

7. The process of refining petroleum shown with the help of model or good chart. Along with this, the samples and specimen of all the bi- products of this process may also be kept and shown.

8. Process of destructive distillation of coal shown with the help of a model or some good chart. Along with it, the specimen and samples of all the bi-products should also be shown.

9. Metallurgy of various metal ores like iron, copper, zinc, etc. may be shown by suitable models or charts.

10. Manufacturing process of glass along with the types and varieties of glass can also be properly displayed through specimen, charts and models.

(C) ***Physics Section***

1. Actual objects, models and charts showing all types of levers and their uses.

2. Working models and charts of petrol, diesel and steam engines.

3. Working models of telephones and telegraph.

4. Working models with demonstration of the open circuits of radio, television-set,etc.

5. Models of aero-plane and a jet-plane.

6. Models of Rocket—ordinary and space rockets.

7. Actual models of photographic camera and the specimens of the ingredients and materials for the developing and printing of the pictures.

8. Models of microscope, binocular, terrestrial telescope, and astronomical telescope apparatus. Photo-electric cells and their functions-demonstration equipment, models or chart.

SOURCES OF ARTICLES FOR SCIENCE MUSEUM

1. Visits and Excursions--The students may collect different objects belonging to the physical and social environment during the visits and excursions to the place of scientific interest.

2. Borrowing-Certain things can be borrowed from the State or district museums, botanical gardens or from the science museum of some neighbouring schools and institutions.

3. Purchases charts, models, specimens and real objects, etc. should be purchased from the market, factories and other places dealing with the sale of such things.

4. Improvisation-The charts, models and improvised apparatus, etc, may be constructed with the help of students.

METHODS OF PRESERVATION AND SAFE DISPLAY

1. Classification-The material collected for the science museum should be placed in a systematic way by putting, it in some suitably classified sections either subject-wise like chemistry, physics, biology or botany sections or object-wise like birds, animals plants, living objects, non-living objects, mineral sections, etc.

2. Identification-Every article placed in the museum should have its proper identification for being displayed effectively. For this purpose, we may attach a piece of thick paper or wooden piece by writing on it the following identifying data— (i) Name of the object,

(ii) Name of the student who has collected the object,

(iii) Date on which collected,

(iv) A brief description of the object regarding its nature, characteristics and the purpose served, etc.

3. Show Cases-All zoological specimens should be kept in the show cases sealed properly, after properly disinfecting them with D.D.T. or spray of other strong disinfectants.

4. **Jars**-Specimens of different kinds of snakes, lizards and fishes,

5. **Glass Strips**—Life history of mosquitoes, housefly, white ant, etc. can be kept preserved in the properly sealed jars filled with 30 per- cent formaline solution.etc. may be properly mounted on glass strips and kept in jars filled with 10 percent formaldehyde solution.

6. **Mounting**-Different birds should be stuffed and mounted properly for being kept safe in glass-cases suited to their size.

AQUARIUM

For keeping living fish and other animals of water which are conditioned to live in the stagnant water an aquarium may be constructed.

Aquarium is a sort of small pond made out of a glass box. For the construction of aquarium, we can have a small portable size glass box preferably of a rectangular shape. In the bottom of this box, we first place some rich soil belonging to ponds, lakes or fertile fields and then cover it with a thin layer of the sand, put some pieces of stones and pebbles and then root some water plants collected from the ponds for making the internal environment of this artificial pond as natural as possible. Afterwards, pond water is to be poured in this glass box and then the animals like snails and fishes with their eggs can be introduced in the water. For the safe preservation of the living animals in this aquarium, all precautions about their food and cleanliness of water, etc. are also followed quite strictly.

The animals like earthworm and frogs etc. can be placed in the terrariums. Different types of terrariums can be constructed as to suit the living conditions and nature of the particular animals.

Terrarium suiting to its requirements may be constructed for keeping earthworm in the following way:-

First of all, we take a rectangular glass box of portable size. The bottom of this box is covered with a thick layer of the moist soil from the fertile fields. It is then covered with the layers consisting of decayed vegetable matter, sands and pebbles etc. Some earthworms along with their eggs are then laid down between these layers and some insects etc. are also placed for being used as food by the earthworms.

In constructing terrarium for the frog, care is taken for partitioning it into two sections. In one section, there is an arrangement of water storage in the shape of a tank and

in the other section, we have moist soil along with grass plants and the food material in the form of insects, flies, etc.

VIVARIUM

A suitable open air caged accommodation may be provided in the museum to keep certain beautiful live animals like rabbits, hares, white rats, squirrels, etc. These animals should be given appropriate food at the proper time and proper cleanliness should be maintained in their cages. If possible, care should be taken that each of them gets the same natural living conditions for which they are most habituated.