

SCIENCE CLUB

In School/ Colleges, Co-curricular activities have their own importance. The co-curricular activities help the child to go head and provide powerful support for personality development. In the area of Biology, Biological Clubs are the most natural means by which he gets a chance to show suppressed and unconscious talents. These clubs develop the spirit of scientific leadership, Co-operation and citizenship. With the help of these clubs, a number of educational objectives can be achieved.

Educational Objectives

1. To develop scientific leadership.
2. To develop affection towards national life and trying to improve it.
3. To make the student perfect in scientific jobs and developing their self-confidence.
4. To develop a positive outlook towards scientific occupations.
5. To help the students to find solution to their problems related to biology.
6. To identify the various needs and problems of the group and finding their solution.
7. To teach the students to decorate their homes and surroundings.
8. To allow the students the use of their intelligence in different situations.
9. TO help children develop good character, useful citizenship and correct spirit of patriotism.
10. To help children develop feeling or mutual courtesy.
11. To familiarize students with modern biological developments and inventions which help the human life.
12. To perform experiments in connection with the basic principles of Biology.
13. To give rise to the feeling of discovery and development.
14. To develop the interest of students in science and making proper use of vacation.
15. To organize and arrange scientific fairs, exhibitions, tours, dramas, games, films etc.
16. To collaborate with other science clubs.

ORGANIZATION

To establish a Biology Club, it is important to fix objectives, how they will be achieved i.e methods to achieve the set objectives. The list of the expenditure involved and other job-accomplishments should be given to the headmaster of the school for his permission and co-operation. Besides the headmaster, all students of Biology and other students having interest and love for Biology, should also co-operate. At the time of establishment, a meeting should be called and the objectives, its activities and procedures should be told and its importance highlighted. A constitution of this organization should be formulated. The constitution should have entrance of the following—

1. Name of Institution.
2. Objectives.
3. Scope
4. Membership
5. Office bearers
6. Treasury
7. Meeting time and place
8. Activities

Given below is a draft of the constitution of Biology Club to guide the teacher—

1. Name of Institution-Biology Club.

2. Area of Work- (i) School (ii) Community.

3. Objectives- Besides the objectives given earlier the following objectives can be included—

- (i) To prepare community related plans and execute them.

(ii) To impart knowledge of new discoveries of Biology to the community and to explain their importance to them.

(iii) To provide leadership to students in following subjects—

(a) Give speech.

(b) To write technical and scientific description.

(c) To keep an account of new publications of Biology.

(iv) To publish different bulletin and magazine related to Biology.

(v) To conduct workshops and seminars on problems related to Biology.

4. Membership In this the teachers should think over as to which students can be members of the club, who can co-operate in achieving suitable objectives like-

(i) **Active Members-** All students of Biology.

(ii) **General Members-** Those students who are studying other subjects related to Biology (like chemistry, physics, industrial science etc.)

(iii) **Honorary Members**— Ex-students of Biology and of other students of other science subjects.

(iv) **Life members-** All those people who are related to Biology and have great interest in Biology can pay a nominal fee Rs. 50/- or Rs. 100/- and become life members.

5. Office Bearers-The office-bearers of the club can be the following-

(i) Patron, (ii) Teacher Advisors.

1. Chairman

2. Vice-Chairman

3. Secretary

4. Vice-Secretary

5. Treasured

6. Editor

7. Recorder

Under the office bearer's act everything like-on which post. what type of person, how he can be elected and what all will be his responsibilities-should be clearly written.

Executive In this all office-bearers, class-representative, all Biology vocational heads and members.

6. Treasury-There should be clear cut instructions as from where the money for the various jobs of the club will be obtained, how and how- much will be collected from whom, what type of members will pay (what) membership fee, where and how the money will be kept.

7. Meeting Time and Place-In the constitution, it should be clearly mentioned as to who can call a meeting, venue and time of meeting, how many members should be present.

8. Activities-Mainly the following types of activities can be organized by the club-

(i) Tours.

(ii) Fairs and Exhibition.

(iii) Collection of birds, fruits, roots, seeds, diseased articles, insects etc.

(iv) Museum.

(v) Conduct Meetings.

(vi) Going around the Country.

(vii) Debate, oration and essay competitions.

(viii) To have a Bulletin Board and making proper use of this.

(ix) To prepare a description of Biologists, their life and work and putting up their photographs

(x) Publish Magazine.

(xi) Organizing speech programmes, lectures etc.

For proper management of these activities, zoology circles and Botany circles should be made and as convenience these clubs can work. In these circles students having interest and capabilities are made members. Both these circles have different programmes. Each circle has its own chairman, secretary and an executive body of 5-8 members. These circles can work on projects of work Improvement and Productive home projects. These members can give their co-operation in improving the atmosphere, decorating, planting healthy plants and trees getting aquarium fixed etc. These circles can perform the following activities —

1. Observation competition.
2. Identification competition.
3. Competitions like writing articles, speeches and story writing based pictures related to biology
4. Biology information competition.
5. Establishing home laboratory
6. Work experience
7. Collection of various types of living things or their pictures.
8. Preparation of Biology related charts models competitions
9. Discussion with specialist
10. Survey of biology apparatus
11. Preparation of slides and film strips
12. Biological Olympiads
13. Biological Evenings
14. Biology Day.
15. Publication of different types of information related to Biology.
- 16 Organizing Biological fairs and exhibitions.

17. Adult education programme.
18. Various subject related demonstration.
19. Film shows etc.

If the 'Biology Clubs' in their branches, through their circles, work within the limits of the school, in a group for the community then only the 'Biology Club' would be successful in achieving their true meaning. These clubs, besides giving knowledge to the students in their student life, give them the self-confidence to choose scientific occupation in their happy and beautiful future. In this manner, these clubs, under the able guidance of capable teachers, with the use of appropriate material, give the students real training for their future and thus give a great contribution in building a healthy society and a self-sufficient nation.

FIELD TRIPS OR TOURS (EDUCATIONAL EXERCISE)

'Field Trips' are a rich source of true education. Field trips not only provide educational knowledge but also give them a chance to make use of actual or real knowledge. Their power of observation is developed. As regards to its importance it is said that "Field trips when properly conducted, satisfy two main concepts of Educational Theory, the motivation of the desire to learn and the actual learning."

OBJECTIVES

1. The objective of the field trip is to provide first hand observation and experience. Knowledge as regards to all those things can be provided, which cannot be shown in the class-room easily.
2. To create interest in the students about different subjects.
3. To draw conclusions from the exercises conducted in natural environment.
4. To exhibit relation between theoretical and practical knowledge.
5. To develop the desire among students to understand responsibility and fulfill it.
- 6 To develop the observation power of students.
7. To teach the students to make proper/good use of vacation. Or To teach the students proper utilization of vacation.

Advantages of field trips

1. The students obtain knowledge on natural surroundings.
2. The students get a chance to observe actually experience and describe.
3. The students develop the quality of mutual cooperation.
4. The students learn a lot of things which may help in changing their attitudes.
5. Field trips an ideal teacher farmer and masses provide larger interaction and widen the horizons of learning.
6. Helps in acceptance of progressive methods and developing healthy attitude towards them.

7. It gives an opportunity to the students to perform practical's independently which come under theoretical knowledge.
8. It teaches students proper utilization of leisure.

Limitations

1. At least a whole day is required for the field trip it is not possible to conduct it in few hours.
2. Co-operation is required between teacher and students for success.
3. There can be accidents during Field trip.
4. There should be enough financiers for field trip.

Adjustment in Field Trips

Organizing Field Trip is a responsible job. All the jobs should be distributed equally in a congenial atmosphere. All the information should be given to the students before the commencement of the journey. It is very helpful if a road guide is prepared in advance.

Role of Teacher

1. First all teachers should know about his students as regards to their age, previous knowledge, previous experience and capabilities.
2. What type of experiences would be suitable for them and where? How can the behaviour related problems of problematic children be controlled? All these topics should be given due consideration in advance.
3. The teacher should obtain permission from the college incharge for the field trip. Then he should complete all formalities and obtain permission of the in-charge for the place selected for the trip. The following point should be fixed in advance as these will prove very helpful.
 - (i) Time of reaching the meeting place.
 - (ii) The meeting place.
 - (iii) Complete programme of the visit.

- (iv) List of study points and things to be observed.
- (v) Solutions to the questions and doubts of the students.
- (vi) List of facilities.

3. Important points and unexpected happenings should be thought of in advance.

4. Everyone should be briefed about the main objectives of field trip so as to obtain expected co-operation.

5. The teacher should also plan out how he would reply to the queries in written form from the students and answer them? What types of questions would he answer and what types of questions will be answered by a specialist? Will a time period be fixed for questions answer and discussion session at the meeting place? These things should be fixed by the teacher or organizer of the field trip in advance

6. After the field trip either at the meeting place or in school, time for discussion should be fixed.

7. The students should be imparted knowledge of the following prior to commencement of the trips—

- (1) Mode of travel, objectives, limitations and expenditure.
- (2) Description of travel, dress-code, important items and important precautions.
- (3) Instructions regarding study points regarding journey before the start given to the students
- (4) Helpful if a 'road-guide' is prepared in advance.
- (5) A draft of the points of discussion after the completion of the trip.
- (6) The group of students who have collected for the trip should be given knowledge of—
 - (i) The aim of field trip
 - (ii) Knowledge of things to be observed during the field trip.
 - (iii) Safety rules.

DURING FIELD TRIP

The teacher gives the introduction of the In-charge of the meeting place and organizes the trip in such a way so that each student is able to observe everything properly, see the demonstration of all activities and hear all important instructions. The teacher proves to be helpful to the students to observe carefully and careful about all safety hazards. He should thank the in-charge of the meeting place for all the facilities provided by him.

AFTER THE FIELD TRIP

The teacher should initiate a discussion about the field trip and answer the questions of the students and clear their doubts. He should highlight the important aspects of the trip and encourage the students to write a description about it. He should instruct the students to note down important observations and about new things they see.

RESPONSIBILITY OF STUDENTS IN THE FIELD TRIP

The students should have complete knowledge of the objectives of the trip and other aspects of the trip beforehand. They should follow the instructions given to them carefully. They should follow the safety rules. They should behave in a dignified manner. After careful observation, they should note down their problems and doubts and clarify them during discussion session. During the trip, as and when required, they should clarify the things from the teacher of trip in-charge or any responsible person. The field trip should be taken as means to gain knowledge and keep jotting down important things. The students should keep studying after the trip also.

PRECAUTIONS DURING FIELD TRIP

1. The organizing teacher should gather all relevant information about the meeting place. If possible, he should visit the meeting place and find out about the facilities and problems of that place.

2. A suitable and economical vehicle should be used. A first aid kit should be taken along in the vehicle.
3. If a road guide is required it should be taken.
4. The student should be given necessary instruction to bring torch, megaphone, tape-recorder and camera etc.
5. Pay attention to problematic students.
6. The student should be given instruction on as regards to their clothes , bedding writing material etc..

Evaluation of Field Trip

1. The feedback given by the students as regards to the success of the field trip should be counter checked by a check list.
2. The students should be asked, to submit a report about the field trip.

SCIENCE FAIRS

Science fair is very important co-curricular activity, through which the work of science students may be presented effectively. It involves exhibits, lecture-demonstrations, presentation of new ideas, techniques, discoveries and projects etc. of science of students. These can be organized at school, district or national level. It helps in reinforcing science hobbies, scientific interests, scientific attitude and scientific temper.

OBJECTIVES OF SCIENCE FAIRS

1. To popularise science activities of students.
2. To encourage to develop science exhibits.
3. To stimulate students to take more interest in scientific investigation and projects.
4. To develop and reinforce scientific hobbies.
5. To recognize and commend youthful scientific talents.
6. TO encourage students to think creatively.
7. To bring parents and society closure to schools.
8. To identify and nurture budding scientists.
9. To help the general public of the area in developing interest in science and scientific skills.
10. To develop critical thinking in the design and development of apparatus for various investigations.
11. To help in providing satisfactory forum and opportunity the healthy competitions on the individual and institutional level.

Exhibits

Exhibits are given below —

1. Collection of objects and specimens by the students.
2. Charts and models.

4. Improvised apparatus.
5. Scientific toys and games prepared by the students.
6. Industrial and technological use of certain scientific principle demonstrated through the arrangement of some apparatus or innovative design of a process depicted through some media.
7. Articles of scientific use.
8. Display of student-projects.
9. Standard science Text-books, Reference books, General books, Newsletters, News bulletins and Science journals.
10. Experimental/investigatory/research type projects.
11. Film show etc.
12. Good Science Aids, useful for learning science/scientific process etc.

OTHER ACTIVITIES UNDERTAKEN IN THE SCIENCE FAIRS

1. Holding debates, declamation and paper reading contest on science topics.
2. Holding group discussions & seminars on the topics of scientific interests.
3. Essay competition on scientific topics.
4. Symposia and workshops.
5. Science quiz contests.
6. Lectures/talks of prominent scientific/science teachers.
7. Group discussions.
8. Film shows, slide shows, film strip shows and puppet shows on science themes.

ORGANIZATION OF SCIENCE FAIRS

1. Selection of proper and appropriate site for the science fairs.
2. Appropriate provisions for electric supply be made. The available power should be sufficient and the load and plug points well-distributed.

3. There should be suitable arrangement for drinking water, toilets and urinals etc.
4. No place for dead-end aisle and bottle-neck in the fairs.
5. The location should have well-marked aisle-spaces, entrances and exits.
6. Allotment for space should be as per need and requirement of the participating team.
7. Rule and regulation regarding participation, display and security of their own goods and equipments be made every clear to various teams.
8. Provide all amenities to each team in a systematic manner.
9. Place exhibits in such a way so that these may be visible and their working & principles should be explained by a competent person.
10. Arrangement should be made for competent and trained persons with an effective communication ability.
11. The exhibits should be properly labeled.
12. Use good quality of wires for electricity and electric apparatus.
13. As far as possible, provide symmetrical furniture arrangements.
14. The place of the fair should preferably be a school-building, having a large hall and fairly big-size class-room. It will be good, if school is centrally situated in the city, so that more persons may visit the fair.
15. Time consuming exhibits should not be accumulated at one place.
16. Different sections should be made for the display of exhibits/processes related to different branches of science *e.g.* Physics section and Chemistry section etc.
17. There should be one In charge and Asst. In charge for each section of the science fairs.
18. Opening and closing time should be well-notified beforehand.
19. Make arrangement in such a way, so that there may not be any crowd at one place.
20. Provide proper publicity for different activities to be organized during the fair along with complete details.

21. Make proper arrangement for the safety and security of the exhibits and participating teams.
22. Provide proper incentive, recognitions and awards to deserving students and deserving teams.
23. Try to develop the fair-climate full of love, mutual trust co- operation and cohesion. '
24. The in charge of Science-fair, should take permission, free and frank discussion on arrangement and seek the co-operation of the principal of the Institution.
25. Committees may be appointed for various arrangements to be made in the fair.
26. Arrange proper finances beforehand. Take help of NCERT, SCERT, GOVT. and N.G.O.s. for finances.
27. After careful planning, the work and duties should be distributed ably.
28. For evaluation, use proper and impartial evaluation measures and criteria.

NCERT has given the following criteria for evaluating exhibits.

Sl. No.	Criteria	Marks
1.	Scientific approach	30
2.	Originality	20
3.	Technical skill and workmanship	20
4.	Thoroughness	10
5.	Dramatic value	10
6.	Personal Interview	10
	Total	100

It arranged properly, Science fairs contribute much to the development of scientific attitude, scientific interests and scientific temper. Science fairs play vital part in the school curriculum. Inter-woven in the texture of school curriculum, they work wonders for child's personality and acquaint them with the wide roads of scientific knowledge which lead to success in life.

SCIENTIFIC HOBBIES

By developing scientific hobbies, the students can derive the following benefits

1. Fulfilment of Psychological needs-As a result of the development of scientific hobbies one develops the constructive/creative habits of collecting items which develops the psychological tendencies in a natural manner. The student gives important contribution in his area and develops competence right from the beginning.

2. An aid to acquire the knowledge-As a result of development of scientific hobbies, students play a significant role in helping to acquire the knowledge of science. The child studies according to his interest, does practical work, testifies the laws, prepare, various charts, models and apparatus. In this manner, their interest help them to learn science.

3. Economic advantage -Scientific hobbies are advantageous from economic point of view. Interest in collection of various items related to science, preparations of charts, models and apparatus are useful both for the student and school from economic point of view. Interest in preparation of soap, ink, hair oil, candles, toothpaste, boot polish etc. can later be taken up as cottage industry.

4. Proper use of Leisure time The students get pleasure in spending their leisure in a useful manner. The children collect various items according to their interest. This increases their knowledge on one hand and saves them from idling their time away on the other. Thus, the scientific hobbies help the students in making proper and correct use of leisure time. .

SOME SCIENTIFIC HOBBIES

1. Improvisation of apparatus.
2. Photography, printing and developing of the negatives.
3. Maintaining scientific museum.

4. Drawing and craft work i.e. preparing models, charts, graphs and pictures, etc.
5. Preparation of articles of daily use like Soap, Washing powder Ink, Cream, Boot polish, Varnish, Toothpowder and Toothpaste, etc.
6. Collection of different kinds of rocks, soils, minerals, etc.
7. Assembling and devising scientific toys.
8. Providing first aid to the injured and needy persons.
9. Reading scientific literature.
10. Listening to Radio/Television broadcast related to scientific information.
11. Repair and maintenance of common household articles and equipment's e.g. Radio, Television, Tape-Recorder, VCR and VCP, Watches etc. - .
12. Participating in science fair and exhibitions.
13. Develop fire extinguishers.
14. Prepare Oxygen, Hydrogen-peroxide gases, etc.
15. Reading life histories of scientists.
16. Excursion hobbies.