SCIENCE INDIA FORUM BAHRAIN

"promoting a new generation of creative scientists"

in association with

Embassy of India, Bahrain

"National Children's Science Congress-2018"

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"NATIONAL CHILDREN'S SCIENCE CONGRESS" (in INDIA)

"BAHRAIN STUDENTS' INNOVATION CONGRESS " (in BAHRAIN)

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26th National Children's Congress (NCSC)

- National Children's Science Congress (NCSC) is a nationwide Science Communication programme started in the year 1993.
- National Council for Science and Technology Communication (NCSTC), Department of Science and Technology, Government of India organizes this program nationally through NCSTC-Network, New Delhi.
- NCSC is an initiative of Department of Science and Technology, Government of India.

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Who all are eligible to participate?

- Any child in the age group of 10-17 years can participate in the congress. It is not necessary that a participant should be a school/college student.
- A child scientist can not participate in the National Level CSC two times in the same age group.
- There will be 2 (two) age groups. Date for calculation of age is 31st December of the calendar year.

  Lower Group: 10 years to less than 14 years

  Upper Group: 14 years to less than 17 years

- A group of children not exceeding **TWO** can do the project study under a guide.

Note: Age will be determined as on 31st December of the calendar year.

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Role of School Authorities

- School will notify students of the Focal Themes and Sub themes.
- The Science teachers will brief the interested students of the process, SIF Bahrain can also come over to school and do presentation to short listed students.
- The School will conduct internal contest and select the projects that will represent at Bahrain Students' Innovation congress.
- **TWO Projects** in each category can be nominated by school.

Note: Age will be determined as on 31st December of the calendar year.

Objectives

- The main objectives of NCSC are:-
  - Stimulating scientific temper through the use and internalization of the method of science, i.e. observation, collection of data, experiments, analysis and then arriving at conclusions.
  - Encouraging the children to understand the environment, its problems and to help them to find feasible solutions by adopting the principle of 'Learning by doing'.

Nature of NCSC Projects

- The NCSC projects are expected to be :-
  - Based on the theme provided by Department of Science & Technology.
  - Innovative, simple and practical.
  - Representing teamwork.
  - Based on exploration of everyday life-situation.
  - Involving Experimentation and/or field based data collection.
  - Having definite outputs arrived through scientific methodology.
  - Related directly to community work in the local geographical area.
  - Having follow-up plans.

Motivations

- Two best projects from each age group are allowed to participate in the National Children's Science Congress.

- Selected projects at the national level will be provided with financial support to undertake its developments, patent support and guidance, scientific / technical consultancy, fabrication assistance, market information and networking with related research lab/institutes etc.

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Focal Themes of last 12 years

- 2006 & 2007 → *Biodiversity : Nurture nature for our future.*
- 2008 & 2009 → *Planet Earth : Explore, Share and Conserve.*
- 2010 & 2011 → *Land Resources : Use for prosperity, Save for posterity.*
- 2012 & 2013 → *Energy : Explore, Harness and Conserve.*
- 2014 & 2015 → *Understanding Weather and Climate.*
- 2016 & 2017 → *Science Technology & Innovation for Sustainable Development.*

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Focal Theme for 2018 - 2019

SCIENCE, TECHNOLOGY & INNOVATION (STI)

FOR A CLEAN, GREEN & HEALTHY NATION

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Sub Themes for 2018-19

- Ecosystem & Ecosystem Services.
- Health, Hygiene & Sanitation.
- Waste to Wealth
- Society, Culture & Livelihoods.
- Traditional Knowledge System (TKS).

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Sub Themes for 2018-19

Ecosystem & Ecosystem Services	**Focus :** Understanding an ecosystem, its Components, Associations, Functions & Services.	**Coverage :** Study of ecosystem like Aquatic & Terrestrial, Homestead garden, Agricultural field, Grassland; Accessing bio-diversity of a locality, Species diversity & seasonality, Habitat studies, Evaluating / estimating ecological services, etc.
Health, Hygiene & Sanitation	**Focus :** Understanding health, hygiene & sanitation as a system associated with way of life; how to manage such issues for wellbeing & development of living beings.	**Coverage :** Study of disease patterns, its impact, food & nutrition, studies on personal, family or community hygiene & its impact on wellbeing, Environment & health (water, land, soil, forest, etc.), human habitat management& health, etc.
Waste to Wealth	**Focus :** Reduce, Re-use, Re-cycling of waste; Resource recovery from waste.	**Coverage :** Area based waste management; Audit in domestic, market & institutional sector; Hospital waste management, Resource recovery from waste (domestic, agricultural, market, industrial, etc.), appropriate technology & management approaches for waste management & wealth recovery.

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Sub Themes for 2018-19

Society, Culture & Livelihoods	**Focus :** Demystification of superstitions & myths; Redefining cultural value system from ecological conservations; Sustainable consumption & production, Sustainable livelihood perspectives in an ecological context.	**Coverage :** Study on superstitions & approach for demystification, accessing cultural practices & its impact on ecological systems & service; Sustainable livelihood planning & action in an ecological context; Approach to promote sustainable production & consumption.
Traditional Knowledge System (TKS)	**Focus :** Traditional Ecological Knowledge (TEK), Traditional Technological Knowledge (TTK) & Traditional Value and Ethics (TVE) for ecological security, Human wellbeing & development.	**Coverage :** Documentation & validation of TKS specific to TEK, TTK & TVE applied to Ecosystem management, Agriculture, Housing, Animal husbandry, Handloom & Handicraft, etc. Review of its potentiality for ecological security & human wellbeing; effort on developing appropriate or new technology to strengthen TS based practices or augmentation of ongoing practices for ecological sustainability & human welfare, etc.

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Criteria for Good Projects

S	**Specific**	The subject / issues of study must be specific.
M	**Measurable**	The study must be measurable in quantitative / qualitative forms so that component of comparability is maintained.
A	**Appropriate**	The topic must be appropriate to focal theme and sub-themes, along with field study area, methodology must be appropriate to the content considered for the study.
R	**Realistic**	The content of the study must be realistic along with the methodology adopted for the purpose.
T	**Time bound**	Study must be carried out in limited time frame. The project activities may not destabilize the normal activity schedule of the Child.

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NCSC Official Website

http://www.ncsc.co.in

This website has all the information that you need to prepare the project.

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BAHRAIN STUDENTS' INNOVATION CONGRESS

Methodology for Doing a Good Science Project

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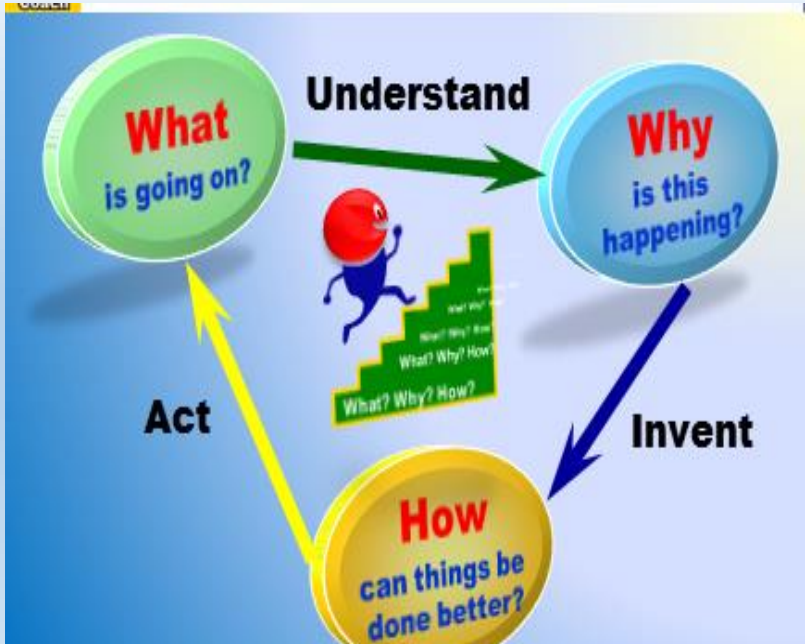
Goals

- Stimulate Scientific and Technological temper.

- Communicate Science and Technology – encourage involvement and intelligent scientific debate on current issues.



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General points to be remembered.

- **Team of 2 children**.
- Do not impose higher scientific projects on children – Higher level projects done by others to be presented by children, especially if the children cannot understand / explain the principle behind the project / concepts / methodology, etc.
- The project is to be done by the children – role of the Guide is to GUIDE and not to do the project by themselves.

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General points to be remembered.

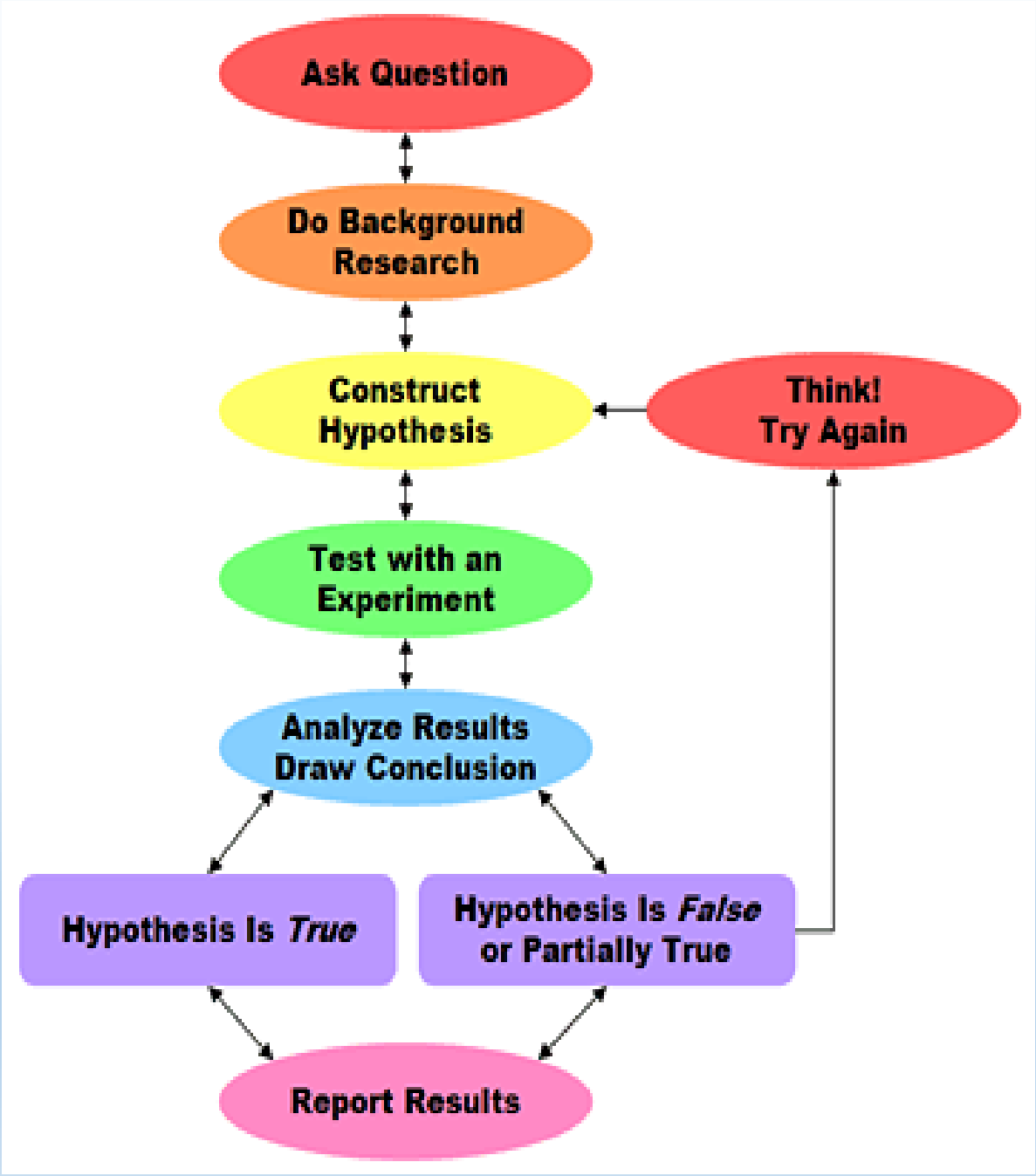
- Remember that during the presentation, the questions will be directed to the child-scientists and not to the Guide.
- The process of doing the project is equally important as to the outcome of the project.
- Only projects having an experimental component will be selected to the national level. Surveys can be one of the components of the project.

Scientific Method:

The scientific method is a way to ask and answer scientific questions by making observations and doing experiments.

The steps of the scientific method are to:

- **Ask a Question**
- **Do Background Research**
- **Construct a Hypothesis**
- **Test Your Hypothesis by Doing an Experiment**
- **Analyze Your Data and Draw a Conclusion**
- **Communicate Your Results**


Ask Question
Do Background Research
Construct Hypothesis
Think! Try Again
Test with an Experiment
Analyze Results Draw Conclusion
Hypothesis Is *True*
Hypothesis Is *False* or Partially True
Report Results

Ask a Question:

The scientific method starts when you ask a question about something that you observe:

How, What, When, Who, Which, Why, or Where?

And, in order for the scientific method to answer the question it must be about something that you can measure, preferably with a number.

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Do Background Research:

Do not re-invent the wheel..

Rather than starting from scratch in putting together a plan for answering your question, you want to be a savvy scientist using library and Internet research to help you find the best way to do things and ensure that you don't repeat mistakes from the past.

Good References	Bad References
Come from a credible source	Come from a source with poor credibility
Not too old	Out of date
Not biased (e.g. Glorification)	Not objective and fair, biased towards one point of view
Free of errors	Prone to errors
Properly cite the original source of all information	Do not cite where the information came from
Easy for other people to find or obtain	Difficult for others to obtain

Construct a Hypothesis

A hypothesis is an educated guess about how things work:

"If _____*[I do this]* _____, then _____*[this]*_____ will happen."

You must state your hypothesis in a way that you can easily measure, and of course, your hypothesis should be constructed in a way to help you answer your original question.

E. g. When you wash a bunch of leaves of a garden plant in a bowl of clean water, and if you get a change in colour of the water, the area has a lot of dust particles or could be a polluted area. (which can be quantitatively measured by setting up an experiment).

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Test Your Hypothesis by Doing an Experiment

Your experiment tests whether your hypothesis is true or false. It is important for your experiment to be a fair test.

You conduct a fair test by making sure that you change **only one factor at a time while keeping all other conditions the same**.

You should also **repeat your experiments several times (at least three times)** to make sure that the first results weren't just an accident.
Write the **experimental procedure** like a step-by-step recipe for your science experiment.

Repeating a science experiment is an important step to verify that your results are consistent and not just an accident. For a typical experiment, you should plan to repeat it at least three times (more is better).

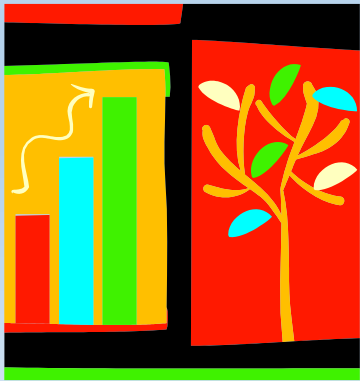
If you are doing an experiment that involves testing or surveying different groups, you won't need to repeat the experiment three times, but **you will need to test or survey a sufficient number of participants** to ensure that your results are reliable.

Analyze Your Data and Draw a Conclusion:

Once your experiment is complete, you collect your measurements and analyze them to see if your hypothesis is true or false.

Scientists often find that their hypothesis was false, and in such cases they will construct a new hypothesis starting the entire process of the scientific method over again.

Even if they find that their hypothesis was true, they may want to test it again in a new way.



Communicate Your Results

To complete your CSC project you will communicate your results to others in a final report and/or a display board.

Professional scientists do almost exactly the same thing by publishing their final report in a scientific journal or by presenting their results on a poster at a scientific meeting.

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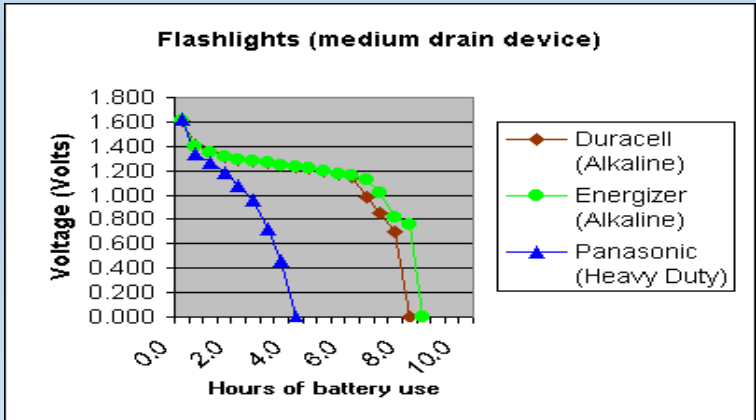
Data Analysis And Graphs.

Review your data. Try to look at the results of your experiment with a critical eye. Ask yourself these questions:
Is it complete, or did you forget something?
Do you need to collect more data?
Did you make any mistakes?

Calculate an average for the different trials of your experiment, if appropriate.

Make sure to clearly label all tables and graphs. And, include the **units of measurement** (Litres, Centimeters, grams, etc.).

Place your **independent variable on the x-axis** of your graph and the **dependent variable on the y-axis**.



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How to write the Final Report ?

TITLE PAGE.
ABSTRACT. → An abstract is an abbreviated version of your final report. (See the slide on how to write the Abstract)

TABLE OF CONTENTS.
Question, variables, and hypothesis.
BACKGROUND RESEARCH. → This is the Research Paper you wrote before you started your experiment.

Don't make this as your Final Report !!!

MATERIALS LIST.
EXPERIMENTAL PROCEDURE.
DATA ANALYSIS AND DISCUSSION. → This section is a summary of what you found out in your experiment, focusing on your observations, data table, and graph(s), which should be included at this location in the report.

CONCLUSIONS. → What you want draw from your project, Ideas for future research. Also state any follow up work that you carried out like awareness creation, conducting meetings, etc.

ACKNOWLEDGEMENTS.
BIBLIOGRAPHY.

Write the abstract section last, even though it will be one of the **first sections of your final report**.

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POSTERS/DISPLAYS

Organize your information like logically so that your audience can quickly follow the thread of your experiment / project.

Use a BIGGER font size. (Write in bigger letters so that people can see your charts from a distance itself.)

The title should be big and easily read from across the room.

Give your main tables / data analysis etc. leading to the Conclusion.
A graphical representation / picture speaks a thousand words!

Project Title:
Project Team /State
Name of School

Objectives:

Methodology:

Work Plan
Experimental Design./Methods
Observations
Compiled Data Table

Data Analysis
Graphical Representation

Conclusions
Follow up / Any other matter of relevance.
Photographs (3-4 nos).

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Throughout the process of doing the science project, you should keep a journal containing all of your important ideas and information. This journal is called a **laboratory notebook or a LOG BOOK.**

REMEMBER

LOG BOOK IS MANDATORY FOR ALL NCSC PROJECTS AND SHOULD BE BROUGHT WHILE MAKING THE PRESENTATION!

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Important Dates

- Internal Contest conducted by schools.
- Research Abstract submission to SIF BAHRAIN :
  To be Advised
- Schools to provide 2 teams per Category/Age Group.
- Bahrain Level Screening : To be Advised
- Two team per Category/Age Group will be selected to participate in National level.
- National Level Competition in India :
  To be Advised

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NCSC Participation in INDIA

1. Before registration, School must confirm with the Students that they can travel to INDIA (for the 05 day event), if selected.
2. The expenses for the trip to INDIA will not be borne by SIF-Bahrain.
3. The School has to make arrangements for the trip with return air ticket.
4. From airport in INDIA on arrival to airport in INDIA for return, all the expenses will be borne by Government of INDIA.

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NCSC Participation in INDIA

Number of Teams from Bahrain

Junior Category = 1

Senior Category = 1

TEAM LEADER AND PROJECT GUIDE ONLY CAN ATTEND THE NCSC in INDIA

PROJECT GUIDE SHOULD NOT HAVE ANY BLOOD RELATION IN ANY WAY TO THE TEAM MEMBERS