

NATIONAL SCHOOLS SCIENCE AND TECHNOLOGY FAIR 2014-15

**THEME: “YOUNG INVENTORS BLAZING AN EXCITING TRAIL
TOWARDS SUCCESS IN SCIENCE AND TECHNOLOGY”**

INTRODUCTION

In recognition of the important contribution that Science, Technology and Mathematics make towards the socio-economic development of our country, the Ministry of Education, Human Resource Development and Labour, sponsors and the Business Community are working towards organizing the District and National Schools Science and Technology Fair 2015. Using a partnership approach, mainly the secondary schools and the business community will work together for creating innovative and original projects which will contribute in developing the learning environment of students.

The **primary aim** of the Schools Science Fair is to stimulate and cultivate the creative, analytical and inventive capacities of young minds in the field of Science and Technology in Saint Lucia.

Specific Objectives of the Science Fair are to:

- Stimulate a renewed interest in Science, Mathematics and Technology in schools
- Provide students with a broader appreciation of the world around them
- Enhance the understanding of the role of Science, Mathematics and Technology in the sustainable development of the country
- Afford students greater opportunities for better understanding of the issues
- Develop the creative potential of students
- Enhance the analytical and problem solving skills of students
- Develop in students the ability to create innovative products that can be used/applicable to industries
- Build national competitive capacities within the framework of the CARICOM Single Market and Economy
- Create a long-term Industry/School partnership that will help secure the sustainability of the process

The **approach** is to develop partnerships by twinning the Science project development phase of the fair with local industries, culminating in a National Schools Science and Technology Fair.

- Industries in Saint Lucia will be invited to adopt one or more schools or to partner with a particular group project
- Support, either in the form of **materials, technical or financial** assistance, will be provided by the industry partner to the selected school or group project
- The industry partner will guide the development of the partner school(s) science project and see it through to its completion
- Project development will be done in a manner that will seek to maximize the creative learning potential and resourcefulness of students
- Projects will be displayed at the District and National Schools Science and Technology Fair
- A panel of judges will select the winners according to predetermined criteria
- An awards ceremony will be held on the last day of the fair
- All sponsored projects may bear the names of sponsors or industry partners

GUIDELINES

Partnership Arrangement:

- School/Industry twinning will be done, in as far as is practical, within geographic locations (this however, should not be a limiting factor).
- The Partnership Arrangement should be sustainable.
- Industry partners must provide technical, material or financial assistance. (Companies must adopt the school partner and establish an intimate working relationship during the entire life of the project).
- Copyright/Patent. Exhibits should be the property of the student groups unless otherwise agreed.
- Schools should prepare a comprehensive budget, and a financial and evaluation report must be submitted at the end of the project.
- Schools and business partners will work together to develop projects of mutual interest. However the business cannot dictate the nature and scope of **all** projects.

Science Fair:

The purpose of the Science Fair is to provide an opportunity for students to display their creativity, work and scientific process skills acquired in their studies. It is an event to spark the interest of all students about the different areas of scientific study that can be pursued as future careers.

General Guidelines:

The fair is open to all students at the following levels:

- Kindergarten /Primary
- Lower Secondary
- Upper Secondary
- Tertiary

Divisions and Categories:

Kindergarten/Primary

1. Science & Technology
2. Environmental Science
3. Home Economics
4. Agriculture Science
5. Mathematics

Lower Secondary (Forms I – III)

1. Science & Technology
2. Environmental Science
3. Agriculture Science
4. Mathematics

Upper Secondary (Forms IV – V)

1. Agricultural Science
2. Biology
3. Chemistry
4. Environmental Science
5. Home Economics
6. Mathematics
7. Physics/IT
8. Integrated Science
9. Alternative Energy
10. Sports

Tertiary

Science Technology/Mathematics

Innovation

The best innovative project overall will be selected from the **FOUR** levels.

- ALL Projects must be accompanied by a typewritten report containing the following information. Reports must be submitted **a week before** the beginning of the District and National Schools Science and Technology Fair. **Late submission will result in a deduction of 10 points from the overall total:**
 - (a) Abstract
 - (b) Statement of Problem or Task
 - (c) Hypothesis
 - (d) Procedure/Description
 - (e) Results/analysis of Results
 - (f) Discussion of Results
 - (g) Conclusion
 - (h) Bibliography

Exhibits Guidelines:

- The exhibit display must adhere to the instructions and details outlined in Annex I.
- Items should be securely attached to the backboard. Projects must be free-standing for the table display. Select appropriate colours for presentation/background materials.
- The students' name and grade must be on the back of the project in the lower right hand corner.
- Students should be prepared to discuss their projects from a technical standpoint with the judges and to explain the projects in simplified terms to the general public.
- Science Fair Project must follow the following five steps:
 - A Problem: In the form of a question, this states what the scientist wishes to explore, develop or produce.
 - Hypothesis: This is an intelligent guess of what the scientist thinks will happen and why he/she thinks so.
 - Procedures/Description: These are step-by-step instructions which will be followed to successfully complete the project. This is a very

important step. To verify the results any scientist should be able to understand and follow exactly all steps performed to achieve similar results.

- Results: As the project is being developed, the scientist must keep accurate records of what happens. He/she must then be able to show what happened in an organized, logical and clear way. Results can be shown by graphs, charts, pictures or photographs, and/or tables of data.
- Conclusion: The scientist restates his/her hypothesis explaining whether it was correct or incorrect. After completing the experiment and learning from the data (results) collected the scientist must explain why he/she believed the experiment turned out the way it did.
- Recommendations

JUDGING CRITERIA

NATIONAL SCHOOLS SCIENCE & TECHNOLOGY FAIR 2015

JUDGE'S SCORE SHEET

JUDGE'S NAME:

SCHOOL:

Division:

Project title:

Category:

PARTICIPANTS:

A-WRITTEN REPORT (10 Marks) - In Section A circle one mark per line - Place the total for section A in the box A. **LATE REPORTS WILL NOT BE JUDGED.**

INFORMATION (8 Marks)		Total Part A
Has all the required information been provided? (abstract, title, purpose, procedure, results, conclusion)	0 1 2 3 4 5	
Is the information in the specified format? (750-900 words Tertiary level; 500-700 Secondary level; Up to250 Primary level, excluding title, references, bibliography)	0 1	
Is the information presented clearly and with continuity?	0 1 2	

PRESENTATION (2 Marks) (Neatness, grammar, spelling)	0 1 2	10)
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B-- DISPLAY (20 Marks) - In section B circle one mark per line - Place the total for section B in box B

SKILL (10 Marks)		Total Part B
Is the display neat and carefully done?	0 1 2	<input style="width: 50px; height: 50px;" type="text"/>
Is the lettering legible and well done and readable from at least 5 ft. away?	0 1 2	
Is the grammar and spelling appropriate?	0 1 2	
Is the layout logical and self-explanatory?	0 1 2	
Is the content clearly and logically presented?	0 1 2	
DRAMATIC VALUE (10 Marks)		
Is the display visually balanced and uncluttered?	0 1 2 3 4 5	
Does the display capture attention?	0 1 2 3 4 5	

C-ORAL PRESENTATION (20 Marks) - In section C choose **ONE** level and circle **ONE** mark in that level

Level 1: The student is unsure of the material or the process of the experiment and has difficulty answering questions about the project. The vocabulary may be inappropriate. The project may not be the student's work.	6 7 8 9 10	Total Part C
Level 2: The student can summarize the project adequately and can answer correctly the majority of questions about the project. Appropriate vocabulary is used.	11 12 13 14 15	<input style="width: 50px; height: 50px;" type="text"/>
Level 3: The student explains the project well and can answer correctly all questions about the project clearly and logically. Shows evidence of background reading in the area and is aware of project extensions.	16 17 18 19 20	

D- ORIGINALITY and CREATIVITY (15 Marks) - In section D choose **ONE** level and circle **ONE** mark in that level

Level 1: Little imagination shown. Project design is simple with minimum student input. A project entirely from textbook, magazine or online. An exact duplicate of previous project.	0 1 2 3	<input style="width: 50px; height: 50px;" type="text"/> (out of 15)
Level 2: Some creativity shown in a project of good or fair design. Standard approach using common resources/equipment. Topic is a current or common one.	4 5 6 7	
Level 3: Imaginative project. Good use of available resources. Well thought out -above average approach. Creativity in design or materials.	8 9 10 11	
Level 4: A highly original project or a novel approach. Shows resourcefulness, creativity in design, use of equipment and/or construction of experiment.	12 13 14 15	

E- SCIENTIFIC THOUGHT (35 marks) CIRCLE ONE PROJECT TYPE AND ONE LEVEL

EXPERIMENT STUDY	STUDY	INNOVATION	ALLOWABLE RANGE
<p>Definition: An investigation undertaken to test a scientific hypothesis using experiments. Experimental variables, if identified, are controlled to some extent.</p>	<p>Definition: A collection and analysis of data to reveal evidence of a fact or a situation of scientific interest. It could include a study of cause and effect relationships or theoretical investigations of scientific data</p>	<p>Definition: The development and evaluation of innovative devices, models or techniques or approaches in technology, engineering, or computers (hardware or software).</p>	<p>Circle ONLY ONE mark at THE LEVEL SELECTED</p>
<p>Level 1 (low) Duplication of a known experiment to confirm the hypothesis. The hypothesis is predictable.</p>	<p>Level 1 (low) Study of printed material related to the basic issue.</p>	<p>Level 1 (low) Building models (devices) to duplicate existing technology</p>	<p>5 7 9 11</p>
<p>Level 2 (fair) Extend a known experiment through a modification of procedures, data gathering and application.</p>	<p>Level 2 (fair) Study of material collected through compilation of existing data and through personal observations. The display attempts to address a specific issue.</p>	<p>Level 2 (fair) Make improvements to, or demonstrate new applications for existing technological systems or equipment and justify them.</p>	<p>13 15 17 19</p>
<p>Level 3 (good) Devise/carry out an original experiment with controls. Variables identified. Some significant variables are controlled. Analysis such as graphs/simple statistics.</p>	<p>Level 3 (good) Study based on observations and literary research illustrating various options for dealing with a relevant issue. Appropriate analysis (arithmetical, statistical or graphical) of some significant variables(s).</p>	<p>Level 3 (good) Design and build innovative technology or provide adaptations to existing technology that will have human benefit and/or economic applications.</p>	<p>21 23 25 27</p>
<p>Level 4 (excellent) Devise and carry out original experimental research which attempts to control or investigate most significant variables. Data analysis includes statistical analysis.</p>	<p>Level 4 (excellent) Study correlating information from a variety of significant sources which may illustrate cause and effect or original solutions to current problems through synthesis. Significant variable(s) are identified with in-depth statistical analysis of data.</p>	<p>Level 4 (excellent) Integrate several technologies, inventions or designs and construct an innovative technological system that will have human and/or commercial benefit.</p>	<p>29 31 33 35</p>

Total Score: _____

Judge's signature _____

PRIZES:

Certificates of participation will be given to ALL students at the District and National levels. Trophies will be given at the District level to the top **THREE** projects, while at the **National level a first, second and third prize will be issued in each category depending on the number of projects in the category.** The three (3) best innovative project overall will receive special prizes.

ACHIEVEMENTS

Every year five (5) lower sixth form science students who excel in their studies and participated in the National Science Fairs will represent St Lucia at the Caribbean Youth Science Forum (CYSF) in Trinidad and Tobago during the second week of August. In addition, starting in 2012 two (2) students who are actively involved and promoting science activities will be sponsored by LUCELEC to participate in the –Student Program for Innovation Science and Engineering (SPISE) in Barbados for four (4) weeks during August.

In 2013, SAGICOR introduced a new challenge competition for all Secondary schools students on sustainability. There were seventeen (17) projects in total, with the `OBSTACLE DETECTOR` from St Mary`s College emerging the top project from the competition.

This project represented St Lucia at the Regional competition in April, which was held in Barbados. The project emerged the `BEST CREATIVE AND INNOVATIVE` project in the Region, receiving a cash prize, science kits for the school and a one(1) week all paid trip for the student and teacher to the Kennedy Space Centre in Florida.

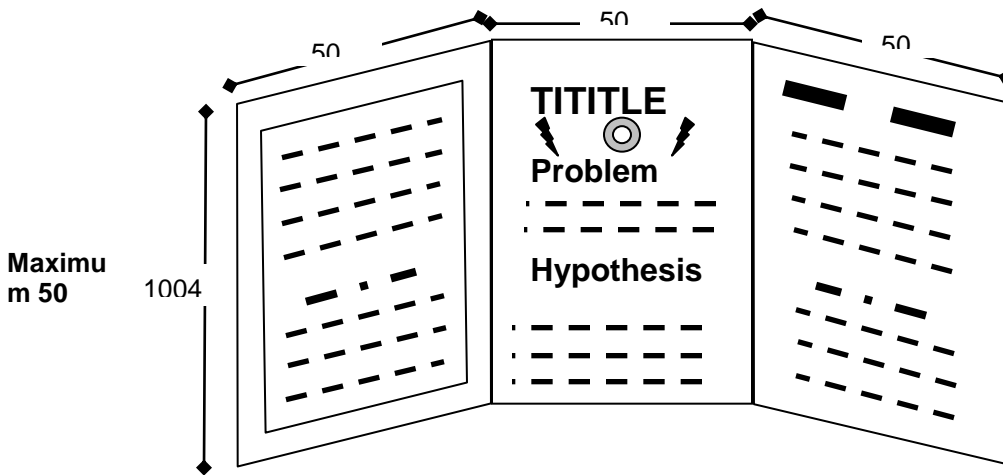
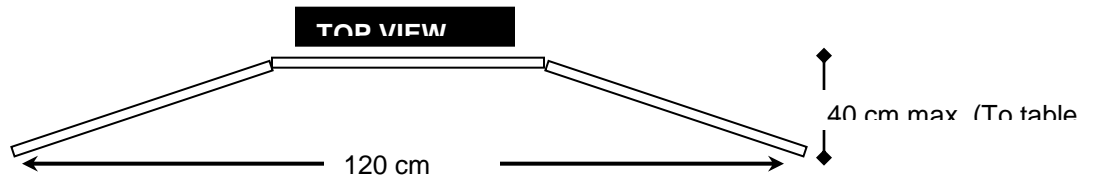
This challenge competition continues this year with sensitization starting mid September and the finals on November, 28th 2014 at the Derek Walcott Square.

Furthermore, every year the top Environmental projects from the National fair enter the World Environmental competition. This year Marigot Secondary school, for the second year running was declared the winning project for St Lucia.

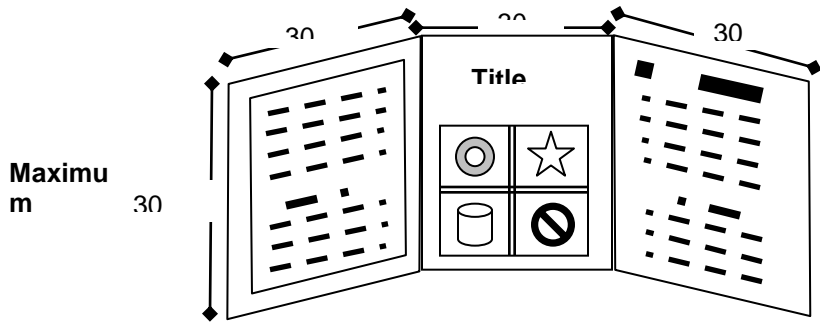
ANNEX 1

YOUR DISPLAY

1. The backboard should be a 3-sided shape within the size limitations stated below. All projects must have a display.
2. When displayed, the project should not occupy more than 120 cm of length and 40 cm of dept. If equipment is to be displayed it must be contained within this prescribed area (see top view diagram).
3. Backboards may be made of Masonite, pegboard, hardboard, wood, or cardboard to which poster paper, cardboard or fabric may be attached.
4. The centre panel should contain the project title, hypothesis and statement of the problem (lettering should be clear and large enough for someone to see from a distance). It may also include visual material (photos, drawings, etc).
5. Side panels should have supporting material (more photos, drawings, graphs, charts etc.)
6. It is suggested that you put the Procedure on the left panel and the Results and Conclusion on the right panel. Keep this information brief and be sure to double-check your grammar and spelling.
7. Plan ahead to avoid overcrowding of material on display.
8. Projects are expected to be in accordance with the specified guidelines. The Organizing Committee must be informed at least one month in advance if projects are of greater dimension and if there is need for specific requirements (i.e. transformer, extension cords, etc.)



* All measurements in centimetres
* Centre panel may be less 50cm if side panels are decreased proportionately.



* All measurements in centimetres
* Centre panel may be less 30cm if side panels are decreased proportionately.

ANNEX 2

Possible Science projects ideas for Primary schools

1. Pollution
 - Marine pollution-solid waste pollution and water quality testing
 - Riverie systems- Agricultural pollution-water quality testing, solid waste, prevention of siltation
 - Solid waste projects
 - Plastic project -recycling
2. Renewable energy and energy saving projects
 - Improving efficiency of domestic and or commercial water and electrical usage
 - Improving house designs and constructions
3. Agricultural projects
 - Improving agricultural and or fisheries production
 - Improving standards of food products
 - Producing suitable local animal feed
4. Disease vector control projects
 - Rats
 - Mosquitoes
5. Earth Science
 - Does the moon rise every night at the same time and in the same location?
 - How accurate are long range weather forecast?
 - Is rainwater absorbed at the same rate in different kind of soils?
 - From which direction does the wind blow most frequently?
 - How can the problem of litter in schools and the environment be avoided?
6. Life Science
 - Which grows faster, body hair or scalp hair?
 - How do fingerprints differ?
 - Who has bigger hands: boys or girls?
 - Can mice distinguish color?
 - Do mint plants repel insects?
 - What color of flowers attracts hummingbirds best?
 - Can Technology be utilized in the use of artificial plant propagation and materials to satisfy human food needs

7. Physical Science

- What kind of materials can put out a fire?
- Can seawater be desalted by freezing to be used locally?
- What is the best shape for a kite/
- Which holds two materials together better, a screw or nail?
- How does the design of a paper airplane affect its flight?
- Do all objects fall at the same speed/
- How do Technology related to energy use has enhanced the lives of people in the past and present/

Area	Collaborative agencies
Marine Pollution	Fisheries
	Solid waste
	CEHI
	SMMA
Riverine pollution	Solid waste
	CEHI
	Forestry
	Agriculture
	WASCO
Solid waste and plastics recycling	Solid Waste
	Recyclers in St. Lucia
Renewable and energy saving projects	Established hotels
	LUCELEC
	WASCO
Improving house design and construction	Planning
	Architects guild
Improving agricultural/Fishery production	Agriculture and Fisheries

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