



Republic of the Philippines  
DEPARTMENT OF EDUCATION  
Region VII, Central Visayas

**SCHOOLS DIVISION OF NEGROS ORIENTAL**  
www.depednegor.net

**DIVISION MEMORANDUM**

No: 650, s. 2018

August 30, 2018

**DIVISION SCIENCE AND TECHNOLOGY FAIR FOR SCHOOL YEAR 2018-2019**

**TO: Assistant Schools Division Superintendents  
CID and SGOD Chief  
Education Program Supervisors/Division Coordinators  
Public Schools District Supervisors/District in Charge  
School Heads of Public and Private High School & Elementary**

1. There will be a Division Science and Technology Fair (STF) on **October 12, 2018** at Negros Oriental High School, Gymnasium, Dumaguete City.
2. The STF aims to promote Science and Technology consciousness among the youth and identify the most creative/innovative and the best science researchers who will represent the division in the regional competition.
3. The participants to this STF are student researchers, Quiz contestants, and coaches.
4. Elementary Schools; Junior and Senior High Schools are enjoined to conduct school wide STF and Science Quiz in grade 6 and grade 10 for the selection of the best researchers and student quiz contestant who will represent the school in District Level Competition.
5. School Districts are requested to submit to the Division Scientific Review Committee (SRC), Attn: Ms Alma Cora M. Catacutan,
  - a) district winners of Science Investigatory Projects (SIP) write up and required forms (Annex 1-4) not later than October 5, 2018.
  - b) First Place Quiz winners in grade 6 and grade 10.
6. The SIP categories are Life Science, Physical Science, Robotics and Intelligent Machines in Individual and Team Competitions.
7. The following documents are enclosed for information and guidance:

[3 1 AUG 2018

Tel. Nos: (035)225-2838 / 225-0667/422-7644 (Division Supt's Office); (035) 225-1622 (CID); (035) 225-1623 (Legal Section); (035)225-8180 (SGOD); (035) 422-7643 (Cash Section); (035) 422-8511 (Planning Section); (035) 225-6987 (Record's Section); (035) 422-5283 (Admin. Section); (035) 422-0267 (Personnel Section); (035) 225-2378 (Guard/Medical/Dental Sections); (035) 225-7012 (Educ. Facilities Section); (035) 225-1640 & (035) 225-1640 (Acct. Budget Section); (035) 422-3921 (Supply Section)



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|                 |   |
|-----------------|---|
| Enclosure No. 1 | Guidelines on the National STF 2018-2019                        |
| Enclosure No. 2 | Schematic Diagram on the flow of STF Activities                 |
| Enclosure No. 3 | 2018-2019 Calendar of Important STF Activities and Requirements |
| Enclosure No. 4 | Format of Research Paper  |
| Enclosure No. 5 | Format of invention Report Paper                                |
| Enclosure No. 6 | Checkpoints for SRC Review                                      |
| Enclosure No. 7 | SRC Review and Recommendation Report                            |
| Enclosure No. 8 | Board of Judges (BOJ) Project Evaluation Form                   |

8. The registration fee for each participant is one hundred pesos (P100.00). This will cover the honorarium of judges, meals and snack of judges and working committees, trophies and medals
9. Registration fee, transportation, per diem and other expenses will be charged to school MOOE/PTA/SEF and other local fund available subject to the usual accounting and auditing rules and regulations of COA.
10. School Heads and District Supervisors/District In-Charge are requested to disseminate this information to all concerned teachers and students.

**WILFREDA D. BONGALOS, PH. D., CESO V**  
Schools Division Superintendent

8/20/18

31 AUG 2018

Tel. Nos: (035)225-2838 / 225-0667/422-7644 (Division Supt's Office); (035) 225-1622 (CID); (035) 225-1623 (Legal Section); (035)225-6180 (SGOD); (035) 422-7643 (Cash Section); (035) 422-8511 (Planning Section); (035) 225-6987 (Record's Section); (035) 422-5283 (Admin. Section); (035) 422-0267 (Personnel Section); (035) 225-2376 (Guard/Medical/Dental Sections); (035) 225-7012 (Educ. Facilities Section); (035) 225-1640 & (035) 225-1640 (Acct. Budget Section); (035) 422-3921 (Supply Section)

## **GUIDELINES ON THE NATIONAL SCIENCE AND TECHNOLOGY FAIR 2018 - 2019**

Similar to the previous national level fair, the National Science and Technology Fair (STF) for 2018 -2019 is an Intel ISEF-affiliated fair. As such, the requirements for affiliated fairs should be met and followed as stated in the ISEF guidelines mentioned on page 2 of this Memorandum.

### **1. The Science Fair**

The Bureau of Curriculum Development of the Department of Education (DepEd-BCD) shall conduct the **National STF 2018 -2019** on **February 18 - 22, 2018**.

The STF aims to promote Science and Technology consciousness and a culture of innovation among the youth. The NSTF also aims to identify the most creative and innovative student researchers from the Junior and Senior High School who shall represent the country in the international Science research fairs.

In addition to the existing research competition, there shall be other activities within the fair as described below.

#### **1.1 National Science Innovation Expo**

Innovation Expo is designed to showcase products and innovation of learners. It aims to crowd-source and display science and technology innovations and solutions to everyday challenges. Furthermore, it also serves as a venue to exchange ideas on Research and Development and Science and Technology.

The format of the paper is found in **Enclosure No. 5**.

The region can send two (2) inventions by an individual or by a team composed of a maximum of two (2) members only.

**Gawad Likhang Agham** shall be awarded to the most innovative invention exhibited at the fair.

### **2. The Research Competitions**

The competitions will be conducted among Junior and Senior High School students from both public and private schools. The first place winners in each of the categories at the Regional level shall represent the region to the National STF competition as approved by the national Scientific Review Committee (SRC).

The competition will start at the school level advancing to the division, regional, national then to the international level. Regional Science High Schools (RSHSs) are **expected** to join the regional fair directly. RSHSs may submit only one entry per category or a maximum of six (6) projects in the regional fair.

The participation of schools in the NSTF shall be clustered into **three major categories**: life science, physical science and robotics and intelligent machines. These major categories are further classified into different subcategories. See Enclosure No.

| Life Science (LS)  |              | Physical Science (PS) |              | Robotics and Intelligent Machines (RIM) |              |
|--------------------|--------------|-----------------------|--------------|---|--------------|
| Individual Project | Team Project | Individual Project    | Team Project | Individual Project                      | Team Project |

### 3. Levels of Research Competition

#### School/Division Level

The conduct of the school/division level shall be done on a weekend to conform with **DepEd Order No. 26, s. 2010 (Calendar of School Events and Activities For SY 2010-2011)**. The school and division level STF should refer to Enclosure No. 3 for the schedules of the competition.

The following are the forms and manuscripts to be submitted in all levels of the competition:

1. RESEARCH PLAN
2. FORMS for all the projects
  - A. Checklist for Adult Sponsor
  - B. Student Checklist (1A)
  - C. Research Plan (NOTE: No need to attach the Research Plan Instructions)
  - D. Approval Form (1B)
  - E. Regulated Research Institutional/Industrial Setting Form (1C)
3. FORMS depending on the type of research (e.g involving humans, vertebrate animals, hazardous chemicals, etc.)
  - A. Qualified Scientist Form (2)
  - B. Risk Assessment Form (3)
  - C. Human Participants Form (4)
  - D. Human Informed Consent Form
  - E. Vertebrate Animal Form (5A)
  - F. Vertebrate Animal Form (5B)
  - G. Potentially Hazardous Biological Agents Risk Assessment Form (6A)
  - H. Human and Vertebrae Animal Tissue Form (6B)
  - I. Continuation Project Form (7)
4. Abstract (Maximum of 250 words)  
The abstract should include the following:
  - A. Purpose of the experiment
  - B. Procedure
  - C. Data conclusion

The abstract may NOT include the following:

  - A. Acknowledgement
  - B. Work of procedures done by the mentor
5. Research Paper (Include the Title Page, Abstract, Main Body, and References)
6. Project Evaluation Form (see Enclosure No. 11)
7. Scanned copy of the log book in pdf format

Project of proponents should have been screened by the Institutional Review Board (IRB)/Scientific Review Committee (SRC) at the school-level. All school level winners must be certified by the division SRC to join in the division-level fair.

The Division Science/Mathematics Supervisor shall be a member of the BOJ who shall determine the school/division winners of the different categories and fair divisions.

With the exception of RSHSs and PSHSs, students of both regular and science high schools of private and public high schools shall participate in the division-level STF.

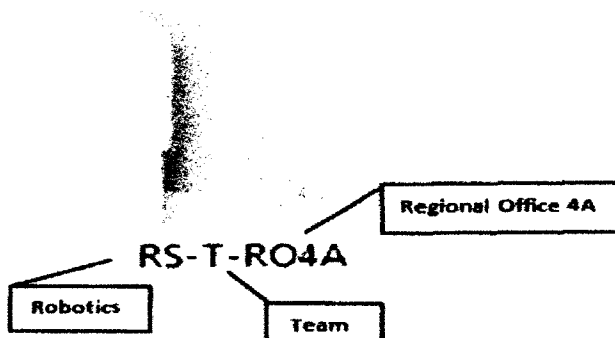
Winners at the school level shall be officially endorsed to the division office for the division-level. Likewise, the division-level winners shall be officially endorsed to the regional office.

**Regional Level**

The first place winners at the division level in both clusters shall be properly scrutinized by identified members of the SRC for the regional level competition.

The official list of the **first place winners at the regional level**, report on the conduct of STF, **hard and soft copies** of the manuscripts and other necessary documents shall be officially **endorsed by the Regional Office to DepEd Central Office through the Bureau of Curriculum Development**. The soft copies must be saved in the CD containing six (6) **folders representing the six projects from each category**. Each folder must contain the manuscripts in **Pdf format** and another folder containing all the required forms including the the research logbook.

Example:



| Folder Code  | Content of the Folder  | Sample Content of the folder for Forms                |
|--|--|---|
| <b>LS-I-RO1</b><br>*life science-individual-region 1 | Manuscript:<br><b>LS-I-RO1-School Name</b>                                     |   |
|  | Folder containing the needed forms:<br><b>LS-I-RO1-Forms</b>                   | <b>LS-I-RO1-Form 1</b>                                |
|  | *name of the folder where all the soft copies of the necessary forms are found | <b>LS-I-RO1-Form 2</b><br><br><b>LS-I-RO1-Logbook</b> |
| LS-I-RO1<br>LS-T-RO1<br>PS-I-RO1<br>PS-T-RO1         | LS-I-RO1-Forms   | → LS-I-RO1-Datalogbook.pdf<br>→ LS-I-RO1-Form1.docx   |

The Report of the Conduct of the STF shall include the following:

1. Title
2. Table of Contents
3. Introduction/Rationale
4. Detailed Information
  - General information
  - SRC Deliberation (include the results , findings and recommendations)
  - Program of Activities (day-to-day activities)
  - List of Entries (include the brief profile of the research adviser of each entry)
  - List of Winners (Research & Innovation Congress)
  - Trend Analysis (results from 3 consecutive years)
  - Financial Report
5. Conclusions
6. Recommendations
7. Appendix

**National Level**

The Finalists approved by the National SRCs of the six (6) categories shall represent the region to the national-level STF to be conducted on February 18 - 22, 2019 at a venue to be announced later.

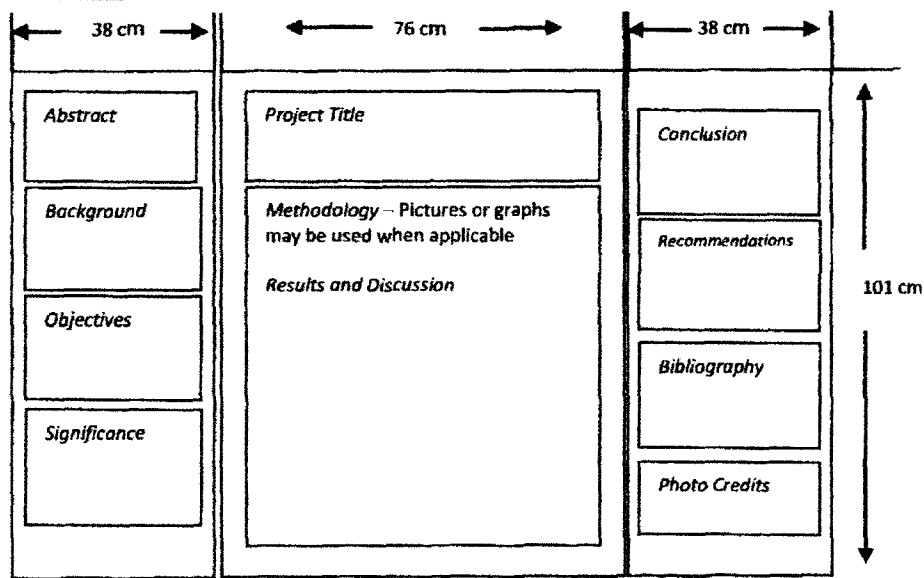
**4. The Research Project**

Science research projects must conform with international rules and standards published by the *Intel International Rules for Pre-college Science Research: Guidelines for Science and Engineering Fair 2019*. Each project is expected to have a Research Adviser and an Institutional Review Board (IRB) or a Scientific Review Committee (SRC).

The research project should cover a maximum of twelve (12) continuous months from January 2018 to December 2018.

**Ethics Statement. Scientific fraud and misconduct is not condoned at any level of research or competition. Plagiarism, use or presentation of other research’s work as one’s own and fabrication of data will not be tolerated. Fraudulent projects are disqualified from the competition.**

**5. The Exhibit**



## 5.1 Display and Safety Regulations

The project display using **sets of any paper or board** summarizes the research project and must focus on the proponent's work for this year's study, and if applicable, with only minimal reference to previous research. **Tarpaulins will not** be used in the NSTF in support of the environmental advocacy of the government in reducing the consumption of non-biodegradable or non-recyclable materials.

The safety regulations that must adhere to or should be consistent with the guidelines found on page 24 of the ISEF guidelines (<https://sspcdn.blob.core.windows.net/files/Documents/SEP/ISEF/2019/Rules/Book.pdf>).

The following items should be seen in the project display: Abstract, Background, Objectives, Significance, Methodology, Results and Discussion, Conclusion, Recommendations, Bibliography and if applicable, Photo Credits (including illustrations and graphics).

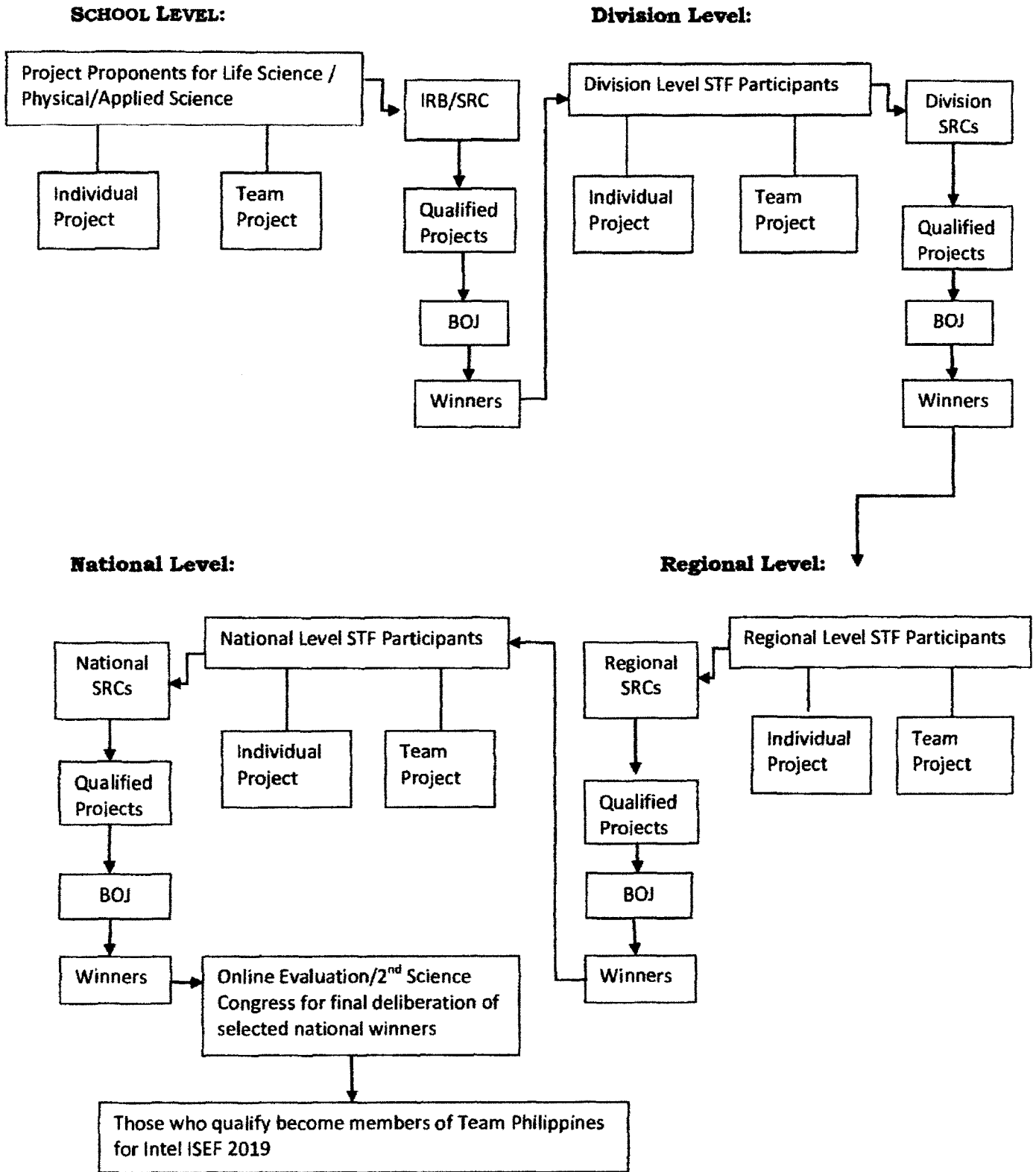
*(Note: A proponent should **not** include his/her face in the project's procedure/illustration in the display.)*

## 5.2 Requirements for presentation by the Project Proponent/s to the BOJ during the exhibit are the following:

- Copy of the required forms
- Copy of the research write-up
- Project data book or student journal complete with dates of entry, number of pages, and all other details (Refer also at ISEF Student Handbook website: <https://student.societyforscience.org/international-rules-pre-college-science-research>)

6. In addition to the usual research competition, the **National Science & Technology Fair Academy** shall be held to give the participants opportunity for learning and development through the attendance in various shop talks designed to promote innovation, creativity and excellence in science and research education.

**SCHEMATIC DIAGRAM OF THE FLOW OF STF ACTIVITIES**





**CALENDAR OF IMPORTANT STF ACTIVITIES AND REQUIREMENTS**

| Activity  | Date                           | Required Items   | Persons Involved  | Venue                                 |
|---|--------------------------------|--|---|---------------------------------------|
| Orientation Workshop for Innovation Expo  | October 2018                   | DepEd Memo   | BCD Staff, WIPO, ITSO   | TBA                                   |
| Submission to BCD of the Regional entries <u>properly endorsed by the RO</u>                  | on or before December 3, 2018  | Hard copy and soft copy of write-ups in CD to be submitted to BCD or emailed to <a href="mailto:nstfs@deped.gov.ph">nstfs@deped.gov.ph</a> . | BCD Staff<br>Project proponents<br>Project advisers<br>Dept. Heads / Div. and Regional Science and Math Supervisors | RO to BCD-CSDD                        |
| Submission of entries to National SRCs  | on or before December 10, 2018 | Complete copies of write-ups (Hard and soft copies)  | BCD Staff<br>Regional Science and Math Supervisors  | Identified addresses                  |
| Submission of entries to BCD of the regional entries for the National Science Innovation Expo | December 14, 2018              | Complete copies of write-ups (Hard and soft copies)  | BCD Staff<br>Regional Science and Math Supervisors  | Regional Science and Math Supervisors |
| Meeting of SRCs members for deliberation and submission of consolidated SRC forms             | January 8 - 9, 2019            | Master list of participants<br>Master list of SRCs<br>Write-ups<br>Evaluation Form for SRCs<br>List of qualified Projects                    | Identified SRCs<br>BCD Staff  | BCD Conference Room                   |
| First round of selection  | January 11, 2019               | Innovation Expo<br>DepEd Memo, Complete copies of write up (hard and soft) and products  |   |                                       |
| Meeting of RCs and return of manuscripts /write-ups to RCs                                    | January 10 -11, 2019           | Affiliated Questionnaire matrix (master list of proponents using ISEF matrix)<br>Evaluation Forms per project with SRC comments              | RCs<br>Project Proponents   | BCD Conference Room                   |
| Submission of Revised Write-up to BCD   | January 23, 2019               | soft copy of revised write-ups in CD to be submitted to BCD or emailed at <a href="mailto:nstfs@deped.gov.ph">nstfs@deped.gov.ph</a>         | Regional Coordinators<br>BCD Staff  | BCD-CSDD                              |
| Submission of write-ups to identified BOJs  | January 25, 2019               | one copy each of the identified BOJ  | BCD Staff   | Identified addresses                  |
| Actual conduct of the National STF  | February 18 - 22, 2019         | Display posters  | Regional delegates<br>Project advisers<br>RCs and BOJ   | To be announced                       |
| Online Mentoring of Top Entries   | February to April 2019         | Revised Research Papers  | Participants, advisers, Research mentors, Regional supervisors and BCD staff  | N/A                                   |
| Science Cliniquing  | May 6 - 10, 2019               | Finalized Research Papers and Posters  | Participants, advisers, Research mentors, Regional supervisors and BCD staff  | To be announced                       |

### Format of Research Paper

Investigatory papers that were reviewed by the national SRCs in the past years were found to have inadequacies in the content, particularly in the areas cited below. To ensure that the investigatory papers are of good quality, students must adhere to the guidelines shown below. These can be found in the Guidelines and in the Student Handbook and Research Plan Instructions published in the website (<https://www.societyforscience.org>).

I. **Research Plan:** (This is compiled separately from the rest of the investigatory paper):

All projects should include the following:

- A. Question or Problem being addressed
- B. Goals /Expected Outcomes /Hypotheses
- C. Description in detail of method or procedures (The following are important and key items that should be included when formulating ANY AND ALL research plans.)
  - **Procedures:** Detail all procedures and experimental design to be used for data collection.
  - **Data Analysis:** Describe the procedures to be used to analyze the data/results that answer research questions or hypotheses.
- D. **Bibliography:** List at least five (5) major references (e.g. science journal articles, books, internet sites) from your literature review. If you plan to use vertebrate animals, one of these references must be an animal care reference.

II. **Project Data Book:**

A project data book is your most treasured piece of work. Accurate and detailed notes make a logical and winning project. Good notes show consistency and thoroughness to the judges and will help you when writing your research paper. Data tables are also helpful. They may be a little 'messy' but be sure the quantitative data recorded is accurate and that units are included in the data tables. Make sure you date each entry.

III. **Research Paper:**

A research paper should be prepared and available along with the project data book and any necessary forms or relevant written materials. A research paper helps organize data as well as thoughts. A good paper includes the following sections.

- a) **Title Page and Table of Contents:** The title page and table of contents allows the reader to follow the organization of the paper quickly.
- b) **Introduction:** The introduction sets the scene for your report. The introduction includes the purpose, your hypothesis, problem or engineering goals, an explanation of what prompted your research, and what you hoped to achieve.
- c) **Materials and Methods:** Describe in detail the methodology you used to collect data, make observations, design apparatus, etc. Your research paper should be detailed enough so that someone would be able to repeat the experiment from the information in your paper. Include detailed photographs or drawings of self-designed equipment. Only include this year's work.
- d) **Results:** The results include data and analysis. This should include statistics, graphs, pages with your raw collected data, etc.
- e) **Discussion:** This is the essence of your paper. Compare your results with theoretical values, published data, commonly held beliefs, and/or expected results. Include a discussion of possible errors. How did the data vary between repeated observations of similar events? How were your results affected by uncontrolled events? What would you do differently if you repeated this project? What other experiments should be conducted?

- f) **Conclusions:** Briefly summarize your results. State your findings in relationships of one variable with the other. Support those statements with empirical data (one average compared to the other average, for example). Be specific, do not generalize. Never introduce anything in the conclusion that has not already been discussed. Also mention practical applications.
- g) **Acknowledgements:** You should always credit those who have assisted you, including individuals, businesses and educational or research institutions. However, acknowledgments listed on a project board are a violation of D & S Display rules and must be removed.
- h) **References/Bibliography:** Your reference list should be written based on the Chicago Manual of Style. For more information, you may visit the websites below:

- <http://www.chicagomanualofstyle.org/home.html>
- <http://www.calvin.edu/library/knightcite/index.ph>

#### IV. Abstract:

The abstract should be 250 words or less. Do not discuss specific aspects of the research in great detail, including experimental procedures and statistical methods. Any information that is unnecessary to include in a brief explanation should be saved for the written research paper or the project exhibit board.

If the project is a continuation from a previous year, the abstract should summarize the current year's work only. If mention of supporting research from previous year(s) is necessary, it must be minimal.

If the abstract text includes special characters, such as mathematical symbols, which won't be translated electronically, please spell out the symbol.

Do not include acknowledgements in the abstract. This includes any references to mentors, institutional facilities, and awards or patents received.

Title

Finalist's Name (or names, if a team project)

School Name, City and Region

Purpose

- An introductory statement providing background, namely the reason, for investigating the project topic.
- A statement of the problem the research is looking to solve or the questions being tested.

Procedure

- A brief overview of how the investigation was conducted, highlighting key points, and including methods and resources used.
- Do not provide details about materials used in the research unless they greatly influenced the procedure or were needed to conduct the investigation.
- An abstract should only include procedures done by the Finalist. Do not include work done by a mentor (such as surgical procedures) or work done prior to the Finalist's involvement.

Observations/Data/Results

- This section should provide key results that lead directly to the conclusions you have drawn.
-

- Do not include unnecessary data or observations about the results, nor tables, charts, graphs or other images. While these belong in the research paper or the project board, they do not belong in the formal Intel ISEF abstract.
- Unless significant, do not include any of the experimental design difficulties encountered in research.

#### Conclusions

- This section should be confined to a short summary in 1-2 sentences. It is a reflection on the research process and results, which may include conclusive ideas, important applications, and implications of the research.
- The Intel ISEF abstract does not include a bibliography. The Intel ISEF requires the bibliography as part of the research plan to be provided on Form 1A.

#### Sample Abstracts

| 2018 ISEF Second Grand Award, Energy Physical  | 2018 ISEF Third Grand Award, Earth and Environmental Science   |
|--|--|
| <b>Solar-Tracking Adaptive Robot PV Panels</b>   | <b>Biosorption of Manganese Mine Effluents Using Crude Chitin from Shell Wastes of Philippine Bivalves</b>   |
| By Cadores, Keith Russel ; Rivera, Eugene ; Manzanero, Joscel Kent<br>Adviser: Johnny T. Samino  | By Saquin, Elaine ; Molejona, Randt<br>Adviser: Ronilo Aponte  |
| <p>The leading sources of energy globally are oil, coal, and natural gas - fossil fuels that can be depleted, and whose access and use greatly impact the environment. Hence, much study has been made of renewable energy sources and use, including harnessing solar power through a photovoltaic cell. The study aimed to improve the power harvesting and generating capacity of photovoltaic cells by designing and building a solar device that mimics a flower opening when the sun is out, tracks the sun's movement, closes when the light source is no longer detected and responds to humidity and temperature to maximize power generation. Six (6) photovoltaic panels are mounted on a base operated by servo motors and controlled by Arduino module. Electronics, servo motors, Arduino, and humidity sensors were acquired commercially. Other material included those repurposed from a broken umbrella and electric fan, and scrap acrylic sheets. The device's performance was compared to that of a fixed-mounted photovoltaic panels at different angles. The fixed setup generated 4.71W while the petal panels produced 6.95W, a 47.72% increase. Taxing the power consumption of the device to the power it generates gives an average of 6.09W. This translates to a 29.29% improvement from the 4.71W generated by the fixed panel setup. T-Test for Dependent Means was used and showed that there is a significant difference between the power generations of the two setups (<math>p = 0.000261</math>, <math>\alpha = 0.05</math>). This robotic design amplifies capacity to harness solar power through a photovoltaic cell.</p> | <p>The area around Ajuy river in Iloilo, Philippines is currently being mined for manganese ore, and river water samples exceed the maximum manganese contaminant level set by US-EPA. At the same time, the surplus of local bivalve waste is another environmental concern. Studies show that chemical treatment compromises water quality leaving toxic residues, and an alternative treatment process is biosorption, or using the physical and chemical properties of a biomass to adsorb heavy metals in contaminated water. The study aims to extract crude chitin from shell wastes of <i>Bractechlamys vexillum</i>, <i>Perna viridis</i>, and <i>Placuna placenta</i> and determine its adsorption capacity on manganese in simulated and actual mine water. Crude chitin was obtained by pulverization, deproteinization, demineralization, and decolorization of shells. Biosorption by flocculation followed 5 g: 50 mL chitin-to-water ratio. Filtrates were analyzed using MP-AES after 24 hours. In both actual and simulated mine water respectively, <i>B. vexillum</i> yielded the highest adsorption percentage of 91.43% and 99.58%, comparable to <i>P. placenta</i> of 91.43% and 99.37%, while significantly different to <i>P. viridis</i> of -57.14% and 31.53%, (<math>p &lt; 0.05</math>). FT-IR validated the presence of chitin in shells based on carbonyl-containing functional groups at peaks 1530-1560 <math>\text{cm}^{-1}</math> and 1660-1680 <math>\text{cm}^{-1}</math>. SEM micrographs showed the amorphous and non-homogenous structure of chitin. Thus, crude chitin from <i>B. vexillum</i> and <i>P. placenta</i> can be biosorbents for water treatment of manganese-impacted effluents, and promote appropriate waste management of local bivalves</p> |

**Format of Paper Invention Report**

**Invention Report Paper:**

a) **Title Page and Table of Contents:** The title page and table of contents allows the reader to follow the organization of the paper quickly.

b) **Introduction:**

**1) Features and Specifications** – This describes the details of your invention.

**2) Market Trends and Opportunities** – This part of the report must include three items: what inspired you to develop this invention, an explanation of what problem your invention will solve, and describe in detail how you determined that the invention that you created did not already exist. Explain what products are already on the market that are somewhat like your invention and describe how yours differs.

c) **Materials and Methods:** Describe in detail how you made your invention. Explain what materials were used and how you put them together to make your invention. Your report should be detailed enough so that someone would be able to repeat the steps and make your invention. Directions on how to use the invention are also necessary here. You must include a detailed drawing(s) of your invention.

d) **Results and Discussion:** This is the essence of your paper. Compare your results with theoretical values, published data, literature and related studies, commonly held beliefs, and/or expected results. Include a discussion of possible errors, statistics, graphs, pages with your raw collected data, etc. How did the data vary between repeated observations of similar events? How were your results affected by uncontrolled events? What would you do differently if you repeated this project? What other experiments should be conducted?

f) **Conclusions:** This discusses the potential applications, possible customer benefits, and the impact of the problem in solving problems and issues of today and tomorrow.

g) **Acknowledgements:** You should always credit those who have assisted you, including individuals, businesses and educational or research institutions.

h) **References/Bibliography:** Your reference list should be written based on the Chicago Manual of Style. For more information, you may visit the websites below:

- <http://www.chicagomanualofstyle.org/home.html>
- <http://www.calvin.edu/library/knightcite/index.php>

For more information about this event please contact Ms. Anna Liza Chan at [annaliza.chan@deped.gov.ph](mailto:annaliza.chan@deped.gov.ph) for details.

**Format of Display Board for the Innovation Expo**

6.1 Sample Format of Display Board for Science Innovation Expo

|                     |  |
|---------------------|--|
| Title               | The title should be short but would capture the essence of the product/invention                                       |
| Picture             | picture of the product/invention only  |
| Overview            | What problem is solved by the invention? What are the existing solutions and what limitations do these solutions have? |
| Key Features        | What are the novelty features of this invention?   |
| Benefits and Impact | What are the benefits/impact of this invention to humans?  |
| Developers' Name    | Who is/are the inventors?  |

**Specifications:**

Each Display Board must have a 38" x 48" dimensions (portrait style)

**Judging Criteria:**

The following **criteria** are used to evaluate each project:

- (a) *Originality & Innovation*..... (30 %)
- (b) *Community Connection & Impact*.....(25 %)
- (c) *Functionality and Quality*.....(25%)
- (d) *Utilization of Patent Information*.....(20%)

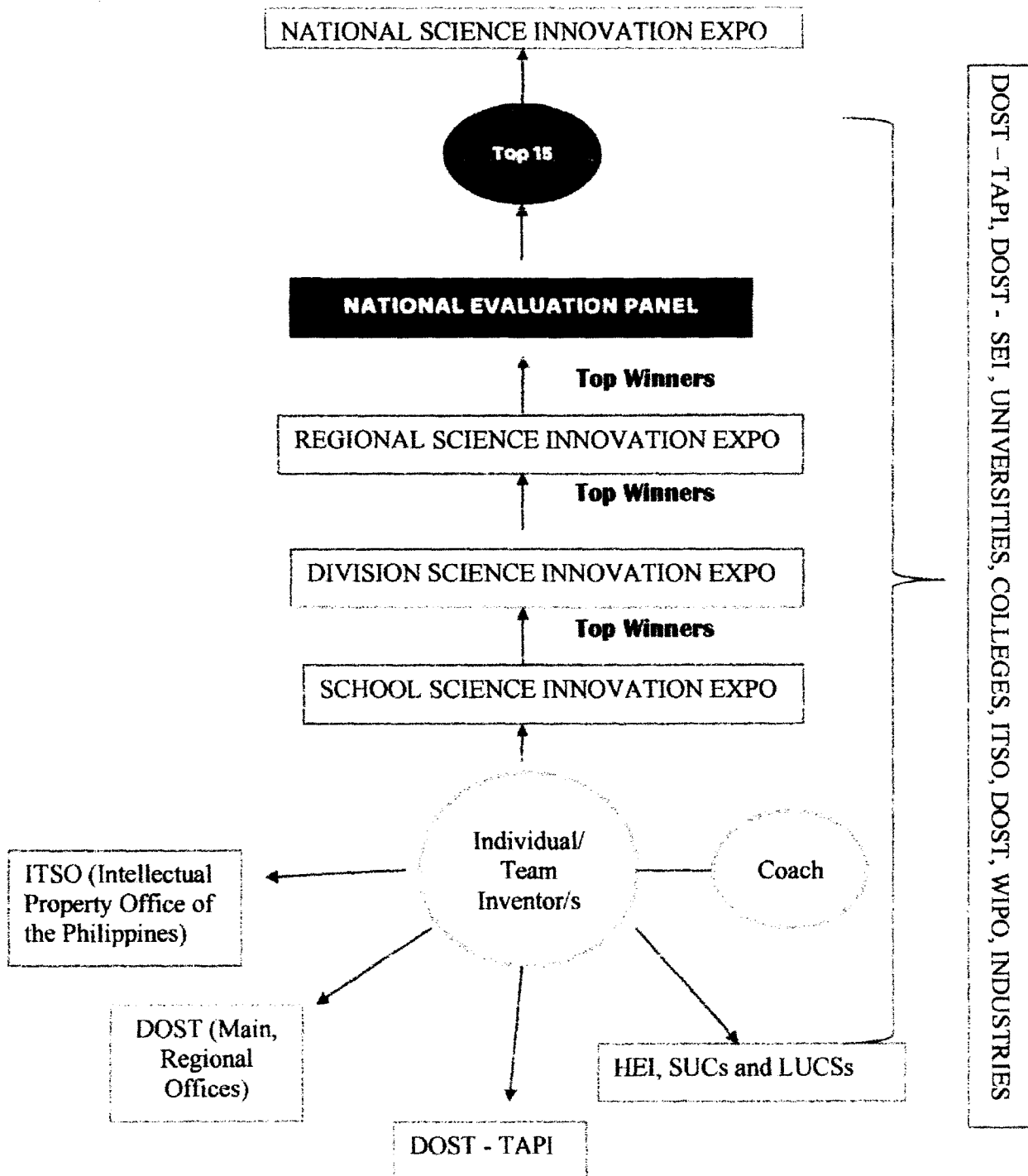
The following are the **members of the evaluation panel** in each level:

A group eight or more judges composed of the ff. listed below shall be members of the evaluation panel who will select the qualified winners in each level:

- (a) patent experts
- (b) industry experts
- (c) business experts
- (d) business professionals
- (e) scientists
- (f) field experts
- (g) regional/division supervisors

15

**National Science Innovation Expo - Process Flow**



**Data for Submission to BCD by the Regional Coordinators**  
(to be used in the official endorsement of the school to division, division to region and region to central office)

This should be in an **Excel spreadsheet** and should be sent to email address: [nstf@deped.gov.ph](mailto:nstf@deped.gov.ph) on or before **December 3, 2018**. Please take note of the sample below:

Region: \_\_\_\_\_

Division: \_\_\_\_\_

| No. | First Name             | Middle Name | Last Name | Grade | High School   | Gender | Team / Individual | Team Code | Research Adviser     |
|-----|------------------------|-------------|-----------|-------|---|--------|-------------------|-----------|----------------------|
| 1   | Dona Vel               | C.          | Lagurin   | 10    | Bayugan Nat'l Compre HS, Bayugan City   | F      | Individual        | —         | Jonathan f. Garzon   |
| 2   | *Venessa Anne Kimberly | M.          | Gealan    | 10    | CARAGA RSHS, Surigao Cty  | F      | Team              | 1         | Maria Ruth Edradan   |
| 3   | *Queene Lavern         | G.          | Pongcol   | 10    |   | F      | Team              | 1         |                      |
| 4   | *Ivy Jean              | J.          | Turno     | 10    |   | F      | Team              | 1         |                      |
| 5   | Bianca                 | A.          | Muñez     | 10    | Bunawan NHS, Agusan del Sur<br>Bunawan NHS, Agusan del Sur<br>Bunawan NHS, Agusan del Sur | F      | Team              | 2         | Jennyvi H. Papellero |
| 6   | Farrah Leah            | U.          | Ebe       | 10    |   | F      | Team              | 2         |                      |
| 7   | El Veena Grace         | A.          | Rosero    | 10    |   | F      | Team              | 2         |                      |
| 8   | Bryll Jay              | I.          | Salazar   | 9     | Agusan del Sur NHS, Agusan del Sur  | M      | Individual        | —         | Emy S Dacoseo        |
| 9   | Lea                    | S.          | Aparente  | 10    | Bayugan Nat'l Compre HS, Bayugan City   | F      | Team              | 3         | Jonathan F. Garzon   |
| 10  | Jayson Rey             | R.          | Vicariato | 10    |   | M      | Team              | 3         |                      |
| 11  | Justin Ryan            | S.          | Togonon   | 10    |   | M      | Team              | 3         |                      |

Prepared by \_\_\_\_\_ Mobile No. \_\_\_\_\_

School/Office Address and Phone No.: \_\_\_\_\_

Regional Coordinator: \_\_\_\_\_

**Note:**

1. **Team code number** is used to indicate the number of teams that joined the Division STF and the member of each team.
2. Include all the schools that participated in the Division STF.
3. Insert an *asterisk* before the first name of students who are qualified to join the National STF.
4. Insert an *asterisk* before the school name whose student-proponents are in the Special Science Classes of S&T-Oriented High Schools or Science, Technology and Engineering (STE) program .



## Checklist for Adult Sponsor (1)

**This completed form is required for ALL projects.**

**To be completed by the Adult Sponsor in collaboration with the student researcher(s):**

Student's Name(s): \_\_\_\_\_

Project Title: \_\_\_\_\_

1.  I have reviewed the Intel ISEF Rules and Guidelines.
2.  I have reviewed the student's completed Student Checklist (1A) and Research Plan/Project Summary.
3.  I have worked with the student and we have discussed the possible risks involved in the project.
4.  The project involves one or more of the following and requires prior approval by an SRC, IRB, IACUC or IBC:
 

|   |  |
|---|--|
| <input type="checkbox"/> Humans             | <input type="checkbox"/> Potentially Hazardous Biological Agents                                       |
| <input type="checkbox"/> Vertebrate Animals | <input type="checkbox"/> Microorganisms <input type="checkbox"/> rDNA <input type="checkbox"/> Tissues |
5.  Items to be completed for **ALL PROJECTS**

|  |  |
|--|--|
| <input type="checkbox"/> Adult Sponsor Checklist (1)   | <input type="checkbox"/> Research Plan/Project Summary |
| <input type="checkbox"/> Student Checklist (1A)  | <input type="checkbox"/> Approval Form (1B)            |
| <input type="checkbox"/> Regulated Research Institutional/Industrial Setting Form (1C) (when applicable; after completed experiment) |  |
| <input type="checkbox"/> Continuation/Research Progression Form (7) (when applicable)  |  |

**Additional forms required if the project includes the use of one or more of the following (check all that apply):**

- Humans**, including student designed inventions/prototypes. (Requires prior approval by an Institutional Review Board (IRB); see full text of the rules.)
  - Human Participants Form (4) or appropriate Institutional IRB documentation
  - Sample of Informed Consent Form (when applicable and/or required by the IRB)
  - Qualified Scientist Form (2) (when applicable and/or required by the IRB)
- Vertebrate Animals** (Requires prior approval, see full text of the rules.)
  - Vertebrate Animal Form (5A) -for projects conducted in a school/home/field research site (SRC prior approval required.)
  - Vertebrate Animal Form (5B) -for projects conducted at a Regulated Research Institution. (Institutional Animal Care and Use Committee (IACUC) approval required prior experimentation.)
  - Qualified Scientist Form (2) (Required for all vertebrate animal projects at a regulated research site or when applicable)
- Potentially Hazardous Biological Agents** (Requires prior approval by SRC, IACUC or IBC, see full text of the rules.)
  - Potentially Hazardous Biological Agents Risk Assessment Form (6A)
  - Human and Vertebrate Animal Tissue Form (6B) -to be completed in addition to Form 6A when project involves the use of fresh or frozen tissue, primary cell cultures, blood, blood products and body fluids.
  - Qualified Scientist Form (2) (when applicable)
  - The following are exempt from prior review but require a Risk Assessment Form 3: projects involving protists, archae and similar microorganisms, for projects using manure for composting, fuel production or other non-culturing experiments, projects using color change coliform water test kits, microbial fuel cells, and projects involving decomposing vertebrate organisms.
- Hazardous Chemicals, Activities and Devices** (No SRC prior approval required, see full text of the rules.)
  - Risk Assessment Form (3)
  - Qualified Scientist Form (2) (required for projects involving DEA-controlled substances or when applicable)

\_\_\_\_\_  
Adult Sponsor's Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date of Review (mm/dd/yy)

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Email

**Student Checklist (1A)**  
This form is required for ALL projects.

1. a. Student/Team Leader: \_\_\_\_\_ Grade: \_\_\_\_\_

Email: \_\_\_\_\_ Phone: \_\_\_\_\_

b. Team Member: \_\_\_\_\_ c. Team Member: \_\_\_\_\_

2. Title of Project:  
\_\_\_\_\_

3. School: \_\_\_\_\_ School Phone: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

4. Adult Sponsor: \_\_\_\_\_ Phone/Email: \_\_\_\_\_

5. Does this project need SRC/IRB/IACUC or other pre-approval?  Yes  No Tentative start date: \_\_\_\_\_

6. Is this a continuation/progression from a previous year?  Yes  No

If Yes:

a. Attach the previous year's  Abstract **and**  Research Plan/Project Summary

b. Explain how this project is new and different from previous years on

Continuation/Research Progression Form (7)

7. This year's laboratory experiment/data collection:

\_\_\_\_\_  
Actual Start Date: (mm/dd/yy) End Date: (mm/dd/yy)

8. Where will you conduct your experimentation? (check all that apply)

Research Institution  School  Field  Home  Other: \_\_\_\_\_

9. List name and address of all non-home and non-school work site(s):

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone/ \_\_\_\_\_

email

10. Complete a Research Plan/Project Summary following the Research Plan/Project Summary instructions and attach to this form.

11. An abstract is required for all projects after experimentation.

**Regulated Research Institutional/Industrial Setting Form (1C)**

This form must be completed AFTER experimentation by the adult supervising the student research conducted in a regulated research institution, industrial setting or any work site other than home, school or field.

Student's Name(s) \_\_\_\_\_

Title of Project \_\_\_\_\_

**To be completed by the Supervising Adult in the Setting (NOT the Student(s)) after experimentation:**

(Responses must be on the form as it is required to be displayed at student's project booth; please do not print double-sided.)

The student(s) conducted research at my work site:

1. Did you or your proxy (e.g. graduate student, postdoc, employee) mentor or provide substantial guidance to the student researcher?  Yes     No
  - a. If no, describe your and/or your institution's role with the student researcher and his/her project (e.g. supervised use of equipment on site without ongoing mentorship and sign below.

b. If yes, complete questions 2–5.

2. Is the student's research project a subset of your ongoing research or work?  Yes     No  
Use questions 3, 4 and 5 to detail how the student's project was similar and/or different from ongoing research or work at your site.

3. Describe the independence and creativity with which the student:
  - a. developed the hypotheses or engineering goals for the research project

b. designed the methodology for his/her research project

c. analyzed and interpreted data

(Continued on next page)

## Research Plan/Project Summary Instructions

**A complete Research Plan/Project Summary is required for ALL projects and must accompany Student Checklist (1A).**

1. All projects must have a Research Plan/Project Summary
  - a. Written prior to experimentation following the instructions below to detail the rationale, research question(s), methodology, and risk assessment of the proposed research.
  - b. If changes are made during the research, such changes can be added to the original research plan as an addendum, recognizing that some changes may require returning to the IRB or SRC for appropriate review and approvals. If no additional approvals are required, this addendum serves as a project summary to explain research that was conducted.
  - c. If no changes are made from the original research plan, no project summary is required.
2. Some studies, such as an engineering design or mathematics projects, will be less detailed in the initial project plan and will change through the course of research. If such changes occur, a project summary that explains what was done is required and can be appended to the original research plan.
3. The Research Plan/Project Summary should include the following:
  - a. **RATIONALE:** Include a brief synopsis of the background that supports your research problem and explain why this research is important and if applicable, explain any societal impact of your research.
  - b. **RESEARCH QUESTION(S), HYPOTHESIS(ES), ENGINEERING GOAL(S), EXPECTED OUTCOMES:** How is this based on the rationale described above?
  - c. Describe the following in detail:
    - **Procedures:** Detail all procedures and experimental design including methods for data collection. Describe only your project. Do not include work done by mentor or others.
    - **Risk and Safety:** Identify any potential risks and safety precautions needed.
    - **Data Analysis:** Describe the procedures you will use to analyze the data/results.
  - d. **BIBLIOGRAPHY:** List major references (e.g. science journal articles, books, internet sites) from your literature review. If you plan to use vertebrate animals, one of these references must be an animal care reference.

Items 1–4 below are subject-specific guidelines for additional items to be included in your research plan/project summary as applicable.

1. **Human participants research:**
  - a. **Participants:** Describe age range, gender, racial/ethnic composition of participants. Identify vulnerable populations (minors, pregnant women, prisoners, mentally disabled or economically disadvantaged).
  - b. **Recruitment:** Where will you find your participants? How will they be invited to participate?
  - c. **Methods:** What will participants be asked to do? Will you use any surveys, questionnaires or tests? If yes and not your own, how did you obtain? Did it require permissions? If so, explain. What is the frequency and length of time involved for each subject?
  - d. **Risk Assessment:** What are the risks or potential discomforts (physical, psychological, time involved, social, legal, etc.) to participants? How will you minimize risks? List any benefits to society or participants.
  - e. **Protection of Privacy:** Will identifiable information (e.g., names, telephone numbers, birth dates, email addresses) be collected? Will data be confidential/anonymous? If anonymous, describe how the data will be collected. If not anonymous, what procedures are in place for safeguarding confidentiality? Where will data be stored? Who will have access to the data? What will you do with the data after the study?
  - f. **Informed Consent Process:** Describe how you will inform participants about the purpose of the study, what they will be asked to do, that their participation is voluntary and they have the right to stop at any time.
2. **Vertebrate animal research:**
  - a. Discuss potential ALTERNATIVES to vertebrate animal use and present justification for use of vertebrates.
  - b. Explain potential impact or contribution of this research.
  - c. Detail all procedures to be used, including methods used to minimize potential discomfort, distress, pain and injury to the animals and detailed chemical concentrations and drug dosages.
  - d. Detail animal numbers, species, strain, sex, age, source, etc., include justification of the numbers planned.
  - e. Describe housing and oversight of daily care
  - f. Discuss disposition of the animals at the termination of the study.
3. **Potentially hazardous biological agents research:**
  - a. Give source of the organism and describe BSL assessment process and BSL determination.
  - b. Detail safety precautions and discuss methods of disposal.
4. **Hazardous chemicals, activities & devices:**
  - Describe Risk Assessment process, supervision, safety precautions and methods of disposal.
  - Material Safety Data Sheets are not necessary to submit with paperwork.



Republic of the Philippines  
DEPARTMENT OF EDUCATION  
Region VII, Central Visayas

**SCHOOLS DIVISION OF NEGROS ORIENTAL**  
www.depednegor.net

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# **A TRAINING DESIGN FOR A DIVISION SCIENCE AND TECHNOLOGY FAIR**

**DATE: October 12, 2018**  
**VENUE: NOHS GYMNASIUM**

Prepared by:

**ALMA CORA M. CATA CUTAN**  
**Education Program Supervisor (SCIENCE)**

for the

**DEPED DIVISION OF NEGROS ORIENTAL**  
August 13, 2018

## I. Identifying Information

|                             |   |
|-----------------------------|---|
| Program Title               | : DIVISION SCIENCE AND TECHNOLOGY FAIR FOR SCHOOL YEAR 2018-2019  |
| Program Description         | : This is a friendly competition of school district winners in Science Investigatory Project (SIP), Science Quiz in grade 6 and 10. |
| Duration                    | : One day, October 12, 2018   |
| Management Level of Program | : Division Level Managed headed by CID  |
| Delivery Mode               | : Oral presentation of SIP, Science Quiz  |
| Target Participants         | : First place winners in the school district level competition and coaches  |
| Number of Participants      | : 175 persons   |
| Activity Code (WFP)         | : _____   |
| Total Budget                | : Php 36,300.00   |
| Source of Funds             | : School MOOE   |

## II. Rationale

Experience is the best teacher and learning through hands-on activities in a friendly setting will produce a lifelong learning.

### Objectives:

1. Promote science and technology consciousness among the youth;
2. Identify the most creative and the best science researchers who will represent the division in the regional level of competition;
3. Identify the best student in quiz competition to represent the division in the regional quiz competition.

### Expected Final Outcome/Success Indicator:

1. Science Investigatory Projects that will represent the division in regional competition.
2. Students/pupils to compete in the regional level quiz.

## III. The Program Content and Delivery Mode

### A. The Program Content and Expected Outputs:

| Session Title                            | Session Objectives  | Content  | Expected Output                            |
|--|---|--|--|
| Putting up of exhibits and researches    | Each research will have a space in the venue where judges and enthusiast can view and ask questions | Science researches conducted by student/pupils | Initial viewing and interview of SIP entry |
| Judging of Science Investigatory project | Judges will interview and have physical viewing of research results or outputs                      |  | SIP winners awarded                        |
| Science Quiz                             | Contestants will answer the same set of questions under a uniform time allotment per question       |  | Quiz Winners awarded                       |

**B. Details of Budgetary Requirement**

| Item Expenditure                             | No. of Persons | No. of Days | Unit Price | Total Amount     |
|--|----------------|-------------|------------|------------------|
| <b>A. Implementation</b>                     |                |             |            |                  |
| Honorarium of Judges                         | 6              |             | 2,000.00   | 12,000.00        |
| Snack meals of judges and working committees | 20             |             | 250.00     | 5,000.00         |
| Trophies and medals                          |                |             |            | 16,000.00        |
|  |                |             |            |                  |
|  |                |             |            |                  |
|  |                |             |            |                  |
|  |                |             |            |                  |
|  |                |             |            |                  |
|  |                |             |            |                  |
| Sub-total                                    |                |             |            | 33,000.00        |
| Contingency (10%)                            |                |             |            | 3,300.00         |
| <b>Over All Cost</b>                         |                |             |            | <b>36,300.00</b> |

**IV. Activity Schedule**

| Time               | Activities                      | Topics | Resource Speakers / Facilitators    |
|--------------------|---------------------------------|--------|-------------------------------------|
| 7:00-8:00 AM       | Registration                    |        | A.Catacutan<br>N. Resoor<br>D. Mira |
| 8:00 AM - 9:00AM   | Opening Program                 |        |                                     |
| 9:30- 12:00        | Contest Proper SIP and QUIZ     |        |                                     |
| <b>LUNCH BREAK</b> |                                 |        |                                     |
| 1:00-3:00 AM       | Contest Proper (continuation)   |        | D.Mira<br>N. Resoor<br>A.Catacuta   |
| 3:00-5:00          | Closing and Awarding of winners |        |                                     |


Prepared and submitted by:

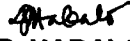
  
**ALMA CORA M. CATACUTAN**  
 EDUCATION PROGRAM SUPERVISOR

This Program Design has been prepared by **Alma Cora M. Catacutan, DEPS** on August 13, 2018 at Division of Negros Oriental, Dumaguete City.

Recommending Approval:

  
**DR. ERLINDA N. CALUMPANG, Ed.D.**  
Chief/Section Head

  
**DAN P. ALAR, Ed.D.**  
Senior Education Program Specialist  
Human Resource Development Section (HRDS)/ Learning & Development (L & D)

  
**DAE P. HABALO**  
Senior Education Program Specialist  
Planning & Research

Certifying Availability of Funds:

  
**JENNIFER P. PIDOS**  
Accountant III

Approved:

  
**WILFREDA D. BONGALOS, Ph.D., CESO V**  
Schools Division Superintendent  
8/14/18