Teach ME
National Students
Innovation Competition
2022

OFFICIAL GUIDELINES

TABLE OF CONTENTS

INNOVATION COMPETITION

EXECUTIVE SUMMARY

NIHERST, a state agency currently under the Ministry of Education, was established in 1984 to promote science, technology and higher education in Trinidad and Tobago consistent with national development goals. In 2014, NIHERST entered into a participatory initiative with the Scientific Research Council (SRC) in Jamaica, entitled "Improving Innovation Capacities in the Caribbean" (INVOCAB). INVOCAB set out to achieve the goal of promoting and enhancing Science, Technology and Innovation at the primary and secondary school levels. Upon executing the project, a decision was taken to extend the project's reach to include a programme that will focus specifically on Mathematics at the primary school level. As a result, *Teach ME* was introduced and implemented as a supported project from INVOCAB, with the overarching goal of improving students' performance in the Mathematics component of the SEA Examination.

The Teach ME project aims to contribute towards improving the levels of creativity in Trinidad and Tobago by building and strengthening capacities in the areas of Science, Technology and Innovation and specifically Science Education as an enabler for ensuring that our education at primary and secondary levels prepares our young people for the challenging world of Science and Technology. The project was initiated in 2016 with two (2) primary schools on board. In 2017, five (5) primary schools participated in the project; in 2018 this number increased to eight (8) participating primary schools; and in 2019, the project further expanded to eleven (11) primary schools and the new addition of four (4) secondary schools[1][2] from the INVOCAB project. In 2021, the project continued to expand and welcomed two (2) additional primary schools.

One of the projects' main deliverables is developing and hosting a Students Innovation Competition. This will be the 3rd year that the competition is open to **all** primary and secondary school students of Trinidad and Tobago. The 2022 competition will focus on the theme: **"Renewable Energy and The Environment".** Primary and secondary school

[1] Teach ME: Increasing **Teach**ers' Confidence for **M**y **E**ducation
[2] Secondary schools are invited to participate in the Innovation Competition only. Teach ME specifically targets the primary school curriculum.

students, with the assistance and supervision of a teacher or mentor, will embark on developing solutions to a particular problem in relation to the above theme.

INTRODUCTION

"The choice before us is simple. Will we continue to subsidize the dirty fossil fuels of the past, or will we transition to 21st Century clean, renewable energy?"
Elizabeth Warren

The National Students Innovation Competition aims to foster a culture of science, technology, innovation and entrepreneurship. The competition seeks to recognise and reward student innovators and problem-solvers for their application of scientific knowledge and technological solutions in an effort to solve a problem faced by their community or school, and ultimately, to market and commercialise their idea or creation. Boosting the creative and innovative capacities of the youth of Trinidad and Tobago, in addition to fostering their entrepreneurial spirit is critical to the country's future competitiveness.

The Teach ME National Students Innovation Competition encourages students:

- To identify and solve a school or community problem.
- To develop *Habits of Mind* and 21st Century Skills such as critical thinking and problem solving, creativity and innovation, perseverance and adaptability.
- To develop their ideas for commercialisation.

The Teach ME National Students Innovation Competition is hosted on the virtual platform **Roblox**. Roblox is an online game platform and game creation system that allows users to design and build their own games as well as play games created by other users. This competition will expose participants to coding, game development and game design, skills that they will use to build a virtual community in which they would solve a problem related to the overarching theme **Renewable Energy and the Environment**. Additionally, students will develop and improve *Habits of Mind*, a set of problem solving, life related skills, necessary to effectively operate in society and promote strategic reasoning, insightfulness, perseverance, critical thinking, creativity and ingenuity.

Potential entrants to the National Students Innovation Competition should give consideration to the following questions when conceptualising ideas and designing their virtual prototype:

- Does your idea or design solve a problem?
- What are the benefits of your innovation/invention to society, environment etc.?
- How easy can your idea be implemented in your community?
- Have you done research to ensure the novelty of your idea?
- Can your creation be marketed and earn profits?

Students are required to develop their idea to deliver a virtual business pitch of their simulated prototype to the Government of Trinidad and Tobago or prospective investors.

ELIGIBILITY

1. All entrants must be nationals of Trinidad and Tobago between the ages of 8 – 17.
2. Individuals or teams of up to five (5) persons can enter the competition.
3. Judging and prize giving will be divided into the following categories:

   Juniors
   Ages: 8 – 10

   Seniors
   Ages: 11 – 17

4. Multiple entries are allowed and should be done on separate entry forms.
5. Members of the organising committee and their families are not eligible to enter this competition.
6. Entrants must sign the relevant agreement forms to be considered for judging.

PROTOTYPE SUBMISSION

Submission Guidelines

An independent panel of distinguished professionals will be appointed to evaluate all entries.

Stage 1:

i. Complete and submit all team registration forms and permission slips **no later** than **September 19th, 2022**.

ii. Complete and submit **Prototype Proposal Document no later** than **September 19th, 2022** in order to be submitted for the first review by the judges. Remember, students can submit multiple entries; however, a team can only hold a maximum of five (5) students. The Proposal Document must include a brief description of the problem to be addressed and the solution that the virtual prototype will provide.

iii. Teams must complete a **Project Design Packet** to document their journey throughout the competition (one design packet per team). Design packets should detail the project concept, design process and development, trials and error, and any other records. Design packets must include weekly progress notes and can be supplemented with pictures or videos. Students are encouraged to be as creative as possible.

iv. Reviewers will conduct an initial assessment of the prototype proposals and will offer recommendations. All teams will receive feedback from the judges' first review by **September 27th, 2022.** After which**,** teams can edit and further develop their ideas in order to begin building their virtual prototype.

Stage 2 (Round 1 of Judging):

i. All entrants must submit **a Draft Design of the Virtual Prototype** (e.g. a picture, sketch, small model) **or a Video of a Run-Through[3], along with the Prototype Proposal no later** than **October 27th, 2022**. The judges will assess these draft designs based on the following criteria: -

- **originality (40%)**
- **functionality (40%)**
- **ingenuity (15%)**
- **sustainability (5%)**

ii. Judges will provide further comments and recommendations. After which**,** teams can then proceed to make any necessary changes to develop their final prototype.

Stage 3 (Round 2 of Judging):

i. Teams must submit their **Final Prototype Proposal no later** than **November 11th, 2022** via email prior to the final judging date.

ii. On the final judging date, teams must deliver a **short presentation*** on their virtual prototype (see page 12 for further guidance), along with their **final Project Design Packets**.

iii. Please note that the final judging will be held via Zoom on **November 19th, 2022**. Any changes to date or video communications platform will be communicated.

iv. Prize giving ceremony details will be announced following the selection of competition winners.

**Presentations can be done in any creative manner preferred by the entrant.*

[3] The activity of performing or playing something from beginning to end in order to practise it.

Judging Criteria

Prototypes will be judged on the following criteria:

- **Originality (15%)**
- **Functionality (15%)**
- **Ingenuity (10%)**
- **Sustainability (10%)**
- **Methodology (10%)**
- **Creativity (5%)**
- **Usefulness (10%)**
- **Presentation (10%)**
- **Simplicity (5%)**
- **Commercial Potential (10%)**

Definitions

A brief definition of each criterion is given below:

Functionality:
- Is defined by the capacity of the innovation/invention to serve the proposed purpose well.

Sustainability:
- Is defined by the capacity for the innovation/invention to be maintained for a considerable period of time (including and not limited to long-term market/economic potential as well as ecological sustenance, i.e. not exhausting natural resources or causing ecological damage).

Methodology:
- Is defined as the system of methods and principles employed in the development of the idea or innovation.

Originality (of the idea):
- Is defined by the innovation/invention being new in character or design (must demonstrate appreciable novelty).

Creativity (of the idea's development):
- Is defined by the level of imagination that the invention/innovation displays.

Usefulness:
- Is defined by the benefits to society (social, ecological, socio-cultural or economic).

Ingenuity:
- Is defined by the skill utilised in devising or contriving the invention/innovation.

Simplicity:

- Is defined by the uncomplicated mechanisms used; the ease with which materials can be acquired and the steps involved in the manufacturing or process of development.

Commercial Potential

- Is defined by the prospect of sales and profit on a large enough scale to make the risk generated from the invention/innovation worth undertaking. It involves undertaking market research to identify the markets, the market need and the market competition.

THE JUDGES' DELIBERATIONS, INCLUDING THEIR EVALUATIONS, AND REPORTS SHALL BE KEPT CONFIDENTIAL AT ALL STAGES OF THE COMPETITION AND THEIR DECISIONS ARE FINAL.

Theme and Presentation

Welcome Young Innovators!

Renewable Energy and the Environment

Energy is in essence the driving force behind human life. In the 18th century, an event labelled the Industrial Revolution occurred, which showed the beginning of fossil fuel energy becoming the new norm. At this time, coal was primarily used to power steam engines which later paved the way for other fossil fuels such as oil and gas to be heavily relied on as an energy source. Fossil fuel energy is now used to power everything from modes of transportation, to generating electricity, to powering homes and offices. Additionally, fossil fuels are used for cooking in the form of gas stoves and ovens; and it can also be used for gas powered washing machines and dryers instead of electricity. In recent years, this growth in the energy sector has undoubtedly identified the oil and gas industry as one of the biggest energy sectors. This industry supplies the high demand for energy seen around the globe. This demand for energy resources to fulfil the world's needs has resulted in an environmental phenomenon named Climate Change.

Consequently, the environment around the world is struggling. This is due to the elevated levels of greenhouse gas (CO_2, methane, etc.) emissions that are a direct result of the continuously expanding energy sector. An example of the blooming energy sector can be seen here in the Caribbean, where most islands rely heavily on fossil fuels for energy to power cars, electricity, and for cooking. Furthermore, Trinidad and Tobago is one of the top contributors of CO_2 emissions in the world. It should be noted that greenhouse gas emissions, due to burning fossil fuels for energy, have grave effects on the environment. Some of these impacts are:

- Rising sea levels
- Rise in global temperature
- Increase in rainfall
- Increase in the frequency of hurricanes and storms
- Depletion of the ozone layer

Additionally, the social environment is impacted by the energy sector. Around the world, there has been an increase in the cost of energy. This price inflation is up to 35.4% as of May 2022. Due to this increase, oil and gas prices in numerous countries have risen by a few dollars. This raise has led to the increase in grocery prices and oil for motor vehicles. Trinidad and Tobago has seen an increase of $1 dollar for both premium and super gasoline and an increase of 50 cents for diesel. Sri Lanka is one country that has been heavily affected by the energy inflation that has led to an energy crisis in the country. Sri Lanka is in financial crisis and can no longer afford to spend large amounts on energy and thus is struggling to obtain fuel for everyday life for its citizens. This has resulted in the country's closure as only essential services have access to fuel.

Subsequently, one way to mitigate the effects placed on the environment is to switch from a heavily based oil and gas energy sector to a more renewable one. Renewable energy is a great alternative for energy generation as it creates less environmental impact, in comparison to fossil fuel usage. Differing from fossil fuels, renewable energy is not a depleting resource but a self-sustaining resource that can supply energy to the population for many years to come. Additionally, it can aid the population with energy security, which is becoming a major problem in countries around the world due to rising prices for oil and gas. The use of renewable energy would also combat the inflation of gas prices and bridge the gap of affordability for developing countries that are facing energy crisis. It would create a sense of security in these countries that face scarcity in energy needs.

All entries to the Teach ME National Students Innovation Competition will be broadly classified under the theme **“Renewable Energy and the Environment”**. Participating students, with the aid and supervision of their teachers or mentors, will embark on a project, following the guidelines, to create a solution to a particular problem in relation to the theme.

Building Your Virtual Prototype

Students must use the designated game building software ***Roblox Studio*** to design their virtual prototypes.

1. Create Roblox user account www.roblox.com
2. Download and install Roblox Studio www.roblox.com/create
3. Collaborate using Team Create feature
4. Using Roblox, create a solution to a threat or problem in your community in relation to the theme ***Renewable Energy and the Environment***

Tutorials would be circulated via email to all participants as a guide to using the gaming platform.

Important Points to Note:

- Students must construct **60%** of their prototypes on their own versus using free models from the online database.
- Absolutely **no** downloading of free models of building structures e.g. houses, schools, hospitals, business offices, commercial centres etc. Students must construct buildings on their own.
- Downloading of free models from the online database is allowed for characters/avatars, cars, accessories, items used for aesthetics (trees) etc.
- Collaborate as a team. Must be a team effort.
- Students are not allowed to edit or delete another teammate's work without his/her permission.

Verbal Presentation of Prototypes

Teams must: -

- explain their innovation, clearly describing the community problem that their virtual prototypes were created to solve.
- describe how their virtual prototypes are intended to work.
- detail the use of coding in the development of their virtual prototype.
- include a brief plan or proposal to produce and sell their innovation to the government of Trinidad and Tobago or investors.

SUBMISSION OF ENTRIES

Competition forms must be submitted **on or before** the stipulated deadlines as follows:

You must e-mail your submissions to teachme@niherst.gov.tt **on or before** the stipulated deadline dates.

Your submission should be entitled "NIHERST Teach ME National Students Innovation Competition 2022".

PRIZES

Up to fifty thousand dollars ($50,000)
in Gift of Units from the Unit Trust Corporation
to be won!

Prizes for winners in the Junior and Senior categories will be awarded as follows:

- 1st place winners
- 2nd place winners
- 3rd place winners

Place	Junior Category	Senior Category
1st	Individual – $2,500.00 Group – $2,500.00 for each group member	Individual – $2,500.00 Group – $2,500.00 for each group member
2nd	Individual – $1,500.00 Group – $1,500.00 for each group member	Individual – $1,500.00 Group – $1,500.00 for each group member
3rd	Individual – $1,150.00 Group – $1,150.00 for each group member	Individual – $1,150.00 Group – $1,150.00 for each group member

Additional prizes may also be awarded at the discretion of the organisers. NIHERST and the organising committee reserve the right to refuse awarding of prizes where the required standards are not met and will not be liable to any entrant for the loss of opportunity, or under any other grounds.

Prizes will be distributed via the courtesies of NIHERST. Recipients must have an existing Unit Trust Corporation account, **only** TT$ Money Market Funds or TT$ Growth & Income Funds are accepted. The account may be in the name of the student, parent or guardian.