STOCKHOLM

JUNIOR WATER PRIZE



What makes a Project stand out?

Useful tips from a Reviewer

1 Examples of past winning projects

2 Elements of successful projects

3 Suggested report structure

1



Examples of past winning projects

STUDENT
Eshani Jha

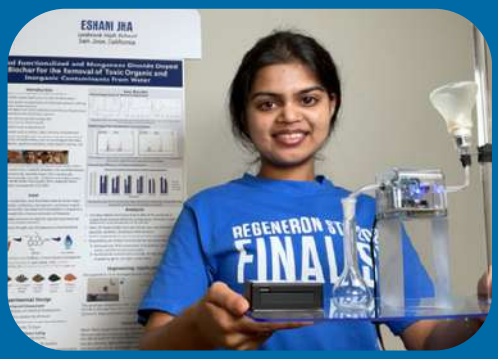
USA

2021
STOCKHOLM
JUNIOR WATER PRIZE

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Thiol Functionalized and Manganese Dioxide Doped Biochar for the Removal of Toxic Organic and Inorganic Contaminants from Water

- **Problem**: Water contamination
- **Inspiration**: Active carbon in filtration systems
- **Idea**: To replace active carbon with biochar for use in efficient and cheap water filters
- **Methodology & Prototype Development**: Removal of key classes of contaminants by
  - manipulating biochar surface area,
  - controlling chemical composition and catalytic properties for oxidative breakdown,
  - adding surface complexing agents, and modifying intrinsic pore size
- **Testing and Impact:** N/A
- **Cost Analysis**: remove contaminants from our freshwater in a simple and cost-effective way



STUDENTS
Hiroki Matsuhashi
Takuma Miyaki

JAPAN

2020
STOCKHOLM
JUNIOR WATER PRIZE

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Controlling soil runoff and increasing food production by the functional water collection system using traditional Japanese soil solidification technology: “Ta-Ta-Ki

- **Problem**: Soil erosion - to revolutionize the way water is collected, used, and conserved for agriculture in arid regions
- **Inspiration**: A traditional solidification technique called Sanwa soil, used in Japan to solidify the soil and increase its strength
- **Idea**: Add fertilizer to the “Sawna soil” to supply crops with nutrients
- **Methodology & Prototype Development**: Sanwa soil is a technique to harden the soil. It uses soil, sand, and slaked lime (or ashed vegetation) to knead and harden the soil
- **Testing and Impact:** Revolutionize the way water is collected, used, and conserved for agriculture in arid regions
- **Cost Analysis**: N/A



STUDENTS
Sureeporn Triphetprapa
Thidarat Phianchat
Kanjana Komkla

THAILAND

2016
STOCKHOLM
JUNIOR WATER PRIZE

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Natural innovative water retention Mimicry Bromeliad (Aechmea aculeatosepala)

- **Problem**: Farmers need additional water for irrigation in Thailand
- **Inspiration**: How a certain Thailand plant, Bromeliad, does not require frequent watering?
- **Idea**: Create an artificial plant to collect moisture based on the shape of Bromeliad
- **Methodology & Prototype Development**:
  - Students examined how the plant's space was capturing moisture
  - Researched materials to build a prototype artificial plant
- **Testing and Impact:**
  - 30 devices were tested
  - Measured moisture on trees with/without device
  - 17% more soil moisture, 57% more production!
- **Cost Analysis**:
  - Farmers were very satisfied
  - Less than $1 per unit, break-even is within 6 days.





STUDENT
Perry Alagappan

USA

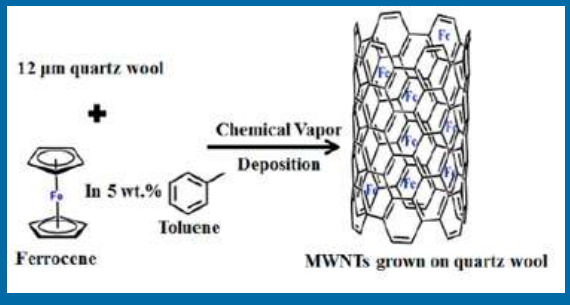
2015
STOCKHOLM
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CLICK HERE!

“Novel Renewable Filter for Heavy Metal Removal: A Practical Application of Functionalized Multi-Walled Carbon Nanotubes”

- **Problem**: People in India are exposed to water contaminated with heavy metals
- **Inspiration**: Can we use Carbon Nanotubes to remove heavy metals?
- **Idea**: Create a renewable filter using carbon nanotubes
- **Methodology & Prototype Development**:
  - Asked feedback and guidance for the idea from a local Research Center
  - Studied the problem: research & experimentation
  - Developed a proof-of-concept in the lab
  - **Testing and Impact:** Removes 99% of heavy metal contaminants
- **Cost Analysis**: Costs $20, will be released as open-source





2



Elements of successful projects

Find your problem, inspiration and idea

1

Find a problem which is **relevant** to you, your community or Cyprus in general.

Must **clearly address a water** issue (avoid “marginally related” problems)

2

Understand **how** this problem is currently being solved and **why** do we need a new solution?

Search for **inspiration** from nature, from existing solutions on different problems or from new research results

3

What is **YOUR solution**? A new process, a new software/app, a new machine…?

The idea should be **original**: Do not repeat a study that was done elsewhere.

Methodology, testing and cost analysis

Methodology

- It's OK to ask from experienced scientists to **help on developing YOUR idea**
- However, simply being a lab assistant to an academic research project is not advised.
- You need to **fully understand** the methodology

Testing

- How can your idea be **applied in practice**? Is it feasible?
- If relevant, **create a prototype or a proof-of-concept**
- If possible, **evaluate its impact** in a real environment

Cost analysis

- Estimate its **costs of production**, break-even analysis, benefits to the economy and society

General tips

Do not just do a literature review.

Devote sufficient **time** to complete the project.

Ask an external scientist (e.g. from a University) to **review** your results.

Avoid plagiarism. Do not copy material (text/images) that was created by someone else.

You should **weight each source** of information: books, scientific papers, blogs, Wikipedia.

You should use a standard way to add **references** (e.g. Harvard, IEEE)

Use scientific **report templates**

Promote change, disseminate your results to the school and the general public, using blogs, online videos etc.

3

Suggested report structure

Indicative Structure
The 7 steps

1. Abstract
2. Introduction
3. Literature review/ Background
4. Methodology/ Experimental Design
5. Case Study Results (in lab or in simulation)
6. Pilot Study Results (in real environment)
7. Cost Analysis & Impact Estimation/Evaluation

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JUNIOR WATER PRIZE
Cyprus

National Organiser

MN WATER MUSEUM

Limassol District
Local Government Organisation



ANNUAL
COMPETITION
for students of Secondary and Technical Schools
on the subject of
water

SCAN ME

CALL FOR ENTRIES

Approved by the
Cyprus Ministry of Education, Sport & Youth

MINISTRY OF EDUCATION
SPORT AND YOUTH

With the support of the
Embassy of Sweden in Cyprus

Embassy of Sweden
Nicosia