**UNESCO Office in Jakarta**
**Cluster Office for Brunei Darussalam, Indonesia, Malaysia, Philippines and Timor Leste**
**Regional Science Bureau for Asia and the Pacific**

# Concept Note

Digital Skills Training and Application Development Competition for Students in celebration of International Day of Girls and Women in Science, Girls in ICT Day and World Science Day 2022

Science, Policy and Capacity Building Unit
**UNESCO Office in Jakarta**

## BACKGROUND:

### Persistent Gender Disparities in STEM

UNESCO Institute for Statistics[1] reported that Asia and the Pacific region only count 8 out of 39 countries with 50% or above female researchers. The 25% share of female researchers regionally and 30% globally makes women minority and under-represented in the research and development sector, especially in Science, Innovation and Technology (STI). UNESCO[2] , in recent studies, also identified persistent gender disparities at the regional level. Gender disparity persists at the higher education level, compounded by a lack of awareness and sensitisation to address socio-cultural misconceptions at all stages of education.

Furthermore, with the current Industrial 4.0 era, most future careers will require technology and digital fluency. Hence, initiatives on teaching digital and technology skills to students, especially for girls at an early age, will help them be more future-ready and further contribute to bridging the persistent gap.

### Emerging Environmental and Disaster Issues During the Global Pandemic

The COVID-19 pandemic has brought a tremendous impact on the environment. With mobility and travel restriction and limited outdoor activities, there are positive and negative consequences to the environment[3]. Improved air quality and decreased noise pollution, household food waste, energy consumption, and greenhouse gas emissions are the positive impacts of decreased human activities globally.

[1] UNESCO Institute for Statistics Global report on STEM in 2020: http://uis.unesco.org/sites/default/files/documents/fs60-women-in-science-2020-en.pdf
[2] Needs and Assets Mapping: Women in SETI in Asia-Pacific Countries: https://unesdoc.unesco.org/ark:/48223/pf0000379246?2=null&queryId=4cc69187-0ece-4f35-ab15-4bcde2f1de66
[3] Patrício Silva AL, Prata JC, Walker TR, et al. Increased plastic pollution due to COVID-19 pandemic: Challenges and recommendations. Chem Eng J. 2021;405:126683. doi:10.1016/j.cej.2020.126683. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7430241/

However, the pandemic also negatively impacts the environment with new pollution, such as increased food-package and medical-hazardous waste. The new daily routine imposed during the pandemic also increased the ecological risks from using hazardous chemical substances for disinfection and improperly disposing of the single-use masks.

In addition to the global pandemic and the following environmental issues, several major disasters took place in these past two years, including wildfires, earthquakes, storms and hurricanes, port explosions, civil wars, and refugee and food crises.

**OBJECTIVES:**

The 2021 Short-Silent Video Competition in Southeast Asia organised by UNESCO Jakarta for the students aged 11-18, especially girls, demonstrated promising potential to sensitise and mainstream Environmental Sustainability through the strong messages expressed in their short-silent videos. Through these activities, we also grasped a significant gap in digital skills among students in the Asia Pacific region.

Through this proposed series of activities, UNESCO aims to:

- raise students' awareness, especially girls, on the impact of the COVID-19 pandemic on the environment and how they can propose solutions and participate in creating a more sustainable environment within their community.
- promote eco-friendly initiatives to tackle environmental issues resulting from the global pandemic.
- improve digital skills by encouraging students, especially girls, to pursue studies and careers in the technology sector through digital skills training to develop an application using Open Application Developer (AppLab from Code.org) to materialise the solutions and their initiatives toward environmental sustainability
- promote STEM (Science, Technology, Engineering, and Mathematics) principles, especially for girls and women, and encourage active participation in STEM systems and careers.

**ACTIVITIES:**

This year, UNESCO, with the generous support from Japan-Fund-in-Trust and in collaboration with the University of Syiah Kuala, will carry out a series of activities targeting students (13-18 years old, girls are encouraged to participate) as follows:

1. **Activity 1: Launching Event to Celebrate International Day of Girls and Women in Science and Girls in ICT was organised on 12 May 2021**

   With the theme of International Day of Girls and Women in Science 2022: *"Equity, Diversity, and Inclusion: Water Unites Us"* and Girls in ICT Day 2022 *"Access & Safety"*, UNESCO will organise a talk show and invite role models in ICT field to discuss what we can do together to tackling the environmental issues emerge during the COVID-19 pandemic. UNESCO will also invite resource persons to examine possible smartphone applications to tackle environmental and disaster risk issues and how students can learn to develop the application with Open Application Developer AppLab from Code.org.

2. **Activity 2: Regional Call for Students to Submit Ideas to Develop an Application on Environmental Sustainability and Disaster Risk Reduction (12 May to 15 July 2022; 2 months)**.

During the event on Activity 1, UNESCO calls students to submit their ideas or proposal to develop applications to tackle any environmental issues and disaster risk reduction efforts emerging within their community. The selected participants will be invited to the regional training on App Developments (Activity 3).

3. **Activity 3: Regional Training on Application Development (25 hours of training in August 2022**

   UNESCO, in collaboration with Universitas Syiah Kuala (USK), Indonesia, will organise a series of online training with simultaneous translation in several local languages (based on assessing the spatial distribution of the selected participants).

   The syllabus of the training is:

   - **Introduction to the Internet**
     - Session 1: What is the Internet
   - **Introduction to code.org's AppLab**
   - **Translating ideas into application/algorithm**
     - Session 2: Variables, Conditions, and Functions
     - Session 3: Lists, Loops, and Traversals
     - Session 4: Basics of application design and Algorithm
     - Session 5: Functions, Parameters, Return Values, and Libraries
   - **Fundamentals of Interface Design**
     - Session 6: Introduction to User Interface (UI) Design
   - **Data literacy in AppLab**
     - Session 7: Online Data and Privacy
     - Session 8: Cybersecurity and Global Impacts
   - **Online promotion of applications**
     - Session 9: Promoting applications
   - I**nterview with recent graduates** working in the IT sector

   All training materials are designed as an online course with playback lecture videos and interactive, hands-on online sessions that students could revisit in their own time.

   - A detailed training programme and training module will be shared with the selected participants.

**For collective registration, please use this link:**
**https://forms.office.com/r/iDcebxZ9yU**

**For individual registration, please use this link:**
**https://forms.office.com/r/gvyHiunitH**

4. **Activity 4: Regional Competition Call for Students on Digital Application on Environmental Sustainability (20 July to 31 August 2022; 1,5 months)**

   After the training, UNESCO will open the call for students to submit their full proposal to develop an Application for Environmental Sustainability for their community.

   A detailed TOR of the competition will be shared in due course.

5. **Activity 5: World Science Day Celebration, Announcement of the Winners, 10 November 2021**

   UNESCO will organise a live hybrid event celebrating World Science Day 2022. During the event, UNESCO will invite resource persons on STEM, Tech and Innovation, and Environmental Sustainability, inaugurate the competition winners and present their projects.

   A detailed TOR of the event will be shared in due course.

These activities are in line with the UNESCO Programme on "Asia-Pacific Institutional and human capacities strengthened in STEM education in a gender transformative manner for sustainable development" for the Outcome of institutional and human capacities strengthened in STEM education in a gender transformative manner for sustainable development (41 C/5 Outcome 1SC6[4]).

These activities will also contribute to achieving:

- SDG 4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all),
- SDG 5 (Achieve gender equality and empower all women and girls),
- SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation) and
- SDG 11 (Make cities and human settlements inclusive, safe, resilient and sustainable).

[4] https://unesdoc.unesco.org/ark:/48223/pf0000380868

**TIME TABLE:**

| Activity | Month | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mar | | | | April | | | | May | | | | Jun | | | | Jul | | | | Aug | | | | Sept | | | | Oct | | | | Nov | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Preparation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 1<br>12 May 2022 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 4<br>20 July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Activity 5<br>10 November 2022 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Scheduled timeline:
Possibility of extension:

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