

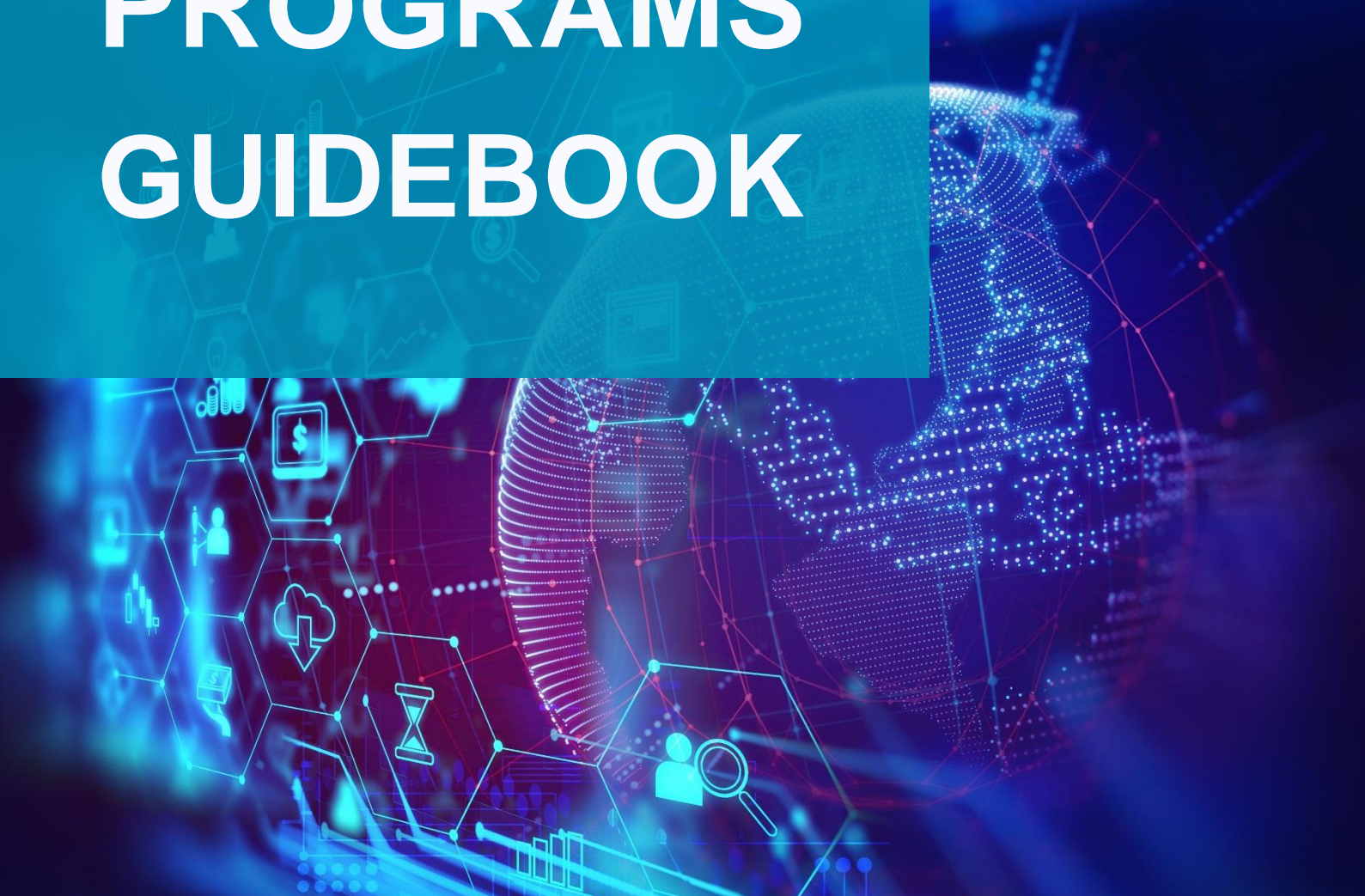


کمنترین قندیقن  
KEMENTERIAN PENDIDIKAN  
NEGARA BRUNEI DARUSSALAM

**STEP  
CENTRE**

PUSAT KERJASAMA SAINS, TEKNOLOGI DAN ALAM SEKITAR

# STEAM PROGRAMS GUIDEBOOK



**SCIENCE, TECHNOLOGY AND ENVIRONMENT PARTNERSHIP CENTRE (STEP CENTRE)  
MINISTRY OF EDUCATION  
NEGARA BRUNEI DARUSSALAM**

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Study and teaching    7. Activity programs in education

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# **STEAM PROGRAMS GUIDEBOOK**

SCIENCE, TECHNOLOGY AND ENVIRONMENT PARTNERSHIP  
(STEP) CENTRE, MINISTRY OF EDUCATION

Published in 2021

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*"...Beta percaya, para graduan mampu untuk mengikuti sebarang perubahan dalam paradigma ekonomi dan cabaran-cabaran baru. Salah satu contoh, ialah ledakan teknologi yang membawa kepada perubahan-perubahan terpantas dalam sejarah tamadun manusia. Aplikasi teknologi ini lebih menonjol di era revolusi industri ke empat kini.*

*Dalam era ini, kepentingan teknologi amatlah ketara, dimana kita, tidak boleh ketinggalan. Untuk tidak berlaku ketinggalan itu, kita perlu mengemaskan diri, termasuk kalau perlu, mengemaskini sistem pendidikan, selaras dengan keperluan.*

*Diantara keperluan utama ialah, untuk menjana kemahiran. Kemahiran sangat mustahak dalam persaingan. Tanpa kemahiran, kita hanya akan jadi penonton..."*

**Excerpt from an address by His Majesty Sultan Haji Hassanal Bolkiah, the Sultan and Yang Di-Pertuan of Brunei Darussalam at the 31<sup>st</sup> Convocation Ceremony at Universiti Brunei Darussalam, 22<sup>nd</sup> August 2019.**

---

*"...Selain menyempurnakan pengajian, rebut juga peluang untuk memiliki kemahiran. Cari dan usahakan ia sebagai nilai tambah. Kerana era sekarang, selain mengutamakan ilmu, juga mementingkan kemahiran..."*

**Excerpt from an address by His Majesty Sultan Haji Hassanal Bolkiah, the Sultan and Yang Di-Pertuan of Brunei Darussalam at the Ceremony with the People and Students of Brunei Darussalam in Cairo, Egypt, 5<sup>th</sup> August 2019.**

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## FOREWORD

**From The Head of Science, Technology and Environment Partnership Centre  
(STEP Centre), Ministry of Education**

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السَّلَامُ عَلَيْنَا وَعَلَىٰ آلِنَا  
وَعَلَىٰ مَنْ آمَنَ بِآيَاتِنَا

Given the notable demand for Science, Technology, Engineering, Art (Innovation) and Mathematics (STEAM) related workforce; and with technological advancement that changes the way we live and communicate, it is imperative to ensure student's understanding and acquirement of the relevant and future-ready skills. STEP Centre is keen to provide students with opportunities in developing skillsets that are relevant in preparedness towards the Industry 4.0 and beyond. It is time to be looking for ways to bridge knowledge and application for a holistic learning experience – This is where STEAM takes the lead.

The STEP Centre's STEAM Education Guidebook serves to give brief understanding on STEAM and to guide the schools on the implementation of STEAM programs. It is hoped that with this guidebook, more schools will understand the role of STEP Centre and reach out to STEP Centre for any support on implementation of STEAM programs, initiatives and activities for their students.

STEAM is a building block that focus on the application of Science, Technology, Engineering and Mathematics through creativity. STEAM initiatives ultimately should lead the students to feel that they can wonder, critique, explore, inquire and innovate. It is the topmost priority of STEP Centre to serve the schools through its in-house iconic programs and other STEAM programs by its strategic partners, hence, to reach out to as many students as possible to experience and benefit from STEAM.

Finally, on behalf of STEP Centre, Ministry of Education, I wish to express my utmost appreciation to MoE colleagues, schools and various strategic partners who have rendered STEP Centre their continuous support.

Wassalam.

Wabillahit Taufik Walhidayah Wassalamualaikum Warahmatullahi Wabarakatuh

**Pengiran Hajah Mas Joliwane binti Pengiran Haji Tejudin**  
Head of Science, Technology and Environment Partnership Centre  
STEP Centre, Ministry of Education

## 1.0 OVERVIEW OF GUIDEBOOK FOR STEAM PROGRAMS

### 1.1 What is STEM/STEAM?

STEAM is generally defined as an educational **approach** that creates learning opportunities to integrate knowledge and skills in Science, Technology, Engineering, Art (Innovation) and Mathematics; hence, to apply these skills in facing real life challenges.

*"STEM education is a teaching and learning approach, which emphasizes the connections among – or integration of – knowledge and skills in science, technology, engineering and mathematics to address problems facing our communities as well as larger global issues that require a skilled workforce and knowledgeable citizens who can apply these skills and knowledge to develop solutions."*

- **SEAMEO STEM-ED Centre**

*"STEAM is an educational approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue and critical thinking."*

- **Susan Riley, Arts Integration Specialist**

By exposing students to STEAM and giving them opportunities to explore STEAM-related concepts, it is hoped that they will develop a passion for STEAM and pursue a future career in the related field.



## 1.2 Characteristics of STEAM Programs

STEAM programs allow students to be more creative in their approaches to a posed situation or problem, i.e. to provide options rather than pre-determined outcomes or outputs. Students are allowed time to experiment and design their own learning, organise their thoughts and visualise the bigger picture to address a situation; thus, enhancing their innovative and thinking skills.

However according to the "Institute for Arts Integration and STEAM", among the characteristics of STEAM programs include (but not limited to) the following (Institute for Arts Integration and STEAM, 2021):

- **Integrated learning** across different subject disciplines for STEAM skills acquirement (e.g. the application of skills obtained through ICT and Science classes to produce output in Design and Technology classes).
- **Intentional connections** between the designing stage (based on scientific measurements and logical concepts) and the application stage (creativity and innovation).
- **Inquiry-based** in which students use their creative and critical thinking in the process of solving a given problem.
- **Instill collaboration, creativity, critical thinking and communication skills** to prepare students to be part of the society and for future workforce.

To ensure efficiency of the STEAM programs, outcomes on how the students have benefited from the programs can be measured.

### 1.3 Importance of STEAM

STEAM plays an important role to equip students with the relevant skills in the ever-growing fields of technology, as well as its role in the Industrial Revolution 4.0 and beyond. It recognizes the importance of creativity and innovation to solve real life challenges.

*"So I want to talk about education, and I want to talk about creativity. My contention is that creativity now is as important in education as literacy, and we should treat it with the same status..."*

*...And the only way we'll do it is by seeing our creative capacities for the richness they are and seeing our children for the hope that they are. And our task is to educate their whole being, so they can face this future. By the way -- we may not see this future, but they will. And our job is to help them make something of it."*

- **Sir Ken Robinson, PhD,**  
**TED Speaker and Creative Thinking Expert**

**STEAM aims to strengthen the foundation of STEM** by helping students to enhance their innovative and critical thinking skills; whilst to educate students in the practice of inquiries and dialogue, to efficiently solve problems. It gives students opportunities to **explore new** and **creative ways** of problem-solving by **linking multiple skills** and **fields**.

The STEAM approach is in-line to support Wawasan Brunei 2035, which aims to increase the number of local graduates who are job-market-ready and can further improve the living standards and productivity of the country. In general, STEAM Education leads to prepare well-rounded and skilled workforce both at present and in the future.

## 2.0 IMPLEMENTING STEAM PROGRAMS IN SCHOOLS

### 2.1 Overview of STEP Centre

Science, Technology and Environment Partnership (STEP) Centre aims to promote STEAM Education to schools in Brunei Darussalam, through the implementation of STEAM programs. It also serves as a platform which allows external strategic partners to conduct numerous STEAM-related programs for the students.

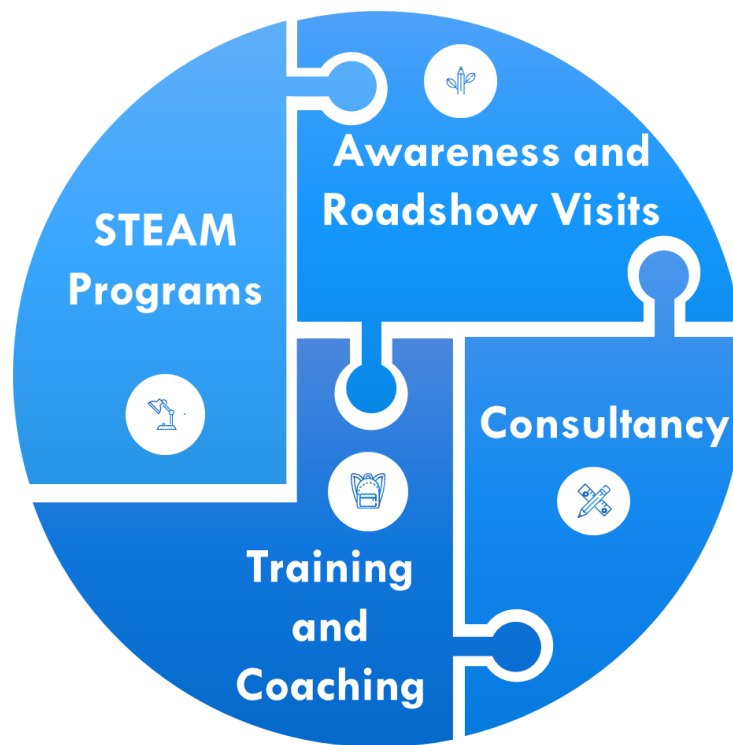
The main roles of STEP Centre (as a **service provider** to the schools) are as follows:

1. To provide a platform for schools (including to assist the schools) in encouraging and increasing the involvement of students in STEAM activities and programs.
2. To increase the number of students' enrollment in STEAM programs and Science stream.
3. To cultivate students' interest and provide understanding about the importance of STEAM skills and programs.
4. To give equal opportunities to all students (**not** just the Science Stream) to enroll in STEAM programs.
5. To ensure the quality and relevance of the implemented STEAM programs.
6. To support the Ministry of Education's effort to improve student's innovation and problem-solving skills.
7. To cultivate the innovative mindset and culture within the students.

## 2.2 STEP Centre Services

STEP Centre provides four (04) main services in promoting STEAM programs to schools. All schools are welcome to contact and visit STEP Centre to request for its services. The services are:

- i. STEAM Programs
- ii. Awareness and Roadshow Visits
- iii. Consultancy
- iv. Training and Coaching



**i. STEAM Programs:**

STEP Centre has in place **seven (07) Iconic STEAM Programs** for student's participation:

- a) National STEM and Innovative Design Challenge (NSIDC) (Competition) - Adapted from the F1 in Schools;
- b) Students in STEAM (Competition)
- c) R.E.A.L. Learning (Competition)
- d) STEAM Outreach Program (Outreach Activities)
- e) Green Schools Initiatives (GI) (Support & Guidelines)
- f) Green School Gardening (GSG) (Support & Training)
- g) STEAM for Future (Training Modules)

**ii. Awareness and Roadshow Visits:**

STEP Centre facilitates awareness talks and opportunities for schools to visit to relevant education sites and higher institutions; hence, entice STEAM learning.

**iii. Consultancy:**

STEP Centre provides consultation service to assist schools in identifying the right STEAM programs for their students. As a lead organisation to promote STEAM learning, STEP Centre also extends this service to external agencies, that wish to provide STEAM-based or STEAM enrichment programs to schools in Brunei Darussalam.

**iv. Training and Coaching:**

STEP Centre provides STEAM skills and STEAM-related training and coaching for both students and teachers. This is to support effective STEAM learning and motivate more schools to engage in STEAM-based activities and programs provided by or through STEP Centre.

## 2.3 Descriptions of STEP Centre's (07) Iconic STEAM Programs and Entry Level

STEP Centre programs offer a suite of STEAM enrichment activities, support platforms, training and coaching; catered for students from Year 3 to 11.

Brief descriptions of the (07) iconic programs of STEP Centre with its entry levels are as follows:

Program Name	Description	Entry Level
<b>STEAM Related Competitions</b>		
(1) National STEM and Innovative Design Challenge (NSIDC)	Students compete in an all-rounder STEAM project, where they produce miniature F1 cars, pitch their ideas and race to the finish.	Secondary Schools (Including 6 <sup>th</sup> Form Centres), & Higher Institutions.
(2) Students in STEAM	A set of challenges that covers poster/infographic, video making and innovation/invention challenges. Two cycles are held every year, with each cycle brings a different theme.	Primary Schools & Secondary Schools, (Including 6 <sup>th</sup> Form Centres).
(3) R.E.A.L. Learning	A pipeline program in which students are encouraged to solve an identified or a given real-life problem, and develop a proposal document on solving the problem.	Secondary Schools (Including 6 <sup>th</sup> Form Centres).
<b>STEAM Outreach Program</b>		
(4) STEAM Outreach Program	<p>An outreach program to promote STEAM among students. It comprises mobile packages (provided by STEP Centre and its strategic partners) to carry out activities in schools.</p> <p>6 Themes of Packages:</p> <ul style="list-style-type: none"> <li>• STEAM Communication, Design Thinking, Team Building and Leadership;</li> <li>• STEAM Mobile Fair;</li> <li>• Computing, ICT, Engineering and Technology;</li> <li>• Agriculture and Diversity of Life;</li> <li>• Environment and Ecosystem; and</li> <li>• Climate Change and Sustainable Lifestyle.</li> </ul>	Primary Schools, Secondary Schools (Including 6 <sup>th</sup> Form Centres).

<b>Agriculture and Environment Programs (Support Platform)</b>		
(5) Green-Schools Initiatives (GI) (Support & Guidance)	<p>Identifying and acknowledging schools that implement the <b>best green practices</b> by awarding them with the Green-School Status.</p> <p>The status (<b>Bronze, Silver or Gold</b>) will be assigned depending on the level of activity in conducting green initiatives <b>based on ASEAN Eco-School Guidelines</b> and is <b>valid for two calendar years (NB: Renewed every 2 years)</b>.</p> <p>Schools with Gold Status will be listed as potential candidates to receive the ASEAN Eco-School Award (<b>NB: Only one Primary School and one Secondary School will receive the award</b>).</p>	Primary Schools, & Secondary Schools (Including 6 <sup>th</sup> Form Centres).
(6) Green School Gardening (GSG) (Support & Training)	Implementation of in-school gardening using hydroponic to promote green activities (through agriculture). This program also encourages schools to promote a healthier lifestyle to their students by consuming fruits and vegetables.	Primary Schools, & Secondary Schools (Including 6 <sup>th</sup> Form Centres).
<b>Training Modules</b>		
<b>(7) STEAM for Future</b>		
(a) ICT & Programming	Training on coding skills with different programming languages and the applications. It serves as a training platform to participate among which in national & international programs such as CIPTA, BICTA, APICTA, etc.	Primary Schools, & Secondary Schools (Including 6 <sup>th</sup> Form Centres)
(b) Engineering	Training to introduce students to basic engineering concepts & skills, as to encourage critical thinking and problem-solving.	Primary Schools, & Secondary Schools (Including 6 <sup>th</sup> Form Centres)
(c) Design & Creativity	Training comprising team-building activities that encourage students to design & think creatively.	Primary Schools, & Secondary Schools (Including 6 <sup>th</sup> Form Centres)
(d) Innovation [with Seria Energy Lab (SEL)]	Training on Design Thinking via NXplorer Express.	Primary Schools, & Secondary Schools (Including 6 <sup>th</sup> Form Centres)

STEP Centre emphasises on **guided participation approach** to ensure efficient and quality student's participation. In addition to the above iconic programs, STEP Centre also coordinates and facilitates entry of schools to other STEAM related initiatives and competition by external agencies, nationally and internationally.

**[Note:** Please refer to **Appendices** (Page 22) for list of STEAM related programs, initiatives and competition that are organized, coordinated and facilitated by STEP Centre and/or with external strategic partners and agencies, nationally and internationally].



### 3.0 RESOURCES

This guidebook provides a number of resources which serve as references for the schools, as follows:

- STEP Centre’s Contact Details;
- Frequently Asked Questions (FAQs);
- Booking Form for STEP Centre’s Services;
- QR Codes for Detailed Information about STEP Centre, Programs and Services; and
- QR Codes for Narrational Videos on “Why STEAM?”.

#### 3.1 STEP Centre Contact Details

**Address:** Science, Technology and Environment Partnership Centre (STEP Centre)  
Ministry of Education,  
2<sup>nd</sup> Floor, Block A, Bangunan Sekolah Rendah PAP Besar,  
Jalan Lumapas, Kampong Lupak Luas,  
Mukim Lumapas, BJ2524  
Negara Brunei Darussalam

Telephone: 2335961/2200163/2200164

Fax No: 2335963

e-mail: [step@moe.gov.bn](mailto:step@moe.gov.bn)

Instagram: stepcentrebrunei

## 3.2 Frequently Asked Questions (FAQs)

This section serves to clarify some of the frequently asked questions on STEAM.

**Q1. Can students from non-science classes participate in STEAM activities organised/facilitated by STEP Centre?**

**A1.** Yes. STEAM programs that are currently organised/facilitated by STEP Centre are eligible for students from Year 3 to Year 11 and Sixth Form.

**Q2. What is the relevance of adding “Arts” to STEAM?**

**A2.** Arts refers to creativity and innovation skills.

**Q3. Do schools need to have special equipment to get started with STEAM?**

**A3.** For most of STEP Centre’s programs, materials & devices will be provided. Exception would be (but not limited) for:

- Training/Programs conducted online (which require participants to provide their own materials, devices, software and internet connection); and
- National STEM and Innovative Design Challenge Program (NSIDC) (which requires specific machines and softwares).

**Q4. Is there a fee to participate in the programs provided by STEP Centre?**

**A4.** Participations to the STEP Centre’s (07) iconic STEAM programs are free-of-charge. However, programs and activities conducted by strategic partners may incur minimum charges.

**Q5. For STEAM programs organised by external agencies such as (Seria Energy Lab, NGO or any others), do we contact them directly or through STEP Centre?**

**A5.** Schools can contact them through STEP Centre. All STEAM related participations from schools must be informed to STEP Centre and obtain approval from the Ministry of Education through STEP Centre.

**Q6. What is the duration for carrying out STEAM programs by STEP Centre?**

**A6.** Conducting STEAM programs should be a continuous effort. However, the duration to conduct individual activity varies depending to the nature of the STEAM activities. It must be ensured that the STEAM activities do not affect curriculum hours.

### 3.3 Booking Form for STEP Centre's Services

Schools are encouraged to place their booking for STEP Centre's services the earliest possible. The schools can obtain the form through QR code below and e-mail to [step@moe.gov.bn](mailto:step@moe.gov.bn).



**REGISTRATION FORM FOR STEP CENTRE SERVICES**

Date:

School's Name			
Telephone No.		E-mail	
Request By			
Contact No.		E-mail	
STEP Centre's Services	<input type="checkbox"/> STEAM Programs <ul style="list-style-type: none"> <li><input type="radio"/> Cabaran STEM dan Inovasi Reka Bentuk / F1 in School (National)</li> <li><input type="radio"/> Students in STEAM</li> <li><input type="radio"/> R.E.A.L. Learning</li> <li><input type="radio"/> STEAM Outreach</li> <li><input type="radio"/> Green-Schools Initiatives</li> <li><input type="radio"/> Green-Schools Gardening</li> <li><input type="radio"/> STEAM for Future</li> </ul> <input type="checkbox"/> Awareness and Roadshow Visits <input type="checkbox"/> Consultancy <ol style="list-style-type: none"> <li>1. STEAM in School – Project Development &amp; Research Development</li> <li>2. Reporting – Reviewing and Guidance</li> <li>3. Coordinating &amp; Networking – Engaging Schools with Relevant Stakeholders, Strategic Partners &amp; Experts</li> <li>4. STEP Centre's STEAM Programs Selection</li> </ol> <input type="checkbox"/> Training and Coaching <ol style="list-style-type: none"> <li>1. Preparing Students for Programs (Guided Participation)</li> <li>2. Project / Project Paper</li> <li>3. Development</li> <li>4. Research Paper Development</li> <li>5. Design Thinking</li> <li>6. Other Related Soft-Skills (ICT &amp; Programming, Engineering, Design &amp; Creativity and Innovation)</li> </ol>		

### 3.4 QR Codes for Flyers & Brochures of STEP Centre's STEAM Programs

The QR Codes provided below contain the information about STEP Centre and STEP Centre's Programs and Services [**Note:** QR Code/Link will be revised as necessary].

QR code links for STEP Centre brochure, flyers and registration forms



ABOUT  
STEP CENTRE



STEAM OUTREACH  
PROGRAM



STUDENTS IN  
STEAM



STEAM FOR  
FUTURE



NATIONAL STEM  
& INNOVATIVE  
DESIGN CHALLENGE  
(F1 IN SCHOOLS)



R.E.A.L.  
LEARNING



GREEN - SCHOOL  
INITIATIVES



GREEN SCHOOL  
GARDENING  
(GSG)



WHY STEAM?

### 3.5 QR Codes for Narrational Videos on “Why STEAM?”.

The Narrational Videos to “Why STEAM”? that embraces the concept of STEAM as root to innovation and sustainable development. These videos aim to provide students with understanding and promote: (i) Student’s Interest in STEAM Education; and (ii) The Role of STEP Centre in Promoting STEAM.

There are five (05) video resources:

- i. **“A Glimpse into the Future”** - Envisions a resilient future with improved quality of life using technology and innovation.
- ii. **“The Roots of Modern Technology”** - Uncovers the underlying history and causes of modern technology by illustrating how the fundamental knowledge have contributed towards the development of modern technology.
- iii. **“Preparing for the Future”** - Projects the current progress in technology and how individuals can be prepared for the desired future.
- iv. **“What is STEAM?”** - Explains the concept of STEAM and how the application of STEAM skills has contributed significantly to our everyday life.
- v. **“About STEP Centre”** - Informs about the significant role of STEP Centre, Ministry of Education as a service provider for the schools in promoting student’s early exposure to STEAM and the relevant skills attainment.

#### QR Code links for all the videos



1. A Glimpse into the Future



2. The Roots of Modern Technology



3. Preparing for the Future



4. What is STEAM?



5. About STEP Centre

## 4.0 REFERENCES

- Why STEAM Narration Resources are products of the final year projects of Digital Media Students from Politeknik Brunei in 2021 which are developed in collaboration with STEP Centre, Ministry of Education.
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- STEM-ED Centre's Definition of STEM Education, Retrieved on July 2021, From <https://seameostemed.org>
- Do schools kill creativity. Transcripts, Retrieved on July 2021, From [https://www.ted.com/talks/sir\\_ken\\_robinson\\_do\\_schools\\_kill\\_creativity/transcript#t-1149452](https://www.ted.com/talks/sir_ken_robinson_do_schools_kill_creativity/transcript#t-1149452)
- The critical importance of STEAM Education: Why use STEAM, Retrieved on July 2021, From <https://www.pcworld.idg.com.au/article/621170/critical-importance-steam-education/>

## 5.0 APPENDICES

### The seven (07) iconic STEAM programs offered by STEP Centre:

1. The National STEM and Innovative Design Challenge (NSIDC)  
Launched by the Ministry of Education in 2012, NSIDC is an experiential learning program which combines academic content to professional skills. This program provides a platform for students to apply their academic knowledge in a real-world setting in order to understand the value of skills.
2. Students in STEAM  
A yearly challenge open to participation from primary and secondary schools. The program encourages students to be creative in their interpretation of a posed theme provided by STEP Centre. The challenge requires students to make either a poster, a video or an inventive product based on a posed theme. Winners' output will be displayed through social media, Teacher's Lounge and Student's Lounge.
3. R.E.A.L. Learning  
An initiative aimed to encourage students to fully utilize their potential of being inquisitive and creative to deal with real-life problems. It supports the schools to develop and implement innovative STEAM Projects. The challenge is open to students from secondary schools as well as sixth form centers. It serves as a **Pipeline Program** to encourage participation in National and International innovative challenges (i.e. CIPTA, BICTA, SEAMEO SSYS+, Young Inventors Challenge) with close guidance provided by STEP Centre.
4. STEAM Outreach Program  
STEAM Outreach Program offers various packages which are categorised under 6 different themes. It is open to primary, and secondary schools as well as Sixth Form Centres. Some of the packages offered are carried out in collaboration with external strategic partners (i.e. JASTRe, SEL, Big BWN Project, BruWILD, EnEvo Sdn Bhd, etc). The program aims to promote STEAM to schools through 'mobile activities'.
5. Green School Gardening (GSG)  
Green School Gardening (GSG) is an initiative to promote green activities in schools as well as increase awareness within the school community on the importance of consuming fruits and vegetables. Students will be able to gain skills in carrying out green activities via urban farming/vertical hydroponic farming, preparing healthy meals and entrepreneurship.

## 6. Green-Schools Initiatives (GI)

Green-Schools Initiatives (GI) promote green-living practices, which are based on 5 themes and 4 criteria posed in the ASEAN Eco-Schools Guidelines for Green School: Energy; Waste Management; Green School Spaces; Water; and Health and Hygiene. Schools can register to this program and obtain Green School's Status certified by STEP Centre, based on how active they run their green-living practices.

A school with Gold Green Status will have the chance to be nominated to receive the prestigious ASEAN Eco-School Awards, held every four (4) years.

## 7. STEAM for Future

STEAM for Future Program comprises training modules based on specific skills such as *ICT/Programming, Engineering, Design & Creativity* dan *Innovation*. This program is offered to primary, secondary and 6<sup>th</sup> form students. Students who participate in this program will have the opportunity to be thoroughly guided in producing the desired outputs.

### **The STEAM programs offered by Local Stakeholders:**

#### 1. Science Show Competition and Workshop (Organised by SEL)

This competition includes a 3-day workshop that exposes students and educators to the methodology and several techniques used in science communication, such as planning, live experiments and demos, interactions and maximizing impact.

#### 2. International Science Drama Competition (Organised by SEL)

International Science Drama is an annual event that allows participants to incorporate their passion for science into acting. The event is organised by Science Centre (Singapore), Science Network (Beijing), Petrosains (Malaysia), The Mind Museum (Philippine), National Science Museum (Thailand) and SEL (Brunei Darussalam).

#### 3. Women in Science Competition (Organised by SEL)

With the aim to empower female representation in the science sector, the competition welcomes girls of ages 12-17 from schools in Brunei Darussalam. The program provides students with the opportunity to play a significant role in society and their schools through projects, which will be aligned with UNESCO's Sustainable Development Goals (SDG). Students will be selected through the submissions of their project proposals to participate in a boot camp organised by SEL.



#### 4. Science Show Competition (Organised by SEL)

The Science Show Competition is a learning approach that demonstrates series of science experiments to an audience, where performers share various science facts in an interesting way through performances. This encourages students to be creative with their show, improve their science communication skills as well as allow them to be innovative with their ideas. The competition not only aims to inspire the audience, but could be a driving factor to encourage people from all walks of life to know more and understand better about STEM Education.

#### 5. BICTA

The Brunei Info-Communication Technology Awards (BICTA) is an annual event co-organised by the Ministry of Transport and Infocommunications, the Authority for Info-Communications Technology Industry of Brunei Darussalam (AITI) and InfoCom Federation Brunei (IFB) to stimulate innovation and creativity in Information and Communications Technology (ICT) industry amongst individual, students and associations including SMEs. It was first introduced in 2004.

It aims to be the benchmark for local ICT companies and educational institutions to compete amongst each other and to represent Brunei Darussalam in the Asia Pacific ICT Alliance (APICTA).

BICTA is a component of APICTA whose vision is to widen the influence of the ICT communities in the Asia region. The winners of BICTA will represent Brunei Darussalam in APICTA. Other participating member economies of the APICTA events are Australia, Bangladesh, Brunei, China, Chinese Taipei, Hong Kong, Indonesia, Japan, Macau, Malaysia, Myanmar, Pakistan, Singapore, Sri Lanka, Thailand, Vietnam and Nepal.

#### 6. National TechKids Camp (Organised by AITI)

The TechKids Camp is a project under AITI's Discovery and Excite program to teach students with basic programming or coding using Scratch application.

#### 7. Hackathon for Teens: Hobbyist (Organised by AITI)

Hobbyist Development Program encourages a strong community ICT enthusiast in different field, e.g.: coding, gaming and software application. The target audiences are students and teachers from secondary school level. The Hobbyist Development Program consists of development workshops and a competition in which the participants create an application using the programming skills they learnt from the workshop.

#### 8. Teens in AI (Organised by DARE)

Launched by Acorn Aspirations at the AI for Good Global Summit at the United Nation in May 2018, Teens in AI is an initiative to encourage young people aged 12 to 18 years to have an early exposure to AI, as well as to utilise AI and Machine Learning techniques to tackle global challenges in a holistic manner. Thus, through this program, students will be able to develop their design thinking, strategy and business model development, ethics, social responsibility and pitching skills.

### **The International STEAM Programs offered through STEP Centre:**

#### 1. Search for SEAMEO Young Scientists (SSYS)

Initiated in 1997, SSYS is a platform for youths from the SEAMEO member countries to gather and share information of their scientific and mathematical research projects. It is held once every two years with a specific theme and there has been 11 SSYS sessions being held ever since then.

#### 2. SAKURA Science High School Program (SSHP)

SSHP is an exchange program to expose students (mainly from Asia) on the development of Science and Technology in Japan and to broaden students' experience in this field. With this program, students are given opportunities to visit and attend lectures held in leading universities and research institutions as well as experiencing hands-on experiments demonstrated by world-leading scientists.

#### 3. ASEAN-China STEM Camp for Youth

A collaboration between China and the participating countries of ASEAN, the camp aims to bring the bright minds from the two regions together to communicate and enhance mutual understanding and friendship among participants, as well as exchange educational STEM information among themselves.

#### 4. Young Inventors Challenge (YIC)

The Young Inventors Challenge (YIC) is a team challenge aimed to build and encourage the creative and inventive capabilities of young people, where 3 to 5 students put their minds together and come up with an invention. Teams are provided live training through videos and Facebook sessions with expert trainers and innovators provided by the Association of Science, Technology and Innovation (ASTI) Malaysia.

#### 5. ASEAN Eco-Schools Award

As part of the ASEAN Eco-schools Program, the ASEAN Eco-schools Award aims to recognise exemplary efforts of eco-schools in ASEAN Member States (AMS) in inculcating environmental awareness in every aspect of education to their students and surrounding communities. Two schools (one primary and one secondary) from each member state will be nominated to receive the Award.



Science, Technology & Environment Partnership  
Centre (STEP Centre), 2nd Floor, Block A, Bangunan  
Sekolah Rendah Pengiran Anak Puteri Besar, Jalan  
Lumapas, Kampong Lupak Luas, Mukim Lumapas,  
BJ2524, Brunei Darussalam



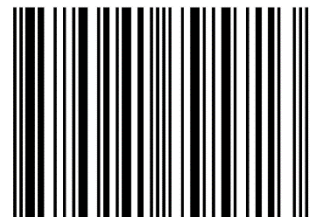
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[step@moe.gov.bn](mailto:step@moe.gov.bn)

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