

Additional Information on Questa Club Activities

Earn 10 stars for a Silver Questa badge

Earn 20 stars for a Gold Questa badge

Rows highlighted in purple can be done in science centre



SECTION A (This section is compulsory for the gold badge)

Activity	General Examples	STEM ALP Schools	LEAPS 2.0	Stars
1a. Project The project should illustrate a principle or concept in any area of pure or applied science (e.g. biology, computer science, chemistry, geology, physics, etc) or any STEM-related field. The project can also aim to solve problems or develop applications for daily life. For teachers: - The project can be done in groups. - Can be used for school-based continual assessment or entered for science/ STEM competitions. - May be used to supplement science practical assessment training.	- How pH effects growth of plants - Types of fuel - Water pollution: effect on plant life - Producing heat energy using chemical reactions - How viruses infect the body (e.g. COVID-19) - Dengue control in Singapore - Any other STEM-related topics - Code for fun programme	(Tier 1 - any STEM ALP lesson/project) Examples: - Coding with micro:bit/ Arduino/ M5Go for e.g. smart city/ smart living/ sustainability - Investigation on food (e.g. food analysis, food chemistry) - Investigation of impact of eating habits on their health - Design and create health-care products to improve lives of people with disabilities. - Growing edibles - Designing a game to solve issues. - Urban farming and design growing edibles systems. - Forensic science investigation		★★★

		• Bernoulli's principle and forces of flight of drones/ glider • Investigation of renewable energy technologies.		
1b. Project Presentation (2 additional stars) For teachers: • The presentation can be done in groups. • Can be used for school-based continual assessment or entered for science competitions.		(Tier 1 – project) • STEM ALP project sharing in class (Tier 2 – project) • Showcasing of their project in open house/ school events, etc • Presentation to the community that they are creating solutioning for		★★
2. Addressing real life problem/ social issue (no prototypes required) (400-800 words) - Identify a problem that you come across in your daily life. - Analyse the causes and effects of the problem. - Suggest STEM-related solution. For teachers: • The report can be part of continual assessment in relevant subjects (e.g. English, Social Studies) where appropriate.	• Pollution in your neighborhood • Traffic congestion along a road you travel. • Problem faced by the handicap • Rising sea level • Food wastage • Drug Abuse • Vaping issue • Climate change • Disease outbreak and control (e.g. dengue, influenza) • Overuse of antibiotics • Ageing population • Any other relevant social issues	(Belong to any STEM ALP Contextual Theme) • Health & Food Science • Future of Transportation • Cities & Urban Landscape • Emerging Technology • Sustainability) Any STEM ALP project/lesson that involves providing solution to a problem and put that into a brief report in 400-800 words.		★★★★★

SECTION B (Elective)

Activity	General Examples	STEM ALP Schools	LEAPS 2.0	Stars
3. Poster (can be a digital poster) Design and draw a poster (A3 size or bigger) highlighting concerning issues in science or STEM-related field. For teachers: - Any form of coloring materials can be used. - Digital design can also be encouraged e.g. Adobe photoshop, online software like Canva.	- Conservation of endangered species - Drug abuse - Use of animals in research - Nuclear waste dumping - Cancer - Diabetes - Pollution - Food wastage - Micro plastics	(Tier 1 – project) - Project sharing day that involves students making poster (Tier 2 – competition/ events) - Health & Food Science Competition		★★★
4. Reflection of STEM-related book/ film/ article/ game/ app/ show For teachers: Can be done as part of English curriculum, assignment, holiday homework, etc.	Things that can be done in Science Centre - Science shows in science centre (Energy Titans Show/ Fire Tornado Show/ Omni-Theatre Show) Other examples: - Whispers in the wind – game app available for iphone/ ipad/ android https://play.google.com/store/apps/details?id=com.BSCS.WhispersintheWind&hl=en_SG&pli=1 - The human body – app available for iphone/ ipad https://tinybop.com/apps/the-human-body - STEM-related board/card games (e.g. pandemic, evolution, potato pirates, enter the spudnet, Terraforming mars) - Environment/ rising sea level/micro plastics - Blackfish/ The Martian/ Interstellar/ Wall-			★★

	E/ Spaceman - Articles by National Geographic - Documentaries - NASA https://plus.nasa.gov/topics/documentaries/			
5. Knowledge of one science society or organization Search the websites of STEM-related organizations for the relevant information. For teachers: Can be presented in the form of powerpoint slides/ word document	- Singapore National Academy of Science - Institute of Physics Singapore (IPS) - Singapore Association for the Advancement of Science (SAAS) - Singapore Institute of Biology (SIBiol) - Singapore Mathematical Society (SMS) - Singapore National Institute of Chemistry (SNIC) - Science Teachers Association of Singapore (STAS) - Agency for Science Technology & Research (A*STAR) - DSO National Laboratories - Singapore Food Agency			★★
6a. Skit Create a script for a skit. It can be either a light-hearted or a serious skit. A maximum of 2 person may submit the same script.	It could deal with topics like - Scientists' Occupations - An experiment Gone Wrong - Eugenics - Any other social Problems in Science			★★★
6b. Skit performing (2 additional stars) Present your skit before an audience. For teachers:	International Science Drama Competition			★★

• Can be part of Science project / continual assessment in school curriculum. • Can be presented during school assembly.				
7. Essay/literacy work (250-300 words) Write about any topic in science/ geography/ mathematics or any other STEM-related field that you are interested in. For teachers: • Can be presented in the form of powerpoint slides. • Digital design can also be encouraged e.g. Adobe photoshop, online software like Canva.	• Mathematics in Nature • Climate change/global warming • Tsunami • Effects of nuclear power			★★
8. Science Career pamphlet For teachers: • Students may choose to research about careers in any STEM-related field. • Teachers can encourage students to attend talks by STEM professionals.	Examples of STEM-related careers: • Engineers • Science/mathematics teachers • Science researchers/ Scientists • Radiographers			★★
9a. Field Trip report For teachers: • This can be done after any school's field trip. • Can be in the form of worksheets	Field trip can be in the form of STEM-related workshop/ events/ festivals. Examples of offerings of these from Science Centre: https://www.science.edu.sg/for-schools/events-and-festivals • DNA day • Brain Fest			★★★

provided by the respective organisation. • Students can also share photographs, videos as part of the report.	• UNTAME schools • Workshops Places may include: • Science Centre • Singapore City Gallery (https://www.ura.gov.sg/Corporate/Singapore-City-Gallery/Programmes) – geography linked about building a sustainable and liveable environment • Mint museum of toys (https://emint.com/learning-journey/) – Amazing race-style tour, learning about technology and artificial intelligence through toys • Changi airport group (https://www.changiairport.com/en/discover/learning-journeys.html#students) • NEWater Visitor Centre (https://www.pub.gov.sg/Public/Places-of-Interest/NEWater-Visitor-Centre) • Red dot design museum (Red Dot Design Museum Singapore Design Exhibition Gift Shop Cafe (red-dot.sg)) • Sustainable Singapore gallery (https://www.pub.gov.sg/Public/Places-of-Interest/Marina-Barrage/SSG) • Science Centre • Gardens by the Bay • Bukit Timah Hill • Singapore Zoo • Botanical Gardens • Museums (e.g. Art Science Museum) • Jurong lake • Any other national parks			
--	--	--	--	--

9b. Science Centre exhibits Explain concepts behind at least 2 exhibits. For teachers: Students may use illustrations/ photographs or oral presentation videos and demonstration related to exhibits.				★★★
10. Set up a website/ create social media post For teachers: Students can set up a website or create social media post (e.g. Tik Tok/ Facebook/ Instagram) on science/ STEM-related fields. Science/STEM content must be accurate.	Possible activities to showcase include: - Making videos of science demonstrations - Showing growth of a plant Sharing scientific fun facts and concepts			★★
11a. Entering a science or STEM-related competition Any STEM-related competition at the school / national level. For teachers: A letter of participation confirmation is required.	- Math or Science Olympiad - Elementz Science Project Competition - National STEM Championship - Science fairs - Singapore Science and Engineering Fair - National STEM Championship - Drone Odyssey Challenge - National Robotics Competition - International Science Drama Competition - Singapore Amazing Flying Machine Competition - Singapore Science Buskers - Horizon Hydrogen Grand Prix Singapore	(Tier 2 – competitions) - Health & Food Science Competition - Nxplorers - Could also be competitions organized at school level like masterchef, coding competition, etc.	(Achievement) - Research or mentoring project with Science Centre (SSEF, SMP, RDP, YSEP, YSC) (Achievement) -Representation - Represent school for competitions	★★

11b. Winning any award at a Science or STEM-related competition (3 additional stars)			(Achievement) -Accomplishment • For winning top 4 prizes	★★★
12. School Service Assist in the running of a science/mathematics club or society in the school, or any other science-related activities in the school.	• School's open house • CCA		(Leadership) In STEM-related CCA committee • Robotics Club, Green Club and any STEM-related clubs	★★
13. Organising field trip Assist in organizing a field trip in STEM-related field.				★★
14. Volunteer work (shorter term) There should be at least 2 certified sessions totaling 10 hours at the place of work. For teachers: • Make an appointment with the Education Officer of the organization concerned before your student's visit.	Possible organisations/activities: • Gardens by The Bay • Singapore Zoo • NParks • Beach cleanup • Any other science / STEM-related companies and institutions		(Service) Examples of volunteer work in Science Centre. Students work on VIA project that impacts school / Community (~10 hours). • Volunteer work in ecogarden: e.g. Research on succulent plants for the signages. • Work on new programmes on STEM like R&D	★★★

			for experiments/ prototyping.	
15. Attachment at science institutions (longer term) Attachment to organisation for minimum one week. For teachers: Teachers to contact respective organisation.	Example of offerings from Science Centre: - SWAP - WOW Other possible institutions offering attaching include: - Wildlife Reserves Singapore - Singapore Discovery Centre - Science Centre - Any other STEM-related companies and institutions		(Service) Examples of attachment in Science Centre. Students work on VIA project that impacts school /Community (2 weeks or more) Work on hand-on activities and deepen their skills in the areas of Research &/or Experimenting &/or content creation for workshops.	★★★