Information on 21st International Elementz Fair

- Each North Zone (NZ) secondary school or JC can submit a maximum of eight projects, with not more than five students in each project. Each secondary school outside NZ can submit a maximum of five projects, with not more than five students in each project.

- No hardcopy project report would need to be submitted.

- **Online registration** of research projects from the same school must be completed online either by the Head of Science (HOD) or a teacher representative by **Wednesday, 12th Feb 2020** at [https://go.gov.sg/21st-elementz-steam-conference](https://go.gov.sg/21st-elementz-steam-conference). Upon registration, a **group code for each project** will be emailed to the HOD and teacher representative.

- Another online link will be emailed to the HOD and teacher representative. Only one representing the school would need to key in the **group code, names of confirmed students and teacher mentors** (for certificate printing purpose), as well as confirmed project title, project abstract, project introduction, materials and methods, results, and discussions which come with maximum word count limit. They must be submitted on that online link by **Monday, 23rd March 2020**.

- All projects will undergo judging on 14th April 2020 (Tuesday). The judging criteria are given on page 5. Schools must bring their own Velcro tapes, and poster stands.

- All projects will remain showcased on 15th April 2020 (Wednesday) where results would also be announced at the poster display venue in the hall. Participating schools can sign up for workshops and learning journeys on this day.

- This year, there would not be any selected award-winning groups that will be invited to present at the Conference.

- To equip participants with skills to write their research report and present their results students for the 21st International Elementz Fair, a Science Research Skills Workshop for Elementz Fair participants. It would be conducted on **29th Jan 2020 (Wednesday)** from 3.30 pm to 6 pm. There are two concurrent sessions – one for teacher mentors and another for students. Please refer to page 9 for more details on the Science Research Skills Workshop. Registration Forms for the Science Research Skills Workshop must be emailed to resma_gulzar_mohd@schools.gov.sg by **Friday, 17th Jan 2020**.
ArtScience Festival

Under the ArtScience Festival, there would be a series of workshops and learning journeys held on 15th April 2020 (Wednesday). They are opened to sign ups by teacher and student participants at a later date, where more details will be shared to participating schools through email. As each workshop and learning journey has limited capacities, schools are advised to sign up early at the earliest opportunity to avoid disappointment.

In addition, we are pleased to have Ms Liew Wei Li, Deputy Director-General of Education (Schools) and Director of Schools to give her keynote address in the auditorium. We invite all teacher and student participants to join us. Please email poh_wei_leong@schools.gov.sg by 10th April 2020 if you are keen to attend the keynote address, stating (i) school name, and (ii) estimated number of teachers, and students.

All enquires can be directed to the Organising Committee:

Co-Chairpersons
Mr Poh Wei Leong, poh_wei_leong@schools.gov.sg,
Mdm Resma Gulzar Mohd, resma_gulzar_mohd@schools.gov.sg
Mr Kelvin Soo, soo_kah_wai_kelvin@schools.gov.sg
21st INTERNATIONAL ELEMENTZ FAIR
RULES AND REGULATIONS

1. ENTRIES FOR THE 21st INTERNATIONAL ELEMENTZ FAIR

1.1 All registration of entries to the 21st International Elementz Fair must be made online at https://go.gov.sg/21st-elementz-steam-conference by the Head of Science (HOD) or a teacher representative. A group code for each project and another online link will be emailed to the HOD and teacher representative upon registration.

1.2 Each project must be sponsored by a teacher and approved by the HOD.

1.3 Each north zone school is allowed a maximum of eight entries while other schools outside north zone is allowed a maximum of five entries.

1.4 The number of participants for each entry should not exceed five.

1.5 The Organisers reserve the right to reject any entry.

1.6 The Organisers will not be held responsible for any accidents or injuries incurred by the participants as a result of their participation in the S.T.E.A.M Conference.

1.7 The deadline for online registration of school participation is Wednesday, 12th Feb 2020.

1.8 The deadline for the submission of group code, names of confirmed students and teacher mentors (for certificate printing purpose), as well as confirmed project title, project abstract, project introduction, materials and methods, results, and discussions which come with maximum word count limit on another online link that has been emailed to the HOD and/or teacher representative is Monday, 23rd March 2020.

2. ELIGIBILITY

All upper secondary students currently attending Secondary Schools and all students attending Junior Colleges are eligible to participate in the 21st International Elementz Fair.
3. **PROJECTS**

3.1 All participants must undertake an investigative type of project with science and/or engineering principles.

3.2 All participating teams will present a **poster exhibit for judging** on 14\textsuperscript{th} April 2020 (Tuesday). Please bring along your own Velcro tapes and poster stands. The poster display must remain exhibited on 15\textsuperscript{th} April 2020 (Wednesday).

3.3 Exhibits using dangerous items such as exposed high-tension wires, explosive chemicals, open fires and ferocious or poisonous animals are strictly prohibited.

3.4 If the research projects conducted involve animals and birds, please adhere to the rules regarding the care and use of animals for scientific purposes, as published on the website of The Animal & Veterinary Service (AVS) at: [https://www.nparks.gov.sg/avs/resources/legislation/animals-and-birds-act-chapter-7](https://www.nparks.gov.sg/avs/resources/legislation/animals-and-birds-act-chapter-7)

3.5 Most proposed research projects involving vertebrate animals and/or potentially hazardous biological agents must be reviewed and approved by the Scientific Review Committee (SRC) before experimentation. All proposed human research must be reviewed and approved by an Institutional Review Board (IRB) before experimentation begins. For more information, please visit [https://www.science.edu.sg/docs/default-source/scs-documents/for-schools/ssef_2018_operational_guidelines_for_src_and_irb_2018.pdf](https://www.science.edu.sg/docs/default-source/scs-documents/for-schools/ssef_2018_operational_guidelines_for_src_and_irb_2018.pdf)

4. **JUDGING OF ENTRIES**

4.1 The judging criteria are modified and adapted from the judging criteria used in the Singapore Science and Engineering Fair (SSEF).

4.2 The Organisers reserve the right to decide on the mode of judging.

4.3 Judges are from tertiary institutions and will be appointed by the Organisers.

4.4 The decision of the judges will be final. Enquiries on the judging will not be entertained.

5. **AWARDS AND CERTIFICATES**

5.1 The Main Organising Committee of the 21\textsuperscript{st} International Elementz Fair will decide on the quantum of awards.

5.2 Certificates and/or awards will be given to each participant.
6. DECISIONS PERTAINING TO THE 21st INTERNATIONAL ELEMENTZ FAIR

The Organisers reserve the right to decide on issues pertaining to the 21st International Elementz Fair that is not explicitly stated in the Rules and Regulations.

7. ACCEPTANCE OF THE RULES AND REGULATIONS

All institutions and participants will, by registering their projects online, bind themselves to these Rules and Regulations.

21st INTERNATIONAL ELEMENTZ FAIR

JUDGING CRITERIA

Modified and adapted from the Singapore Science and Engineering Fair (SSEF)

<table>
<thead>
<tr>
<th>JUDGING CRITERIA</th>
<th>Approximate Weightage (%)</th>
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<tbody>
<tr>
<td>1 Soundness of Scientific Principle</td>
<td>25</td>
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<tr>
<td>Depth of analysis of research problem, design and methodology including data collection, analysis and conclusion.</td>
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<td>2 Poster Display Exhibit</td>
<td>25</td>
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<td>Relevant, with layout that aids student’s oral presentation. Any prototypes present are useful to give judges a clearer understanding of project.</td>
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<tr>
<td>3 Oral Presentation</td>
<td>25</td>
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<tr>
<td>Systematic presentation of research problem, principle involved, discussion of results, potential application, and future use.</td>
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<td>4 Question and Answer</td>
<td>25</td>
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<td>Oral defence skills – display knowledge of project to address any queries by judges.</td>
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<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
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To help you with the above judging criteria, the following serves as a reference:

**POSTER GUIDELINES**

**General**
1. The poster must be clear, with text large enough to be seen. It is recommended to be A0 size and portrait (same as SSEF). There are many science research poster template which can be downloaded from the Internet.

2. Supporting tables, graphs, charts, diagrams, pictures or photos, etc. should be properly labelled in sequential order and captioned. For example,
   - Table 1, 2, 3 etc.
   - Figure 1, 2, 3, etc.
   - Diagram 1, 2, 3, etc.
   - Chart 1, 2, 3, etc.

**Project Title**
The project title should throw light on your investigation. It should **not** be an advertisement-type of slogan.

Examples of good project titles:
- *Investigations on the Breakdown of Aspartame*
- *The Multi-Purpose Red Cabbage Indicator*
- *Effects of Refrigeration & Room Temperature on Proliferation of Yeast on Honey*
- *To Study the Effects of Abiotic Factors on the Sungei Api Mangrove Swamp*

Examples of bad project titles:
- *Small Thing Great Wonders*
- *A Magical Solution*
- *The Sound of Gourmet*
- *Save the World with Vegetables*

**Organisation of Poster**

**Abstract/ Synopsis**
The abstract is a summary of the whole project, stating its purpose, method, main findings and conclusion(s).

**Introduction**
- What the project is all about?
- Why it is chosen?
- Why it is important, significant or interesting?
- What you hope to achieve from your investigation?

**Investigative Approach / Theoretical Background**
- What theoretical background drives the investigation of the project?
• What approaches are considered?
• How is the final approach decided upon?
• Are there any initial assumptions or hypotheses made?
• Are there any key questions you hope to answer from your investigation?
• What is the main focus of your project?

Resources
• What resources (human, physical and time) have been utilised in the project?
• How have they been procured?

Methodology / Procedure
• Describe in detail the steps in your study or investigation, including timeframe, repetitions, and changes made to original plans.
• How does your method lead towards answering the key question(s) in your study?

Findings
• What data is collected from the study?
• Your data must be organised and presented in a reader-friendly format.

Analysis of Findings
• How is the analysis of the data collected conducted?
• Why is the data analysed the way you did?
• Present your analysis in a way that makes for easy interpretation by the reader.
• The use of tools, such as tables, graphs, charts will improve your presentation.
• The tables, graphs, etc. have to be interpreted. i.e. what do they mean?

Relevance to Practical Application
• What are the practical applications of the project and the results obtained?
• Highlight the feasibility, advantages and relevance of any ideas proposed in the course of the research.

Conclusion
• What significant conclusions can you make from the analysis of the findings?
• Do the conclusions fit your initial assumptions or hypotheses?
• If they do not, can you explain the cause of any deviations?
• Can you explain any interesting or unexpected results of your investigations?
• Are your research questions sufficiently answered by your investigation?
• What further investigations can your team or other investigators do as a follow-up?
References
• Choose the significant references to be included in your poster. List your references in alphabetical order of family names of author.
• The list should include the author’s name, year of publication, title of publication, relevant chapters and pages (if applicable), and publisher. E.g.:


• References can either be from printed or non-printed media. State the type of media, if non-printed.

Acknowledgement
List those who have assisted the team in one way or another in the process of the investigation and poster making. The more significant persons should be listed first.
SCIENCE RESEARCH SKILLS WORKSHOP

Synopsis: The Science Research Skills Workshop aims to prepare both teacher mentors and students for the 21st International Elementz Fair. The concurrent workshop session for teacher mentors would help them guide their students. More details will be emailed to the participants.

Date: 29th January 2020 (Wednesday)
Time and Venue: 3:30 pm at ASRJC

Target Group: Each secondary school and JC may send teachers and/or students for the research skills workshop. There is no quota for the number of teachers or students. Registration would be based on a first come first serve basis, though unlikely to reach maximum capacity.

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* Delete where appropriate

Please note: **All Registration Forms for the Science Research Skills Workshop must be emailed to** resma_gulzar_mohd@schools.gov.sg **by Friday, 17\textsuperscript{th} Jan 2020.**