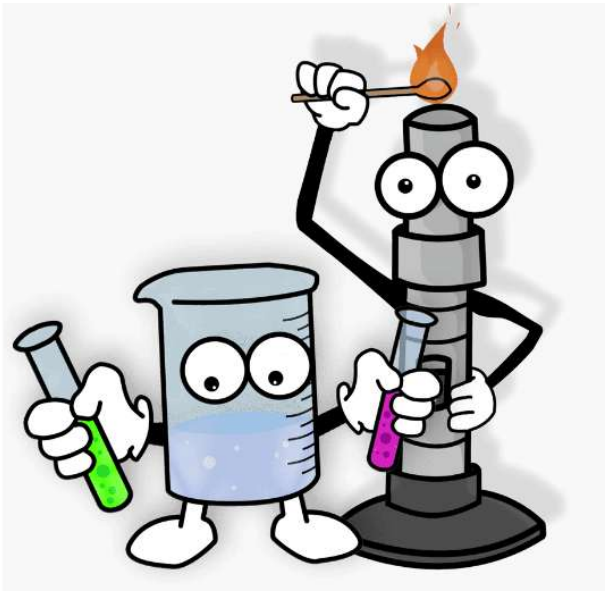
Tritech Science Fair
Learner Information Brochure



Tritech is an exciting competition with the following objectives:

- to prepare learners to be informed students, well-equipped for tertiary level education.
- to teach learners how to conduct scientific research.
- to incorporate modern technology in the research.
- to use science and technology in a responsible manner. The learner must therefore be aware of the impact his/her project will have on the environment and/or how it can make the lives of people easier or better.
- to equip learners to present their projects / ideas to all interested parties.

Requirements of the project

1. The project may be done either individually or in a group (maximum 2) in which each member has a specific responsibility. You need to provide evidence of each member's contribution to the success of the project.
2. The visual presentation can be:
   - Power point (If this method is used then a printout is required for the judges) or
   - Display board that can stand alone and is a maximum of 1.2 m wide.
3. The presentation of the project is limited to a maximum of 10 minutes.
4. **You must include the following in your project:**
   a. Problem
   b. Investigative question
   c. Aim
   d. Background information / Research
   e. Hypothesis
   f. Materials
   g. Method
   h. Results
   i. Interpretation of results
   j. Conclusion
   k. Bibliography/ References
   l. Acknowledgements

The **Scientific Journal** is a very important record of the development of your project. This journal doesn't need to be neat but should be handwritten and must show evidence of your own research and thoughts throughout your project. All your interviews, background research, rough data with dates, calculations and interpretation of data should be in the journal. Remember that the journal is **not a duplicate of your written presentation**. It must accompany your board or powerpoint as it will also be marked by the judges.

An abstract is an overview of your project. It is a paragraph **without headings**, of a maximum of 250 words. The project abstract must appear on the front cover of your journal. Your abstract should include a summary of the introduction, method, results, conclusion and the contribution your project made to the relevant community. Also include 5 keywords at the end of your abstract that could be used to explain the main focus of your project.

Problem:
State what the **problem** is that you intend to solve through your project and name the community you intend to help through your project.

Background knowledge:
Put **all** the background research you did into your journal and then on your project mention briefly where you found your information to do your project like interviews, questionnaires, articles, etc.

Aim:
State what it is that you intend to do to solve the problem.

Investigative question:
Rephrase your problem as a meaningful and well researched **question**. The question must be clear, short and "test-able", including your variables.

Hypothesis:
State this in a "If ..... then....." format, e.g. "If an athlete drinks the energy drink, then he/she will perform better in the 100m race."

Method:
State clearly what you used to do your experiments or build your design.
Explain point by point how you went about doing it.

National TRITECH RUBRIC

Project title:	Category:	Project no.	Grade:
Name of participant/s:	Name of Judge:	Mark: [100]	

SECTION A: JOURNAL and LITERATURE STUDY	Max mark	Project mark
Abstract: 1 paragraph, clearly written, that summarises the project and appears on the outside of the journal. Logical and clear 2/2 Present 1/2, Absent 0/2	0 - 2	
Background knowledge: Clear evidence that a literature study was undertaken and is shown through **written or verbal knowledge.** **Learners score 3/3 if:** Significant amount of background information. **Learners score 2/3 if:** Limited knowledge of background information. **Learners score 0/3 if:** No literature study was undertaken.	0 - 3	
Scientific progress: The journal clearly shows the student's **progression** through the research steps in logical order, for example: in either/or the problem, background information, aim, question, hypothesis, method, results (in rough table and/or graph format) and conclusion. **Learners score 5/5 if:** the **scientific cycle** is clearly evident and repeated with improvements along the way. **Learners score 2/5 if:** only parts of the scientific cycle are shown. **Learners score 0/5 if:** no evidence of research is shown / information is irrelevant or incomplete.	0 - 5	

SECTION B: VISUAL PRESENTATION (of research)	Possible mark	Project mark
Overall Appearance: Project is neat, eye-catching and creative. Correct, scientific, no spelling mistakes, with appropriate headings. Board: Anyone would be able to see what the project is all about in 2 minutes at a distance of 2 m, without help. Power Point: Points shown on slide are short, clear and summarise the project. ***Hint:*** *It is always good to have a physical printout of the power point presentation for pre-judging purposes.*	0 - 3	
Topic/Design/Computer program: Something new within the participant's frame of reference. Not just a duplication of something that already exists. (e.g. existing experiments, computer processes, scientific processes, existing technology or computer technology)	0 - 3	
Problem is a real problem for a specific community (or group of people) and is well defined.	0 - 3	
Background knowledge: The student **summarises** the academic background available on the topic.	0 - 2	
Aim: State clearly what you intend to do to solve the problem. The variables impacting on the study should be mentioned.	0 - 2	
Investigative question is meaningful and well researched: The question is clear, short and "testable".	0 - 3	
Hypothesis: **Learners score 2/2 if:** The hypothesis is clearly stated including mention of the variables. **Learners score 1/2 if:** Hypothesis is not clear.	0 - 2	
Method is complete, appropriate and well thought out and explains point by point how the hypothesis was tested. **Learners score 5/5 if:** Steps of the method are clear and in logical order. **Learners score 3/5 if:** Steps of the process are less clear or not in order. **Learners score 1/5 if:** Process is incomplete, only a few steps are done. **Learners score 0/5 if:** The presentation is only a literature study.	0 - 5	

Results:
Interpret your results and display them clearly in tables or graphs. If you have designed something, then a model of your design or detailed drawings of the design and how it will work should accompany your presentation board or powerpoint.
State what can be deduced from the results of your research.

Conclusion:
This needs to relate back to the hypothesis and aim –Will it be of benefit to the community concerned?

Always use your variables when you write your aim, hypothesis and conclusion.

Bibliography:
You should use the heading "References" to acknowledge all the material used and referred to in your assignment. All sources should be arranged alphabetically according to the surname of the author. Remember that you must also acknowledge articles from web pages and oral interviews with people. Visit https://youtu.be/cMlSRjcyQlQ internet explorer to see how it must be done.
Thank anyone who helped you or gave you ideas for your project.

Helpful note: Use "References" in the WORD program. Choose "Havard" and complete all info. With the press of a button your Bibliography will be done.

Results:	**Variables, control (See below for IT, Technology and Engineering)** **Learners score 5/5 if:** Variables identified and control is applicable and can be explained. Sample size and sample selection is appropriate to the complexity of the study and can be explained.	0 - 5	P.T.O
Results cont:	**Learners score 2/5 if:** One or two variables are absent. Sampling size and sample selection are not considered. **For IT, Technology, Statistics and Engineering where Controls and Variables are not available, a CLEAR outline of improvements made to the design/ programme etc. during the course of the project must be given and discussed. Clear 5/5, Unclear 2/5, None 0/5**		
	Tables and graphs. Clear, meaningful, relevant and applicable to research/testing done. Clearly labelled (can be on board, in power point presentation or journal).	0 - 5	
	Meaningful **interpretations** / deductions are made from the results.	0 - 2	
Conclusion is meaningful and is connected to the aim and hypothesis.		0 - 5	
Bibliography and recognition: **Learners score 5/5 if:** Acceptable format is used (author, date, title, and source) for 5 or more literature searches **AND** acknowledgements are listed separately. **Learners score 2/5 if:** Little research is done and there is only 1 or 2 references. **Learners score 0/5 if:** Only Google is listed or there is no evidence of a literature search and no acknowledgements are listed.		0 - 5	

During your **presentation** you will be presenting your research and findings to the judging panel only once.

The following points need to be kept in mind:

- be enthusiastic
- don't read your speech off your notes – Talk about your project and what you did
- make eye contact
- don't use teenage slang
- keep your speech to 10 minutes maximum
- answer all questions as honestly as possible – if you don't know, say so!
- your presentation must be supported by a written report either on a display board or power point or film etc.

NB: Print your power point presentation in "thumb nail format" if you do not have a board. This must be ready for judges for prejudging and during your presentation.

SECTION C: **ORAL PRESENTATION OF PROJECT**	Possible mark	Project mark
Introduction: Immediately creates interest in her/his project.	0 - 2	
Project comes out of learner's field of experience: It is clear that the project comes out of the learner's field of experience.	0 - 2	
Enthusiasm: Learner is energetic, clearly excited and in control of the presentation.	0 - 2	
Presentation of the project: A lot of effort is made in order to explain in a clear, comprehensive and logical manner. Single project: It is clearly the learner's own work. Group project: All members have put in the effort and it is their own work.	0 - 3	
Self-confidence and body language: Learners are full of confidence and comfortable with the topic/project.	0 - 2	
Scientific language: Scientific language is used fluently and learner shows insight into language. (No teenage slang may be used)	0 - 2	
Speech: Presentation is clear and is not read off. (May refer to notes.)	0 - 2	
Answering of questions: Listens to questions asked and answers meaningfully and intellectually OR admits to not knowing the answer but offers to research it.	0 - 2	
Improvement of and possible expansions of the Project. Meaningful suggestions on improvements of existing project (experiment / program or product). Learner realises the **scientific short-comings**, can support and substantiate possible suggestions for expanding on the project.	0 - 4	
Time frame: Presentation of not more than 10 min.	0 - 2	
Ownership: Learners take 100% ownership of the project. They can explain all the methods/techniques used. Recognition given to help received.	0 - 2	

The impact your project has on the environment / community.

- You must identify a problem in YOUR home environment/ community / family. You must plan your project in such a way that it addresses the problem effectively.
- By the end of your project, you must be able to prove that your project has a positive impact on the environment or community.
- Motivate why your project is important.

What is your environment / who comprises your community?
Environment:
It can be limited to your immediate environment e.g. your garden, school, class,
Or extended environment e.g. your town, province, country...
Community:
It can be intimate e.g. family, friends, class mates, neighbours, or wider like a farming community, school community, town, country, soccer players, mothers, etc.
Technology:
It can be any technology e.g.:

- The computer – to do research and to assimilate data, build a model, present your project or
- YouTube or Facebook or
- Cell phones, GPS or
- Any apparatus used to build / test your project e.g. welding, programming, microscope work...

Use any technology / own initiative that will suit your particular project.

SECTION D: IMPACT OF THE PROJECT AND USE OF TECHNOLOGY		Possible marks	Project mark
Community and/or environmental impact:	Learner has identified the relevant community and can explain the advantage the project has on the community and/or environment.	0 - 2	
	Project findings have been communicated to the community.	0 – 2	
	Benefits to or impact on the community and/or environment was tested (Statistics are given)	0 - 2	
	Proof of the positive changes that the project has had on the community and/or the environment where it has been put to use.	0 - 2	
Technology	Learner has identified the technology **available to the child** that was used for **research and testing.**	0 - 2	
	Technology was used in an exciting, creative and meaningful manner in the research.	0 - 3	
	Use of a variety of technological skills (if available).	0 - 2	

Categories for Tritech Science and Technology Fair

Category		
Category	**Sub-categories**	**Category Number**
Life Sciences	- Plant Sciences including marine plants - Animal and veterinary Science including marine animals - Food Sciences and Food Technology	1
Engineering and Design	- Engineering - Electronics, Electrical - Engineering – Mechanical and aeronautical - Engineering – Civil - Engineering – Industrial - Engineering – Chemical and Metallurgical	2
Maths, Science and Technology	- Physics - Chemistry - Mathematics and Statistics - Computer Science and Applications	3
Environmental and Social Sciences	- Environmental Science and Ecology including marine ecology - Energy (alternative, renewable, sustainable) - Tourism opportunities, including ecotourism - Recycled Materials - Earth Science – Geography and Geology including oceanography and Mining - Astronomy and Space Science - Housing, Settlement Studies	4
Health Sciences	- Medical Sciences (human anatomy and physiology, diseases, cures, drugs) - Health Care (primary healthcare, prevention, diet, hygiene) - Psychological Sciences	5
Agricultural Sciences	- Plant Science related to Agri - Animal Science related to Agri - Agri Tech and design - Land Ecology, Soil Science, Hydrology - Farming	6

<u>Competition and other important dates for learners</u>:

The competition consists of different rounds where you must submit the same project. You may improve your project between the various rounds.

1. **Tritech School round:** April – June 2025
2. **Tritech Regional round:**
   Polokwane: 31 July 2025
   Louis Trichardt: Participate @ Polokwane / Tzaneen regional round
   Tzaneen: 1 August 2025 @ Ben Vorster High School
   Phalaborwa: 1 August 2025 @ Frans du Toit High School
   Giyani: 1 August 2025 @ Khanyisa Education Centre
   Nelspruit: 1 August 2025 @ Hoërskool Nelspruit
   Virtual round: 5 August 2025 (The virtual round will be held for all new schools and schools in remote areas).
3. **Tritech National Science fair:** **19 & 20 September 2025**

Medals and prizes will be given during this round for exceptional research. There are huge cash prizes for each category winner in all the sections, as well as prizes for the most innovative project, the best collaboration and the best community project. Bursary candidates will also be identified.

COSTS:

1. **Tritech School round:** **No entry fee**
2. **Tritech Regional round:** **R 50 to be paid to Regional organizing committee.**
3. **Tritech National Science fair:**
   a. **Hostel Accommodation:** ***TBC***
   b. **Registration fee:** ***R250/participant includes 2 lunches and 1 dinner.***