Young Scientist Awards

JUDGING RUBRIC: STANSW Scientific Investigation, Years 10–12

Level	Description
5	The student has provided clear and convincing evidence that he/she: • completed a **valid** scientific investigation over a **period of time** • had **well-defined** aims and **clearly expressed** the subject of the investigation • included a **concise** and **comprehensive** summary of **relevant** prior research in the field and its **reliability** assessed • formulated a **testable hypothesis** based on prior research or previous observations • exhibited a **deep understanding** of related science concepts • accurately **identified** and took steps to **minimise** potential investigative risks • addressed an issue of **social** or **scientific significance** • had been **innovative** or **creative** in their approach, content, methodology or communication to the audience • **identified** and **assessed** a range of procedures and provided **convincing arguments** for the procedure and technology selected • made relevant observations using **replicated trials** • recorded data in an **organised, sequential** and **logical** manner using correct units • identified **independent** and **dependent variables** and took deliberate steps to regulate and keep **controlled variables** constant • used **analytical tools** to **evaluate** trends, patterns and relationships in collected data • used **critical thinking** to synthesise information and **argue the merits** of conclusions • suggested **creative** and **worthwhile** directions for future research in a succinct way • included a **comprehensive** log book, detailing the investigative process, from brainstorming, through data collection, to the final conclusion • **formally acknowledged** those who contributed to the project • used **clear, concise, consistent** and **meaningful** language, visuals and sequencing to **effectively** communicate to the intended audience
4	The student has provided substantial evidence that he/she: • completed a **well-planned** scientific investigation over a **period of time** • had **realistic** aims and **well-described** the subject of the scientific investigation • included a **summary** of current **relevant** information and checked its **reliability** • proposed a **hypothesis** based on prior research or previous observations • had a **detailed understanding** of the science concepts used in the investigation • conducted a carefully **considered** risk assessment prior to experimentation • had been **innovative** or **creative** in content or methodology • gathered experimental data over a **number of trials** using appropriate technologies • recorded data in a **systematic** manner using **correct units** • identified **independent** and **dependent variables** and worked to control them • **analysed** and **explained** trends, patterns and relationships in the data collected • used **critical thinking** to derive conclusions, suggesting ideas for future research • included a log book **detailing** the different stages of the investigative process • **acknowledged** and provided details of any assistance given • communicated the report with **effective** use of language, visuals and sequencing

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3	The student has provided evidence that he/she: • completed a scientific investigation that shows evidence of **careful** planning • had some **measurable** aims and the subject of the investigation was **clearly** described • collected background research with **some relevance** to the subject of investigation • proposed a **relevant hypothesis** • had a **good understanding** of the science concepts used in the investigation • had some **innovative** or **creative** ideas but did not develop them • conducted a **risk assessment** prior to experimentation • gathered first-hand data **with replication** • used thorough scientific methodology including the **control** of **variables** • identified **obvious** trends, patterns and relationships in the data • formulated conclusions that were **supported** by experimental data • provided **supporting** documentation in the accompanying log book • put forward some **good** and **practical** ideas for future improvements • **acknowledged** any assistance given • communicated the report with **good** use of language, visuals and sequencing appropriate to the intended audience
2	The student has provided evidence that he/she: • completed a scientific investigation with **moderate** planning • had some **tentative** aims and the subject of the investigation was **adequately** described • performed **limited** or **general** background research • had **minimal** understanding of the science concepts used in the investigation • lacked **innovative** or **creative** ideas • considered **experimental risks** but did not conduct a formal **risk assessment** • gathered **some** first-hand data **without replication** • **controlled** some **variables** • identified **limited** trends, patterns and relationships in the data • formulated conclusions that were **not fully supported** by experimental data • provided **limited** or **disorganised** documentation in the accompanying log book • put forward **some** ideas for future improvements • received some assistance but **did not provide details** of the assistance given • communicated the report with **adequate** use of language, visuals and sequencing
1	The student has provided evidence that he/she: • submitted a project with **limited** planning • had no **clear** aim and the subject of the investigation was **vaguely** described • performed **nominal** or **irrelevant** background research • had an **inadequate** understanding of the science concepts used in the investigation • **failed** to recognise or control **variables** • **failed** to identify trends, patterns and relationships in the data • manufactured conclusions **lacking** supporting information and scientific accuracy • **neglected** to include a log book • **neglected** to acknowledge assistance given • communicated the report with **poor expression** and **inadequate** use of visuals