## Young Scientist Awards

**JUDGING RUBRIC: STANSW Scientific Investigation, Years 10–12**

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<th>Level</th>
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| 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 |