**JUDGING RUBRIC: STANSW Scientific Investigation, Years 9–10**

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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   
<p>|       | • communicated the report with <strong>effective</strong> use of language, visuals and sequencing |</p>
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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 |