

### Scientific Explanations Rubric NAGT 12/12/2022 Webinar

Proficiency level	<u>D</u> escriptions	<u>C</u> onclusion	<u>E</u> vidence	<u>R</u> easoning
	<i>First, thoroughly describes all trends, patterns, similarities, and/or differences etc. (“T/P/D/S etc.”) in the data .</i>	<i>A statement that answers the original question/problem. If no question is provided, students make their own conclusion from the data studied.</i>	<i>Scientific data that support the conclusion. The data need to be appropriate and sufficient to support the conclusion.</i>	<i>A justification that connects the evidence to the conclusion. It shows why the data count as evidence by using appropriate and <u>sufficient scientific principles</u> (addressed in this class); also includes reasoning for any data that are <u>not relevant to the conclusion</u>.</i>
0	None provided; completely irrelevant	None provided; completely irrelevant	None provided; completely irrelevant	None provided; completely irrelevant
1 (weak)	Provides <b>few</b> “T/P/D/S etc.” descriptions or mostly inappropriate descriptions and/or level of detail of descriptions.	Provides an inappropriate conclusion given the data used; or restates a data description.	Provides very little (when more is present) and/or inappropriate evidence (evidence that does not support the conclusion). 1a very little evid; 1b inaccurate evid	Provides very little or inappropriate reasoning. 1a - only incl. evidence; 1b - only incl. sci principles; 1c - both evid and principles but are connected inaccurately
2 (passing)	Provides <b>some</b> appropriate “T/P/D/S etc.” descriptions; but not all; or level of detail is inappropriate for some described.	Provides an appropriate, but insufficient conclusion. If only one conclusion is needed, this score could be used where students reference the proper feature etc. but does not name it specifically (etc.).	Provides appropriate, but insufficient evidence (given all data present). Or provides sufficient, but some inappropriate evidence. 2a appro but insuff; 2b suff but inappro	Provides reasoning that connects the evidence to the conclusion. Some, but insufficient scientific principles or justification for why the evidence supports the conclusion.
3 (strong)	Completely describes all “T/P/D/S etc.” at an appropriate level of detail. With quantitative details included when available. If interps or explanations included, they are ignored.	Provides an appropriate and sufficient conclusion.	Provides appropriate and sufficient evidence that includes some relevant specific quantitative information and pattern descriptions.	Provides reasoning that connects the multiple pieces (when available) of evidence to the conclusion. Includes appropriate and sufficient scientific principles to explain why the evidence supports the conclusion.

Modified for Undergraduate Intro Science classes from McNeill & Krajcik (2012)

