

Commentary on candidate 2 evidence

Effect of light intensity on rate of photosynthesis

The evidence for this candidate has achieved the following marks for each section of this course assessment component.

Section	Mark available	Mark awarded	Comments	
1 Aim	1	1	The aim of the investigation is clearly stated. The use of the term 'percentage' is acceptable here as the independent variable is still clear.	
2 Underlying biology	4	1	<p>One expanded description/explanation, that is relevant to the aim, is given at a depth appropriate to Higher level:</p> <ul style="list-style-type: none"> ◆ 1 mark (lines 6 – 11) – 'Light energy moves in... different wavelength of light.' <p>No marks were awarded for:</p> <ul style="list-style-type: none"> ◆ The first 6 lines of the first paragraph and the last paragraph as this is mainly National 5 level. ◆ Absorption and action spectrum, as the use of the term 'range' is incorrect. ◆ Description of the electron transport chain, as it is confused by the use of chemical energy getting electrons excited and releasing energy in the form of ATP. ◆ Diagrams without supporting explanations. 	
3 Data collection and handling	5	a	1	A brief summary of the approach used to collect experimental data is provided, with sufficient detail to allow the nature of the experiment to be visualised. The description is suitable as it describes how the independent variable was changed, chemicals (hydrogen carbonate) and the equipment used to measure the dependent variable (pH colour chart) is named.
		b	1	Repeated measurements are included and the raw (unprocessed) data is sufficient, ie 5 light intensities over a suitable range of values (0 to 100%).

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		c 1	The experimental data is presented in a table with correct headings and units. The mean values (averages) are calculated correctly and included in the table.
		d 1	A line graph and table of results with headings and values are included. There is a statement beside the source that clearly links these to the aim of the investigation and the experiment carried out.
		e 1	The source of the research data is cited in the body of the report and referenced as per the instructions for candidates.
4 Graphical presentation	4	a 1	The graph produced is based on the candidate's experimental data. A line graph has been selected which is the appropriate format for this data.
		b 1	Both axes have suitable scales.
		c 1	Both axes have suitable labels and units.
		d 1	All points are plotted accurately and lines drawn to link each of them.
5 Analysis	1	0	The candidate correctly states that their experimental data cannot be directly compared to the internet data. However, values for the two different independent variables have not been given. The difference in the trends shown by the two pieces of data is also not discussed.
6 Conclusion	1	0	The conclusion given is not valid as it is supported by only the experimental data. A valid conclusion must be supported by both the experimental data and the internet data.
7 Evaluation	3	2	1 mark was awarded for suggesting that the use of a colorimeter would improve the accuracy, as it would eliminate subjectivity in determining the results. 1 mark was awarded for the idea of reliability being shown by the similarities in the results of the repeat measurements.

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			<p>Note, however, no mark would be given for simply stating that repeat measurements were made as candidates are instructed to do this.</p> <p>No marks were awarded for providing a list of variables which were controlled, as there is no justification given.</p>
8 Structure	1	1	An informative title is given and the report flows in a logical manner.
Total	20	14	