Commentary on candidate 4 evidence

Water quality

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	0		The aim does not sufficiently describe the purpose of the investigation.
2. Underlying environmental science	3	1		Holistically, a limited understanding of environmental science is demonstrated. There is discussion of rainfall being naturally acidic, affected by various factors, and how the pH of (standing) water varies with rates of respiration and photosynthesis. However, while the final two paragraphs are relevant to the investigation they are not in the candidate's own words and therefore, do not demonstrate the candidate's understanding of the underlying environmental science. A chart showing the impact of pH on aquatic species is included but is not referred to in the discussion.
3. Data collection and handling	5	a	1	The fieldwork procedures can be visualised from the description provided. A dip net would usually be used for aquatic invertebrate sampling rather than a sweep net, but reference to a net is acceptable.
		b	1	The raw data from the candidate's field work is sufficient. Two comparable sites were assessed for species richness and pH, with repeated sampling at each site.
		c	1	Data, including correctly calculated means, are presented in a correctly produced table. All requirements have been met in the Data 1 table, so the mark is awarded for this. (The total number of each species has been added up incorrectly for Data 2.)

Section	Mark available	Mark awarded		Comments
		d	0	While pH values and species data are both presented, the table captions indicate that the candidate is presenting the data from the two species sampling sessions as the two data sources. Together these form one component of the investigation. Lack of clarity means this mark is not awarded.
		e	1	Sources of internet/literature data or information used in the underlying environmental science section have been cited within the body of the report, and references are given later in the report.
4. Graphical presentation	4	a	1	An appropriate graph format (bar graph) has been used to display the counts of aquatic invertebrate data obtained from the fieldwork investigation.
		b	1	The y-axis of the bar graph has a suitable numerical scale, while species labels are used on the x-axis.
		c	1	The axes of the graph have suitable labels and units.
		d	0	The absence of minor gridlines means it is not possible to check the accuracy of plotting.
5. Analysis	2	a	0	The water health scores are correctly analysed against the water health score criteria, with further discussion of the presence of indicator species. However, no analysis of the water pH data is included, which is a key element of the investigation.
		b	1	The extended calculation is a type of biotic index relating to species richness in freshwater, and is correctly calculated. This index is usually used for standing water but the source booklet cited also makes mention of rivers.

Section	Mark available	Mark awarded	Comments
6. Conclusion	1	1	Evidence from the investigation supports the conclusion, but the limited data means it is not possible to determine if pH has an impact on species richness in the waterbodies investigated.
7. Evaluation	3	3	Three valid evaluative statements are included on: ♦ sampling technique ♦ data variability ♦ pH measurement
8. Structure	1	0	The report is clear and concise but does not have an informative title.
Total	**20**	**13**	