Additional Applied Science – Assignment 1 Exemplar commentary

Marking information – Assignment 1: Investigating the work of scientists and how they use science

Work should be marked in **red**.

Whenever you give a mark, put the appropriate mark on the page next to the place where the candidate has gained that mark. Annotate the work to explain the marking.

It will help moderation if you attach the assessment grid, or the Marking Checklist, to each candidate's work, with the criteria awarded indicated with a tick.

Take a holistic view when deciding on the mark to award each strand. To do this, first review the work to see if it fits the criteria for Level 2:

- If the work **does** fit the criteria for Level 2 then look at the Level 3 criteria and award marks accordingly.
- If the work does **not** fit the Level 2 criteria then look at and award the appropriate Level 1 marks.

Marking should be completed using a 'best fit approach'. There is no compensatory marking or rules on the completion of one box before moving to another etc.

In strands where the Quality of Written Communication is specifically reviewed (1A and 4), if the work does not match the criteria given in a level then the maximum mark for that level must **not** be given, even if all the mark points have been matched.

Put the final marks on the Candidate Record form.

Strand	**0 marks**	**Level 1**	**Level 2**	**Level 3**
1. Research 1A. Information on the organisation	No relevant content	**1A.1a** There is a statement of the purpose of the type of organisation **(mark point)** in which the scientist works **1A.1b** and of the investigation to be completed **(mark point)**. Information is poorly organised and lacks a coherent structure, although it may contain some valid points.	**1A.2a** There is a description of the purpose of the type of organisation in which the scientist works **(mark point)** **1A.2b** and of the investigation to be completed **(mark point)**. Information shows some organisation and structure and contains some valid evidence.	**1A.3a** There is an explanation of the type of organisation in which the scientist works **(mark point)** **1A.3b** and of the investigation to be completed in terms of the benefits to society **(mark point)**. Information is logically organised and structured coherently, and is supported by a range of valid evidence.
Commentary		Both mark points have been achieved as the type of organisation and benefits to society of the investigation have been explained rather than just stated **(2 marks).** The information is organised and supported by evidence so is above this level.	Both mark points have been achieved as the type of organisation and benefits to society of the investigation have been explained rather than just described **(2 marks).** The information is organised and supported by evidence so is above this level.	The candidate has explained the importance of the Food Standards Agency to society (p.1), clearly explaining the role of the organisation **(1 mark)** and how it links to the investigation to be undertaken (p.1), **(1 mark).** Information is organised and supported by a range of evidence.

Total marks for this candidate for Strand 1A: 6 marks

Maximum marks for Strand 1A: 6 marks

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Strand	0 marks	Level 1	Level 2	Level 3
1. Research 1B. Information on work of the scientist	No relevant content	**1B.1a** There is a brief account of the work of a scientist **(mark point)** **1B.1b** and at least one link to scientific knowledge from the specification **(mark point)**.	**1B.2a** There is a description of the work of a scientist **(mark point)** **1B.2b** and some relevant links to scientific knowledge from the specification are identified **(mark point)**.	**1B.3a** There is a detailed account of the work of a scientist **(mark point)**, **1B.3b** with clear links to scientific knowledge from the specification **(mark point)**.
Commentary		Both mark points have been achieved (p.1), as there is a description of the work of a scientist and more than one link to scientific knowledge from the specification **(2 marks).**	There is a description of the work of the scientist **(1 mark)** which is linked to some of the content of the specification (p.1), **(1 mark).**	The account of the work of a scientist is not detailed and links to the specification are not clear.
				Total marks for this candidate for Strand 1B: 4 marks **Maximum marks for Strand 1B: 6 marks**
1. Research 1C. Qualifications and skills used by the scientist	No relevant content	**1C.1a** The qualifications required by the scientist are stated **(mark point)** **1C.1b** and at least one practical skill that is required to carry out the investigation is mentioned **(mark point)**.	**1C.2a** There is a description of the qualifications required by the scientist **(mark point)** **1C.2b** and how practical skills are used to carry out the investigation **(mark point)**.	**1C.3a** There is a description of the qualifications required by the scientist and an explanation of how practical skills **(mark point)** **1C.3b** and scientific knowledge **(mark point)** are used to carry out the investigation.
Commentary		Both mark points have been achieved as the information given on the qualifications required and the practical skills used by the scientist are more than just stated **(2 marks).**	Both mark points have been achieved as the information given on the qualifications required and the practical skills used by the scientist have been described **(2 marks).**	There is a description of the qualifications of the microbiologist and the practical skills required are explained (p.2), **(1 mark).** There is an explanation of how scientific knowledge is used. This can be found in the sections of the candidate's work on the Food Standards Agency and the work of a microbiologist (p.1), **(1 mark).**
				Total marks for this candidate for Strand 1C: 6 marks **Maximum marks for Strand 1C: 6 marks**

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Strand	0 marks	Level 1	Level 2	Level 3
1. Research 1D. Sources of information	No relevant content	**1D.1** A limited range of sources of information is given, some of which may have been provided to the candidate **(mark point)**.	**1D.2a** There is a record of using a range of identified sources of information, showing some degree of selection **(mark point)**. **1D.2b** The limitations of the data and conclusions that the scientist may recognise are given **(mark point)**.	**1D.3a** There is a bibliography containing a wide range of sources of information and the relevant information has been selected from this **(mark point)**. **1D.3b** Alternative strategies that the scientist may use to improve the data collected from the investigation are given **(mark point)**.
		This mark point has been achieved as there is a bibliography that scores marks at a higher level than this **(1 mark).**	The first mark point has been achieved as there is a bibliography that scores marks at a higher level than this **(1 mark).** The limitations of the investigation are given (p.3), and the candidate has discussed a few ways in which the investigation could be improved **(1 mark).**	There is a bibliography (p.2 + 3), which shows how the wide range of sources has been used **(1 mark).** The improvements suggested do not explain how they would make the data collected more reliable so the second mark point here is not achieved.
				Total marks for this candidate for Strand 1D: 4 marks **Maximum marks for Strand 1D: 5 marks**
2. Making a hypothesis	No relevant hypothesis presented	**2.1** A vague hypothesis has been stated for the investigation, but it has little scientific foundation **(mark point)**.	**2.2** A hypothesis has been stated, which is relevant to the investigation **(mark point)**	**2.3** A reasoned hypothesis has been given for the investigation, with scientific justification **(mark point)**.
		This mark point is achieved as there is a hypothesis which is more than just vague **(1 mark).**	The hypothesis given is relevant to the investigation (p.3). This is weak and only just enough to achieve the mark **(1 mark).**	There is no scientific justification given for the hypothesis so this mark point is not achieved.
				Total marks for this candidate for Strand 2: 2 marks **Maximum marks for Strand 2: 3 marks**

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Strand	0 marks	Level 1	Level 2	Level 3
3. **Following standard procedures and collecting data**	No data collected or results presented	**3.1a** The investigation has been carried out, but only vaguely following the standard operating procedure **(mark point)**. **3.1b** Simple observations and measurements have been made and there is some attempt to record the results appropriately **(mark point)**.	**3.2a** The investigation has been carried out, following the standard operating procedure with some guidance **(mark point)**. **3.2b** Careful and accurate measurements and observations have been made and have been recorded in appropriate tables and graphs, with little guidance **(mark point)**. **3.2c** Observations that it would be appropriate to repeat have been recognised **(mark point)**.	**3.3a** The investigation has been carried out, independently following the standard operating procedure **(mark point)**. **3.3b** Accurate and precise measurements and observations have been made throughout and have been independently recorded accurately in appropriate tables and graphs **(mark point)**. **3.3c** Reasons for repeating any measurements or observations have been given **(mark point)**.
		Both mark points have been achieved as the carrying out of the investigation and the recording of results are above this level **(2 marks).**	The investigation has been carried out independently rather than with some guidance **(1 mark).** Observations have been made and recorded in a suitable table (the centre must annotate here (p.4), to show the level of guidance given) **(1 mark).** There is no mention of the need to repeat any results. There is a comment in the evaluation about it being better to collate class data but this is in connection with a wider range of samples rather than repeating so this mark point is not achieved.	The investigation has been carried out independently (p.1), (the centre must annotate the work to show the level of guidance given here) **(1 mark).** The results were not recorded independently so this mark point is not achieved. No mention of repeats.
				Total marks for this candidate for Strand 3: 5 marks **Maximum marks for Strand 3: 8 marks**

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Strand	0 marks	Level 1	Level 2	Level 3
4. **Analysing data / evidence and drawing conclusions**	No attempt made to identify patterns or manipulate the data; no conclusions given	**4.1a** There is some attempt to identify patterns and carry out calculations **(mark point)**. **4.1b** A vague explanation that the scientist may make in a report of the investigation is given **(mark point)**. The conclusions show little logical structure or organisation.	**4.2a** Patterns within the data / observations have been identified and calculations carried out **(mark point)**. **4.2b** Conclusions that the scientist may make, based on the evidence collected, in a report of the investigation are given, which are consistent with the evidence **(mark point)**. The conclusions show some organisation and structure and relate directly to the evidence obtained.	**4.3a** Patterns within the data / observations are identified and explained and some expertise in manipulating the data to carry out calculations is demonstrated **(mark point)**. **4.3b** Conclusions that the scientist may make, based on the evidence collected, in a report of the investigation are given **(mark point)**. The conclusions are clear and logical and relate directly to the evidence obtained, demonstrating a comprehensive scientific understanding.
		Both mark points are achieved here as the identification of patterns, use of calculations and the explanation given for the results are above this level **(2 marks).** The conclusions given have more structure and organisation that that required at level 1.	Both mark points are achieved here. The identification of patterns and use of calculations are above this level and the conclusions given are consistent with the evidence **(2 marks).** The conclusions given have more structure and organisation that that required at level 2.	Patterns are identified (p.5), but since there are only two results, this is a little simple. However, The calculations do show significant manipulation of the data **(1 mark).** The conclusions drawn are based on the evidence (p.5), **(1 mark).** The conclusion, along with the section entitled 'scientific knowledge of bacteria in food and drink', demonstrate a good scientific understanding
				Total marks for this candidate for Strand 4: 6 marks **Maximum marks for Strand 4: 6 marks**
				Total mark for this candidate for assignment 1: 33 **Total maximum marks: 40**

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Assignment 1: Investigating the work of scientists and how they use science

Assessment criteria achieved in each strand (tick as appropriate)

Strand 1A: The organisation

1A.1a	1A.2a	1A.3a
✔	✔	✔
1A.1b	**1A.2b**	**1.A3b**
✔	✔	✔

Marks for Strand 1A 6/ 6

Strand 1B: Work of the scientist

1B.1a	1B.2a	1B.3a
✔	✔	
1B.1b	**1B.2b**	**1B.3b**
✔	✔	

Marks for Strand 1B 4/ 6

Strand 1C: Qualification/skills of the scientist

1C.1a	1C.2a	1C.3a
✔	✔	✔
1C.1b	**1C.2b**	**1C.3b**
✔	✔	✔

Marks for Strand 1C 6/ 6

Strand 1D: Sources of information

1D.1	1D.2a	1D.3a
✔	✔	✔
	1D.2b	**1D.3b**
	✔	

Marks for Strand 1D 4/ 5

Strand 2: Hypothesis

2.1	2.2	2.3
✔	✔	

Marks for Strand 2 2/ 3

3.1a	3.2a	3.3a
✔	✔	✔
3.1b	**3.2b**	**3.3b**
✔	✔	
	3.2c	**3.3c**

Marks for Strand 3 5/ 8

Strand 4: Analysis and conclusions

4.1a	4.2a	4.3a
✔	✔	✔
4.1b	**4.2b**	**4.3b**
✔	✔	✔

Marks for Strand 4 6/ 6

Total marks for Assignment 1 33/40