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91923



Draw a cross through the box (☒) if you have NOT written in this booklet

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Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 1 Science 2025

91923 Demonstrate understanding of science-related claims in communicated information

Credits: Five

| Achievement | Achievement with Merit | Achievement with Excellence |
|--|---|---|
| Demonstrate understanding of science-related claims in communicated information. | Explain science-related claims in communicated information. | Examine science-related claims in communicated information. |

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

Choose ONE context from the Resource Booklet to answer ALL parts of the task in this booklet.

Pull out Resource Booklet 91923R from the centre of this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

Do not write in the margins (//////). This area will be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Excellence

TOTAL 07

Make sure you have the paper Resource Booklet 91923R.

INSTRUCTIONS

This task is made up of two parts. You must answer BOTH parts.

Choose ONE context from the resource booklet and use both resources provided to complete this assessment.

- Context One: **Personality tests**
 - Resource A: ***Scientific American* magazine article**
 - Resource B: **Myers-Briggs website**
- Context Two: **The future of plastics**
 - Resource A: ***Good News Network* article**
 - Resource B: **BioPak website**

Context One: Personality tests ▾

Use information in the resource booklet for your chosen context to answer ALL parts of the task.

PART ONE

Use Resource A from your chosen context to respond to the following:

(a) Who published this information?

B *I* U

This information was published by Seth Stephens-Davidowitz and Spencer Greenberg in an article on *Scientific American's* website. *Scientific American* is a popular science magazine, and the article is an opinion and analysis piece. There are no qualifications mentioned, and the two authors are part of a research group who self-publish their work. They share this research on their website, *ClearerThinking.org*. The article was also published in February of 2024, meaning that it is still recent and most likely not out-dated.

(b) Why was this information published?

B *I* U

This information was published with the intent to inform and possibly persuade. Because it is published in a magazine and isn't an advertisement, the authors seem to want to share their findings with people who might read the magazine. Through the magazine, they will not gain anything by convincing people to do or buy something of theirs. However, there is a slight reason to believe that the information is trying to persuade the reader, too, as it does link to the website of the group the authors are a part of: *ClearerThinking.org*. The authors of the article could possibly want people to read the article, approve of it, and find more on their website, which is mentioned in the magazine. This creates a slight conflict of interest, because it means that they are not sharing their research just because they want to inform people. However, this conflict of interest does not lead to a bias that would affect the topic of the resource and their research, because the authors' jobs and research do not specialise or have anything to do with personality types.

(c) What is a science-related claim in this resource?

B *I* U

"Most people are far from fully extraverted or introverted, or sensing or intuitive. They are instead somewhere near the middle."

(d) What are the science language or conventions used in support of this claim?

B I U     

In the resource, there is a graph, research done and data collected with a test group of 559 people, and statistics.

(e) How well do the science language or conventions used in the information support the claim that you identified in part (c)? Use evidence to support your response.

B I U     

Science language and conventions are used by scientists to research and share their findings with other people accurately, and in a way to make sure that the research process can be repeated.

In resource A, the authors use a few science conventions that increase the article's reliability. One of these science conventions is the use of a graph. The authors of the article claim that the MBTI test is not totally reliable, as it puts people into two boxes for each category. For example, the test will decide if a person is extraverted or introverted, and doesn't leave any room for anyone who is in the middle, not recognising that these things are more of a spectrum, not one thing or the other. The article says this makes the MBTI test inaccurate because most people aren't *just* introverted or *just* extraverted, and are mostly in the middle. They back up this claim with their graph. The graph shows the distribution of the 559 study participants' levels of intuitive/sensing traits from when they did the test. Both of the axes are labelled correctly, with units measured in the score of a person's "sensing" trait as told by the MBTI test. The distribution of data is in a "bell curve" shape, meaning that the highest points are in the middle, and there are fewer and fewer people the further you go to the more extreme ends of the scale. This supports the author's claims because it shows that most people are not *just* sensing or *just* intuitive, but are actually gathered closer to the middle of the scale. Another science convention used in the source that supports the claim is the use of a group trial, where they gathered data from a large group of people and made conclusions from it. They say that they got 559 participants from their online website to do the MBTI test and gathered data from that. They used this data to come to their conclusions about the validity of the MBTI personality test, and also to make a graph to further display their findings. The size of the group, being as large as 559 people, is good for the data's reliability because it means they got data from a range of people. While 559 may not be 1,000 or 10,000, it is still large enough to mean that the participants were a variety of people. This supports the authors' claims because it means that their conclusions are true for many people.

However, there are some aspects of this resource that lower the reliability, and some science conventions and language that could have made the information better. One of the aspects of this article is the conflict of interest from the authors. While they are not aiming to sell anything to the audience, they are still hinting that they have more research on their own website, and are almost trying to draw people towards it. This may not affect the validity of the information because this conflict of interest does not have anything to do with personality types, but it does reveal a motive for the authors to publish the information. It shows that most of what they care about is giving people information to make a name for themselves and their website, not so much about the MBTI personality types. Another aspect of the resource that lowers its reliability is the fact that their group of participants are all random people from their online community. The gathering of the data and testing was not professionally or properly done; there is a chance that some people lied on the test to get a strange result - this is something that the researchers would have no way of controlling. This makes the information less reliable because we don't know how accurate the data actually is, since it was not gathered professionally. There is also a science convention missing from the information, and its absence makes the resource less reliable. The resource has not been peer reviewed before it has been published, or at least, there is no mention of any peer review that was done. The information was also published in a magazine, not an actual scientific journal. In scientific journals, everything is peer reviewed and scrutinised before it is sent out to the public and viewed as complete, proper findings. Peer review is when another professional in the field looks over the work of a researcher to make sure that everything they have said is true and unbiased. It is important because it ensures that the information the audience receives is not false or misleading, and that all the data used has been gathered correctly. A lack of peer review decreases the information's reliability. We do not know how solid and correct the information given to us actually is because it has not been checked over.

PART TWO

Use Resource B from your chosen context to respond to the following:

(a) Who published this information?

B I U     

This information was published by the Myers-Briggs Company, on their website, where the personality tests can be purchased. The Myers-Briggs Company are the official company for the MBTI test, and are the creators of it. There is no mention of any qualifications or whether the creators of the test and authors of the website are professionals. The information was also not published in any scientific journal and there is not mention of any peer review.

(b) Why was this information published?

B I U     

This information was likely published with the intent to sell and persuade. The Myers-Briggs Company will probably want people who come across the test to believe in it and believe that it is accurate. If they do, they might feel the need to buy some of the tests, something the authors of the resource will benefit from. This creates a clear conflict of interest, which could easily lead to bias. Because they are benefiting from their readers believing a certain thing, they could potentially give incorrect information or mislead people, so that they end up having more trust in the MBTI test than they actually should. They could also be biased and end up interpreting information that they receive to mean something different to what it shows, to show them in a better light.

(c) What is a science-related claim in this resource?

B I U     

"...the test-retest reliability for the MBTI tool is very good."

(d) What are the science language or conventions used in support of this claim?

B I U     

In this source, there is a diagram, references to other personality tests and data about them, for example: "the general standard of scale of any psychometric assessment is to have an internal consistency reliability of 0.70 or above".

(e) How well do the language or science conventions used in the information support the claim that you identified in part (c)?

B I U     

Science language and conventions are used by scientists to research and share their findings with other people accurately, and in a way to make sure that the research process can be repeated.

In this source, the authors of the information used the science convention of a diagram to support their claim. Diagrams are science conventions that display information clearly, so that it is easy for anyone to understand. Like graphs, they give a visual representation of any data that has been collected so that viewers can visualise things like the differences between values, for example. In this diagram, it is shown that out of four popular personality tests (Big Five, NEO-FFI, Birkman Method, and MBTI), the MBTI test has the highest test-retest correlations, at 0.87. This means that, after 15 weeks, the results people got the second time around were extremely similar to their initial results, showing that the MBTI test is consistent. Earlier in the article, it is mentioned that the four scales on the MBTI assessment have an internal consistency reliability of 0.90, when the general standard is only 0.70. However, there is something about this diagram that makes it harder to visualise, and that is that for each of the personality assessments, they all have a different amount of time between the assessments. MBTI has the highest of 15 weeks, NEO-FFI has 12 weeks, Birkman Method has only 2 weeks, and the Big Five doesn't even say. These unbalanced values make the diagram incredibly difficult to follow, defeating the whole purpose of putting a diagram in the first place. Obviously, there is a chance that this is not the Myers-Briggs Company's fault and that they cannot control these things. However, it is unfortunate that the diagram is unbalanced, because it makes it harder to understand what it is trying to say. Despite this, the fact that the MBTI test has the longest time in between tests shows that even though more time had passed, the consistency was still higher, adding to its reliability and causing the reader to further believe what the information has to say.

However, there are some aspects of this resource that lower the reliability, and some science conventions and language that could have made the information better. One of the aspects of this article is the conflict of interest from the people who wrote and published the information. On the very same website where they talk about how accurate the MBTI test is, they also sell the tests to people. This seems almost like a marketing scheme, in a way, because they first try to convince and persuade people into thinking that the MBTI test is good and reliable, and then immediately give them the option to buy it. They are obviously benefiting financially from people believing in the MBTI test, and likely want that to continue. This conflict of interest makes this source an unreliable source of information immediately. We have no way of knowing if the writers and publishers of it are sharing information for the good of the people reading, or if they are just trying to make money off them. It is very likely that they are trying to make money by selling the tests, but what we don't know is how much of the information we are receiving is genuine. Even if the authors of the information are trying to be objective, there is always the chance of there being an unconscious bias, where the people giving the information are only saying certain things, leaving out information, or giving incorrect information, because they already believe that their test works. On top of this, there is also a science convention missing from the information: peer review. Its absence makes the resource less reliable. There is no mention of the resource being peer reviewed before it was published. The information was published on a website and not in a scientific journal - if it had been, there would definitely be a peer review. On websites, people can say whatever they want, without needing to worry about the things they say being scrutinised by a professional. This is a good thing for them, but it is bad for anyone reading the information, as it means that we have no idea how accurate the information we are being given is, because we are not professionals ourselves. The lack of a peer review lowers the source's reliability and does not support the authors' claims, because it means it may not be correct and gives the readers a reason not to trust the information given to them.

Excellence

Subject: Science

Standard: 91923

Total score: 07

| Grade score | Marker commentary |
|--------------------|--|
| E7 | <p>The response examines how the science conventions of conflict of interest and peer review impacted the support for the claims within the personality tests context. The response considers where conflicts of interest may have occurred and links this to other science conventions such as bias. It also discusses the reasons why it is important peer review occurs. The response also describes or explains multiple other science conventions such as currency, graphs, sample size, and credibility of the authors.</p> <p>To gain an E8, the candidate would need to examine these science conventions in more depth.</p> |