

Name: _____

Edgewater College

Analysing information on vaping

AS 91154 Biology 2.2: Analyse the biological validity of the information presented to the public

Resource title: Analysing information on vaccination

Credits: 3

Achievement	Achievement with Merit	Achievement with Excellence
Analyse the biological validity of the information presented to the public.	Analyse in-depth the biological validity of the information presented to the public.	Comprehensively analyse the biological validity of the information presented to the public.

Student instructions

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What does biological validity mean?

According to EN3 of AS91154, **biological validity** refers to “**scientifically accurate** information that is used in an **unbiased** way to convey a biological idea”. To establish if the information presented is biologically valid you will need to:

For Achievement	For Achievement with Merit
● Identify the purpose of the information, incl. ○ who produced it ○ who the intended audience is ○ its main intent or message ● Recognise and describe biological features in an article or presentation ● Identify these features as accurate, inaccurate, or biased using biological knowledge	● Give reasons that explain how the article conveys a vested interest to the audience ● Give reasons that explain how or why each feature is accurate, inaccurate or contains bias ● Give reasons that explain how or why inaccurate or biased information could have consequences for the public

This resource will help you with how to:

- analyse and explain any **VESTED INTEREST** in the article/presentation.
- analyse and explain **ACCURACY**, **INACCURACY** and **BIAS** in the biological features of the article/presentation.

What is a VESTED INTEREST?

Sometimes the author or creator of an article or presentation has a particular interest in convincing their audience of something or to take a position on a controversial topic. You might also say they have a *personal agenda*.

When analysing your article/presentation, consider:

- who the **author** (or creator, or publisher) is
- who the **audience** of the article or presentation is (i.e. who will read it or see it)
- **how** the audience might **respond** to the message of the article or presentation.



TYPES OF VESTED INTEREST

An author, creator or publisher of an article/presentation may have a **vested interest** in:



Keeping a population **healthy** and functional (i.e. able to live and work)



Making sure people **understand** an issue so they can make the right decision (i.e. evidence-based)



Convincing the audience, they need to **buy** a product (usually one they are selling) or **donate** money to a cause.



Making the audience take a particular **position** on an issue (usually their own).



Promoting their own views as correct, while slamming critics.



Seeming to be **neutral** and informative on a topic (even though they are biased).



Provoking controversy to get website page views to earn more money from advertising/sales.

A VESTED INTEREST is CONVEYED in the article or presentation through:

- the **language** being used e.g. 'as many as 5000 people...!!!' compared to 'only 5000 people...'



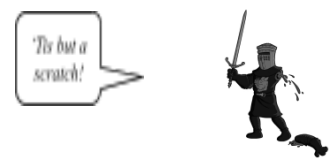
balanced coverage of an issue



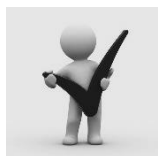
biased/unbalanced coverage of an issue



exaggerating benefits or risks



downplaying benefits or harms



praise



criticism

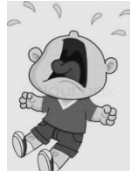


scaremongering



emotive or manipulative language

- how the article is **organised** e.g.
 - how it begins or ends – who gets the last word?
 - how much space is given to each side of an issue (this relates to making things seem more or less important than they are)
- the **imagery or music** etc. that accompanies the article or presentation





To EXPLAIN how a VESTED INTEREST is conveyed, you will need to:

- **describe WHAT** the vested interest might be: how might the author, creator or publisher of an article or presentation be hoping to impact on their audience?
- **explain HOW** the vested interest is **conveyed** in the article/presentation: refer to the **content** itself; how it is **organised**; any persuasive or emotive **language, images or music** etc.

How can a biological feature be ACCURATE?

- It is **factually correct** – it fits with known biology
e.g. how the immune system works, how vaccines work, the risks associated with various diseases, the risks associated with various vaccines
- It is **based on solid evidence** such as scientific studies:
 - with repeatable results
 - with large sample sizes (important when making conclusions about whole populations)
 - that have been collecting data for a long time and/or in many different countries

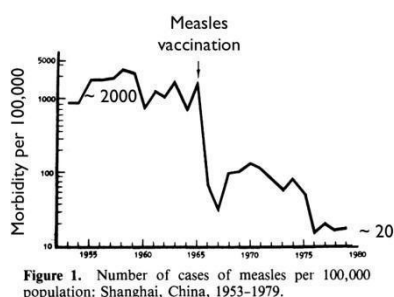
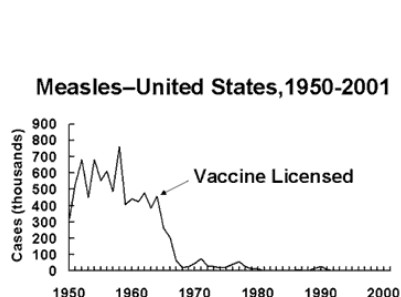


Figure 1. Number of cases of measles per 100,000 population: Shanghai, China, 1953-1979.

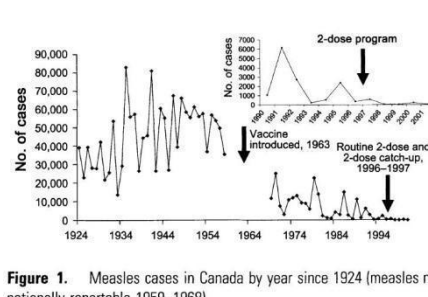
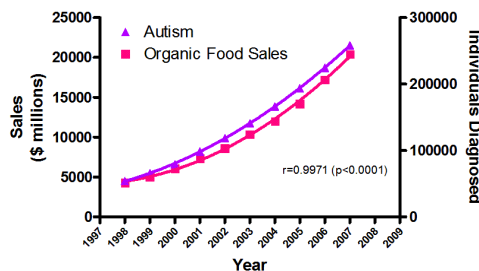
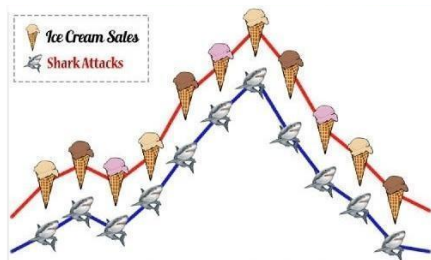


Figure 1. Measles cases in Canada by year since 1924 (measles not nationally reportable 1959-1968).

- Any statistics or claims made are **referenced** i.e. a source is given that supports the claim
- Any statistics or claims made **agree with other reliable sources**

How can a biological feature be INACCURATE?

- It is **factually wrong** – what the information says does not fit with what actually happens or with known biology
- It is **not based on current evidence** or is based on **insufficient evidence**
e.g. a scientific study's sample size is too small; a scientific study's methodology is flawed (e.g. not a fair test, no controls)
- It is based on **cherry-picked evidence**
i.e. only on studies that support it, while ignoring valid studies that would contradict it
- It relies on **anecdotes** (personal stories) rather than properly collected scientific data
- It confuses **correlation** (two factors that show the same patterns of increase and decrease) **with causation** (one factor causes the changes in the other)



- It confuses **coincidence** (two events happening at about the same time) with **causation**.
*e.g. If someone has a **cup of coffee**, and later in the day, they are involved in a **car crash**, then did the coffee cause the crash? Not likely.*
e.g. If an infant is vaccinated, then two days later, starts to talk, was that the vaccine? Probably not – it was just a normal part of their development.
- If it presents a **hypothesis** as a proven fact.
- It is **overly simplified** or **incomplete**.



To EXPLAIN how a biological feature is INACCURATE, you could:

- **Correct** the error(s) in biology that has been made.
- Explain the **flaws** in any evidence that the article provides as support.
- **Contradict** the feature with relevant data (statistics, tables, graphs) from reliable studies.
- **Identify** a claim as an anecdote and **explain** how these are unreliable.
- **Dismiss** a claim based on it mistaking correlation or coincidence for causation.
- **Quote** statements that contradict the feature from other, reliable sources.

How can biological features be BIASED?

- If they only present **one side** of a controversial issue and not the other side
- If they give more importance to one side of an issue than is warranted = false balance
e.g. giving equal space to each side, when the science is heavily on one side
- By **misrepresenting** the scale of something:
 - *overemphasising the benefits while understating the risks, or vice versa*
 - *using sensationalist language*
- By using **emotive language** or making an emotional appeal e.g. to counter facts
- If someone (a vendor) is using the information to **promote a product** they are selling or stands to benefit if the audience follow the information they present (*links to vested interest*)



To EXPLAIN how a biological feature is BIASED, you could:

- **Explain** how the article is one-sided by pointing out what information that they have ignored
- **Criticise** any false balance in the article and explain what the balance should actually be
- **Provide** the actual benefits and risks
- **Highlight** where language is being used to sensationalise the biological feature, and **rewrite** it
- Point out where any emotional manipulation is attempted and how this could mislead the audience
- Identify a product that could make money for someone and explain how the feature could increase its sales.

Other reasons to be suspicious of the biological validity of information:

- The author (an individual or organisation) **promotes other invalid biological information**, indicating their general knowledge of biology is poor, and therefore they can't be trusted as an authority.
- The source **misrepresents** their **credentials**
e.g. they may have (and use) their qualifications, but they are not qualified in a relevant field

Prioritising the information

Prioritise means to put in order of importance. In this assessment, you will be prioritising the biological features based on their significance or influence on people's decisions about getting the vaccination.

When prioritising the information in each resource consider:

- The **accuracy** of the information
- Any **bias** or **inaccurate** information
- The impact of the information on the person reading it.



To show you have **PRIORITISED** the information you need to:

- Identify the biological feature you think is most important in influencing people's decisions about getting the vaccine.
- Explain why or how you arrived at this decision.
- Do the same for the remaining biological features.

Evaluate the overall impact on the public

Your evaluation will form the last part of your report. In it, you summarise what you think is the overall impact of this resource on the public and their decision to get vaccinated and give your reasons for this.

When evaluating the resource consider:

- The balance of accurate, inaccurate and biased information
- Did the resource achieve its purpose?



When you **EVALUATE** you need to:

- Make a judgement about what you think the overall impact of the resources, will be on the public.
- Explain how or why you arrived at this conclusion.

The assessment task

You will be given three articles to analyse.

Processing the information

You can choose to work with these articles in paper or electronic form. Choose a method that will enable you to work on your assessment both at school and at home.

Read your selected article/presentation and identify where **biological information** is being communicated:

As you do this, think about these questions:

1. What is the **purpose** of the article/presentation? The purpose involves three key aspects:
 - Author: Who wrote or created the article/presentation? Name and describe the person or organisation e.g. give their relevant qualifications or experience.
 - Audience: Who would be the normal audience (reader or viewer) of this article or presentation?
 - Message: What is the overall message or intent of the article? What is the creator of the work trying to communicate to their audience?
2. Does the author/presenter have a **vested interest** when presenting biological information? If so, how do they do this? Consider the language or imagery they use, and what information they have chosen to include or exclude that could impact anyone reading or viewing the article or presentation.
3. Is the biological information in the article or presentation **biologically accurate**? How do you know if it is correct or not? To do this you can:
 - Explain the biology involved in claims that relate to diseases or to vaccination.
 - Make corrections to inaccurate information.
 - Provide further information from *other, reliable sources* (data, quotes, graphs etc) that support or contradict the biological feature.
4. Is the biological information in the article or presentation **biased** in any way, or is it **balanced**? In what ways does the article or presentation show that it is biased?
5. What are the **consequences to the public** of **inaccuracies** in the information given? What are the **consequences to the public** of any **bias** shown in the article or presentation? Are people more or less likely to use a vaccine after receiving this information? Why? How could changes in the use of this vaccine impact public health?
6. Is some information more important than other information in terms of how it affects the audience of the article or presentation and their decisions about vaccination? What makes it more important?
7. What is the **overall impact** of the article on its readers/viewers? Did it achieve its purpose?

These questions are starting points only, to get you thinking about how to analyse each article/presentation for your report on each one.

Writing your reports

For EACH of your three chosen articles/presentations, write a report that **analyses the biological validity** of the information presented to the public on vaccines and vaccination.

In each report, you should try to address each of the bullet points below.

- Identify the purpose of the information. This should include: who produced it - who the intended audience is - the main message or intent of the article/presentation	for Achieved
Explain (by giving reasons) how any vested interest (for example, strong personal interest or personal agenda) is conveyed to the intended audience.	for Merit
Recognise and describe at least TWO biological features in the information. For articles, you could: Copy and paste text or diagrams from the article into your report and indicate clearly that they are excerpts (introduce them with your own text, <i>use italics font</i>, or enclose the excerpts in quotation marks / a border); Give a page reference and a brief description of the information on the page <i>Please note that you are not expected to analyse every biological feature in the article/presentation. Instead, focus on the features you think would have a significant impact on the audience's understanding of the COVID-19 vaccine.</i>	for Achieved
Identify each biological feature as accurate, inaccurate or biased using your biological knowledge. <i>Note: Please try to stick to one of the above three terms, rather than using any synonyms.</i>	for Achieved
Explain (by giving reasons) how or why each feature is accurate, inaccurate or contains bias. You can do this by: - Explaining the biology involved in claims that relate to the COVID-19 vaccine. - Making corrections to inaccurate information. - Providing further information from <i>other, reliable sources</i> (data, quotes, graphs etc) that support or contradict the biological feature. Give the reference for this information in full (see <i>Referencing your sources</i> below). - Assessing how fair or balanced the information is.	for Merit
Explain why or how any inaccuracies and/or bias in the biological features presented could have consequences for, or impacts on, the public. <i>Please note that the impact of accurate information does not qualify for this section.</i>	for Merit
Prioritise, with reasons, aspects of the information in relation to how much they influence people's decision making about vaping. Give reasons why some pieces of information are more important than others.	for Excellence
Evaluate the overall impact of the article on the public (its audience and beyond) based on any bias in the article and its balance of accurate and inaccurate features. Link the overall impact to the purpose of the article and the reasons you have given for the information being accurate, inaccurate, or biased.	for Excellence

The order given is only a suggestion – what works for you will depend on the article/presentation being analysed. You can combine your answers to two or more bullet points to avoid repetition.

Your reports may be typed or hand-written. Each report should be 1-2 pages long, depending on how in-depth you are going.

See the Assessment Schedule at the end of this hand-out to clarify what is required for each level of achievement.

Assessment of your work

Each report will be graded according to the Assessment Schedule (see next page). The word length of each report is 700 - 1100 words.

Your final grade will be based on **all THREE** of your reports. It will be determined by the highest grade that you achieve in any of your three reports, so long as they all reach at least Achieved level.

There will be no reassessment offered for this Achievement Standard. However, if one of your reports isn't up to standard, you can replace it with a fourth report that is.

Assessment schedule: Analysing information on vaccination

Judgements for Achievement	Judgements for Achievement with Merit	Judgements for Achievement with Excellence
The student is able to analyse the biological validity of the information presented to the public on vaccination by processing information from articles/presentations selected from at least three different sources.	The student is able to analyse in-depth the biological validity of information presented to the public on vaccination by processing information from articles/presentations selected from at least three different sources.	The student is able to comprehensively analyse the biological validity of information presented to the public on vaccination by processing information from articles/presentations selected from at least three different sources.
In EACH of the three reports, the student MUST:	In addition to the requirements for Achievement, in at least ONE of the reports, the student could:	In addition to the requirements for Achievement, with Merit, in the SAME report, the student MUST:
- identify the purpose of the information, including who produced it, who the intended audience is for the article/presentation, and its main intent or message. recognise and describe at least TWO biological features of the article/presentation. - identify these features as either accurate, inaccurate or biased using biological knowledge (recognition of inaccuracies can be demonstrated by making corrections) <i>Processed information of all three articles is submitted as evidence of student processing.</i>	explain how the information conveys vested interest (strong personal interest or personal agenda) to the intended audience. OR explain why or how each biological feature is accurate, inaccurate, or contains bias. OR explain why or how inaccuracies and/or bias may have consequences or impacts for the public. <i>At least TWO good reasons must be given. They could relate to any of the above bullet points.</i>	prioritise (with at least TWO reasons) aspects of the information in relation to how much influence each aspect has on people's decision-making about getting a vaccination. AND evaluate the overall impact of the article/presentation on the public, based on any bias in the article/presentation and its balance of accurate and inaccurate features.

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the Achievement Standard.