

The Scholar

Issue 14
January 2020
thebrilliantclub.org



The Anthropocene vs. Deep Time

***A Journey Through
Earth's Climate History***

+

***Academic essays on The healthy
heart and The wood-wide-web:
The importance of fungi in the
forests of the future***



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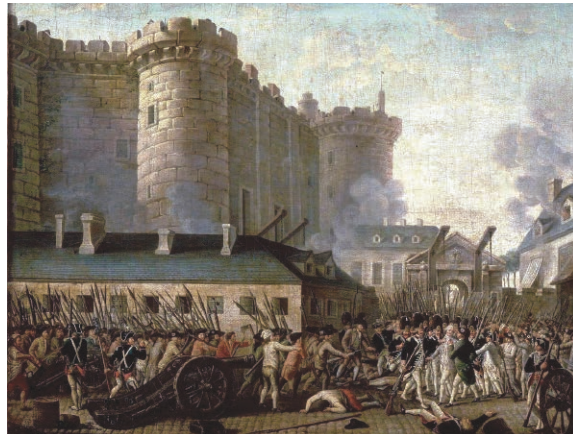
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an external world.

Updates

Introduction from The Brilliant Club

**Welcome to the latest edition of
The Scholar!**

We are delighted to be celebrating the incredible
work of pupils who have taken part in The Scholars
Programme and Uni Pathways from schools across
the UK. In this edition, you will find 20 outstanding
assignments with course titles ranging from 'Is
textspeak destroying the English language?' to
'Why was there a French Revolution?'.

This edition of The Scholar features some of the
most impressive articles ever produced by pupils
who have taken part in The Scholars Programme
and Uni Pathways. The university-style learning
that pupils are exposed to on our programmes is
designed to provide pupils with the freedom to
develop their own ideas and approaches. Not only
will this help pupils who go on to study at university,
but we believe these are crucial skills to develop in
the adult world. The development of independent
study skills and support with critical thinking provides
young people with a platform to share their ideas.
We hope it will empower these young people to
engage in debates that shape our world, whether
they concern combating climate change with
renewable energy or understanding what makes a
good Prime Minister.

The Brilliant Club is passionate about exposing pupils
on our programmes to these important aspects of
university. We hope that these projects encourage
pupils to dig a little deeper into subjects that matter
to them and to seek opportunities to make unique
contributions to their fields. In doing so, pupils can
change their own lives by enriching them with
opportunities for learning and being inspired by the
topics they cover.

This year, we had a record number of nominations
for The Scholar, so we would like to say a huge
congratulations to the pupils published in this edition
and to the pupils who completed The Scholars
Programme and Uni Pathways. All the pupils who
graduate from the programmes should be very
proud of themselves!

On Page 4, we are delighted to have a guest article
from Sir Jonathan Phillips, Warden at Keble College
Oxford. We would like to say a massive thank you to
Sir Jonathan for taking the time to write his interesting
insight into passion and precision, making decisions
based of evidence rather than emotion.



The map above shows the locations of all pupils featured.

If you are a teacher who would like to find out how
your school can get involved with The Scholars
Programme, we would love to hear from you!
Please get in touch via this email address:
tspschools@thebrilliantclub.org.

Do you want to recruit PhD subject experts to
train as teachers in your school? The Brilliant
Club's Researchers In Schools programme is a
unique teacher-training route for high-quality
PhD graduates. The programme recruits subject-
experts to train on Schools Direct and work in non-
selective state schools across England for EBacc
subjects including Maths and Physics; they work
to promote education research, increase subject
expertise and champion university access. If your
school is interested in finding out more about
Researchers In Schools, get in touch with Alice:
Alice.Coombes-Huntley@researchersinschools.org

Guest Article

Change the world – with passion and precision

Sir Jonathan Phillips
Warden, Keble College Oxford

One of my favourite authors is George Orwell. Some readers of this piece will have read one of his many novels, perhaps *Animal Farm* or *1984*. They are both great books of satire about totalitarianism and the negative impact of absolute power. But here I want to draw your attention to something much shorter. This is an essay he wrote in 1946 called *Politics and the English Language*. In it, he illustrates what he regarded as a major decline in the quality and accuracy of the language then being used, especially in the media and in the context of political discussion. In his own, very pithy, style he says, in the concluding paragraph, “Political language... is designed to make lies sound truthful and murder respectable, and to give an appearance of solidity to pure wind.”

Now, you may consider that to be a little exaggerated. If you do, it is worth remembering that Orwell was writing just after the end of the Second World War during which lies and murder had been all too much in evidence. On the other hand, you may think that his words find uncomfortable echoes in the contemporary world.

Whatever view you take, I want to suggest that every Brilliant Club pupil should reflect very carefully on what Orwell is trying to tell us. Why? Because, if, as I hope, many of you will set out to change the world in your own generation, you should aim to do so on the basis of clear evidence rather than emotion and to persuade others to join your cause by reasoned and truthful argument. In the age of so-called “fake news”, it is even more important than it was in the middle of the last century that young people look beneath the surface of the propositions they receive and promote. Are they accurate? Can they be verified? Is their source to be trusted?

Those were ideas to which I was fortunate enough to be introduced by some inspirational teachers who were anxious to show me and my school contemporaries how to think by being curious and questioning. One in particular encouraged me to study history at university. I am eternally grateful. Apart from my continuing fascination with other people's lives, that subject provided an excellent context in which to apply and develop those skills. Later on, working in the Civil Service, the importance of clear thinking and precise expression were very evident, both in presenting arguments to politicians and in conveying their decisions to the people affected by them. This was nowhere more apparent than in my work on the peace process in Northern Ireland.

Don't imagine that anything I've said so far seeks to dampen your passion and enthusiasm for any particular cause or endeavour by erasing vivid language and forceful argument. One of the musical groups I most admire has adopted the strapline “Passion & Precision” to characterise its performances. These approaches are not contradictory. Your aspirations to succeed in whatever sphere you choose will have a greater chance of success if you combine the two.

Sir Jonathan Phillips
Warden, Keble College Oxford

Sir Jonathan Phillips became Warden of Keble College, Oxford in 2010. Before that he worked in the Civil Service, most recently as Permanent Secretary to the Northern Ireland Office.



STEM



Effects of exercise on heart rate and circulation

Year 6, Key Stage 2

Pupil: **G. Dotta**
School: **Town Field Primary School, Doncaster**
Supervised by: **E. Amabebe**
Tutor University: **University of Sheffield**
Course Title: **The healthy heart**

Abstract

This lab report is about the change in the heart rate after a specific aerobic exercise (in this case, star jumps). It also explains what the circulatory system is and its components. In this experiment, there were four participants that were divided in two groups. Their heart rate was taken before and after 30 seconds of star jumps. The results showed that the average difference in the heart rate was larger in the older group while the younger group's heart rate was higher than the older group. The current age of the participants was measured as well.

Introduction

The heart is a hardworking muscle that continuously pumps blood around the body. The arteries (a type of blood vessel) transport oxygenated blood, blood with oxygen, from the heart to the body while veins (another type of blood vessel) carry deoxygenated blood to the heart from the body. The capillaries are the smallest of the blood vessels which connect a vein and an artery. These are the components of the circulatory system which is the system that transports and delivers oxygen and the daily needs of the organs and muscles around the human body.

The aim of this research is to answer three hypotheses: the heart rate increases after exercise; age affects the heart rate and younger people have a larger difference between the resting heart rate and the active heart rate than older people.

Method

What is a method? And what does the word ‘method’ mean? A method is a particular procedure for accomplishing or approaching something, especially a systematic or established one (1). The word ‘method’ originates from the Greek word ‘methodos’ (μεθοδος) which means ‘pursuit of knowledge’ (2). This is my method.

My family and myself, a student of The Brilliant Club, were the participants of the experiment and I measured their heart rate as well as mine. To do this, I used my father's Garmin Vivoactive3 watch. The subject's heart rate was measured before the exercise. Then, they were asked to do star jumps for 30 seconds. After that, their heart rate was measured again in the same way as before. The participant's age was also recorded.

Results

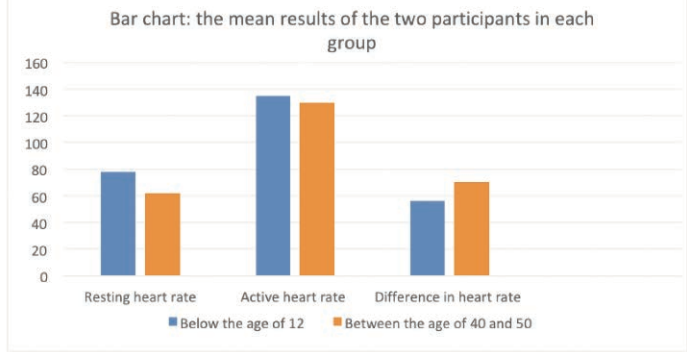
In this experiment there were four different participants. They were divided in two groups. One group is under the age of 12. The other group is between 40 and 50 years of age. The oldest person in the experiment was 46 years old while the youngest person was 7 years old. The experiment was repeated for accuracy and reliability. Then, the mean of the two results was found. What is the mean? The mean, also known as the average, is when a certain number of numbers is added together and then divided by the number of numbers, e.g.: the mean of the numbers 1, 3 and 8 is 4. The average of the two experiments is on Table 1. On Table 2, there are the mean results of the two subjects in each group. Meanwhile, on the bar chart, the same data on Table 2 is represented in a different way.

Table 1: the average of the two experiments

Person	Age	Resting Heart Rate	Heart Rate after 30 seconds of star jumps	Difference in the heart rate
A	11	73	126	52
B	11	83	144	61
C	46	61	128	67
D	41	64	133	74

Table 2: the mean results of the two participants in each group

Group	Resting heart rate	Heart rate after 30 seconds of star jumps	Difference in the heart rate
Below the age of 12	78	135	56
Between 40 to 50 years of age	62	130	70



First hypothesis – the heart rate increases after exercise: The final data from both Table 1, Table 2 and the bar chart reveal that all the subject's heart rate increased. The average increase of the younger group is 56 while the average increase of the older group is 70. Overall, the highest increase was 74 beats and the lowest increase was 52 beats. This hypothesis was proven.

Second hypothesis – age affects the heart rate: From the final results, we can see that the older group had a slightly lower active heart rate than the younger group. There was a difference of 16bpms before exercise and a difference of 5bpms after exercise. This hypothesis was proven even though the mean active heart rate was very similar between the two groups.

Third hypothesis – younger people have a larger difference

between the resting heart rate and the active heart rate than older people: Both the tables and the bar chart show that there is a larger difference between the resting heart rate and the active heart rate in the older group. The mean difference in the older group is 70 beats while the mean difference in the younger group is 56 beats. The data shows that older people have a larger difference in the resting and the active heart rate, so this hypothesis was not proven.

Discussion

The data from both tables and the bar chart has proven two of the three hypotheses.

Out of all the participants, subject B had the highest active heart rate in all the experiments while subject A the lowest active heart rate. Overall the lowest resting heart rate was 60bpm; the highest resting heart rate was 86bpm. Although all the participants did exercise and all their heart rates increased, there were likely some miscalculations.

This is an example: the effort the participants put in the exercise. All the subjects did the exercise, but some could have put in more force and effort than others. This means that the people that put more effort, have a higher heart rate. Another example is: the device that was used to measure the heart rate. The result on my father's Garmin Vivoactive3 after the exercise was fluttering between different numbers and it took a few minutes to measure the resting heart rate: seconds before, it was on another participant's wrist.

There are two ways this experiment could have been improved: a larger number of participants to get a more accurate result as real surveys could include hundreds, or even thousands of people and a more accurate device for measuring the heart rate. Furthermore, other factors that may affect the final results are fitness levels and weight.

- 1) Cambridge online Dictionary definition
- 2) Collins Dictionary definition

Tutor comment:

It was a great delight working with G. and his peers as a tutor. G. was particularly exceptional during the tutorials interacting effectively by asking and answering questions intelligently. His homework was always outstanding, and he diligently considered all the feedback I gave him. Little wonder he produced an excellent final assignment showing an in-depth understanding of the subject. I have no doubt of his capacity to perform even better as he progresses academically.



Design a strategy to help prevent an outbreak of malaria in the rural Franklin Village

Year 8, Key Stage 3

Pupil: T. Brockway
School: Twynham School, Dorset
Supervised by: G. LuTheryn
Tutor University: University of Southampton
Course Title: Disease detectives

Introduction

It has been reported that there is a new outbreak of malaria, spreading through Franklin Village which is in a rural setting, probably somewhere in sub-Saharan Africa

or around the tropics as this is where most cases occur.¹ The Disease Detective Division (DDD) of the World Health Organisation has been tasked to develop a strategy to help prevent further spread of the outbreak and help the already infected. This report details the strategy.



What is malaria?

Malaria is a serious and, in some cases, a life-threatening disease caused by parasites (a pathogen) which is spread by mosquitos. There are five parasite species that infect humans: *plasmodium falciparum*, *plasmodium vivax*, *plasmodium ovale*, *plasmodium knowlesi* and *plasmodium malariae*.² At the WHO, we estimate that in 2017 there were 219 million cases of malaria in over 87 countries with a total of 435,000 deaths of which more than 250,000 were children.³ That equates to a city with a population the size of Bristol, UK.

The challenges of stopping the disease spreading

The main challenge of stopping the spread of malaria is that the parasites are spread by the anopheles vectors⁴ (female mosquito bites in this case) through which the parasites pass from the mosquitos saliva into a person's blood.⁵ The separation of people will not prevent the spread of malaria because it is not spread through human-to-human contact in any way but via the vector. The WHO will not be seeking to make any person-to-person isolation, instead, we will seek to quarantine people from the vector by other means which will reduce the contact rate. The vaccine for malaria has only recently been released (April 2019) and is still in its test phases so will not be available at the time needed.⁶ No person has complete immunity, or any level of natural immunity, but antimalarial medication can reduce the chances of infection by about 90%.⁷ There is still a 10% risk of infection because the malaria parasite is very good at becoming resistant to these medicines.⁸

Symptoms of malaria

Residents of Franklin Village will be displaying all or some of the following symptoms if infected:⁹

High body temperature (38°C or above)

- Feeling hot and shivery
- Headaches
- Vomiting
- Muscle pains
- Diarrhoea
- Yellow skin (caused by liver failure)

Severe cases include the following symptoms:

- Coma
- Seizures
- Breathing problems
- Organ failure (including the brain)
- Death

Pregnant women, babies, young children and the elderly are particularly at risk if not diagnosed and treated quickly. Getting malaria when pregnant can cause serious complications such as premature birth, low birth weight, restricted growth, stillbirth or miscarriage, and,

in the worst cases, death of the mother.¹⁰ Additionally the destruction of red blood cells by the parasite can cause severe anaemia which prevents blood cells from carrying oxygen around the body.¹¹

Typically, the time between being infected and when symptoms start (the incubation period) is 7 to 18 days, depending on the specific parasite the person is infected with. In some cases, it can take up to a year for symptoms to develop which may be mild and difficult to identify as malaria. The most serious type of the disease is caused by the plasmodium falciparum parasite. Without prompt treatment, infection can quickly lead to the development of some or all of the more severe and life-threatening complications listed above.¹²

The strategy to prevent further spread

The WHO strategy will have five primary elements:

1. Bite protection

Mosquitoes are attracted to heat and carbon-dioxide sources (e.g. humans, birds and mammals)¹³ so taking steps to avoid bites in the first place is the best protection of all. This means that the more a person exhales, the more likely they are to get bitten, which accounts for why a large majority of bites occur on the head. Mosquitos can also detect lactic acid, uric acid, ammonia and other compounds emitted in sweat which means that if possible, residents should lower the amount of physical activity they carry out.¹⁴ They should also avoid being outside between sunset and sunrise because this is when the mosquitoes are most active. They should avoid mosquito habitats (i.e. long grass or stagnant water).¹⁵ To avoid being bitten at night, the residents of Franklin Village should seek to stay where there is air-conditioning (and prevent doors or windows needing to be opened) or screen their doors and windows to reduce the bite rate. Where this is not possible, residents need to sleep under a mosquito net which has ideally been treated with insecticide. This is a good method of protection because it is cheap and lasts a long time. The WHO will provide enough insecticide to last throughout the outbreak to treat nets and supply indoor residual spray for the walls of the house. If the residents are concerned about chemicals, the WHO will supply/ source funding for biological insecticide so not to harm the environment. During the day, residents need to use insect repellent on their skin and seek to wear loose-fitting light colour (mosquitos find dark and red easier to spot¹⁶) clothes which cover the body. The most effective repellents contain diethyltoluamide (DEET) although this will not kill the mosquitos, it will deter them from biting by creating a vapour on the skin which interferes with the neurons and receptors located on the mosquito's antennae and mouth-parts (proboscis).¹⁷

2. Medication and pop-up clinic

The WHO will establish a pop-up clinic in Franklin Village to care for residents with symptoms, and for those without symptoms in the village. Staff will prescribe medication, monitor malaria incidence and transmission intensity,¹⁸ whilst encouraging residents to take antimalarials for the prescribed period (for up to 4 weeks after infection to cover the incubation period of the disease).¹⁹ Particular care needs to be given to pregnant woman as antimalarials can cause serious harm to the baby and/or mother. Treatment will continue to be offered to residents of Franklin Village until the outbreak has significantly declined.

3. Removal of stagnated water (habitat management)

Mosquitoes have four distinctive life stages, with the first three stages being spent in the water. All mosquitoes must have a water source to complete their life cycle.²⁰ We will seek to educate the residents of Franklin Village about removing any sources of stagnant fresh water (e.g. ponds, swimming pools, bird baths, tin cans/waste containing water, storm drains, septic tanks, clogged gutters, etc.) which will reduce the number of mosquitos in the village through larval source management, possibly using larvicide.²¹ This is a good method of prevention because it is a cost effective solution.

4. Vaccination (will not be fully tested and ready for general use in time)

At the moment, there is only one newly released effective malaria vaccine, RTS, S. It is the first vaccine that has shown it can significantly reduce malaria in children. In its clinical trials it has prevented 1 in 4 cases of malaria, including 3 in 10 cases of life-threatening malaria.²²

5. Awareness of risks

'Prevention is better than the cure.' The WHO will seek to educate about reducing the risks and treating the symptoms which will also be described in universally accessible literature. The key message to communicate is, "*the less you are bitten, the less likely you are to get malaria.*" This literature will be distributed by WHO medical personnel in the pop-up clinic and by door-to-door visits in the village. Education is particularly important if there is resistance to receive treatment or using the prevention methods listed above.

The strengths of the strategy

I am confident that this five-stage strategy will begin to eliminate malaria in Franklin Village because the bite protection advice and resources will deepen people's knowledge and reduce the contact rate, thus reducing the rate of infection. The pop-up clinic providing antimalarials will help treat symptoms, provide medical and educational support, and reduce the chances (by 90%) of well people becoming infected if bitten. By providing a simple education message, WHO are not only offering a short-term response but also a long-term knowledge, without the need for intensive additional medical support, which will help if there is another outbreak of malaria in Franklin village.

The weaknesses of the strategy

The medical treatment, resources, medication, literature and the deployment of personnel into Franklin Village will result in significant financial costs which the residents, because it is rural and remote, may not be able to afford. This will result in the WHO funding/gathering funds from external sources to pay for the response.

It is possible the residents may not be able to read or understand the advice given which may require translators, diagrammatic representations of the literature and verbal communication from the response teams. This could result in the response taking longer, infection rates increasing and the need to send translators to the village which will introduce extra costs.

There is no guarantee the residents will accept the response teams help which means from the start the teams need to be respectful of the villager's culture and its elders.

Conclusion

The WHO DDD strategy detailed above will prevent the further spread of malaria and help the already infected in Franklin Village if the resources can be made available and quickly deployed. Once utilized, the WHO personnel will assess the situation and decide what action should be taken first to decrease the infection rate of the disease outbreak. They shall then seek to advise the village residents on how to stop them from getting malaria.

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2 Elle Sherrard-Smith, Ed Parker & OJ Watson, (no published date), The Scholars Programme: Disease Detectives, 43 and
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22 World Health Organisation, 'Malaria vaccine pilot launched in Malawi', <https://www.who.int/news-room/detail/23-04-2019-malaria-vaccine-pilot-launched-in-malawi> [13 May 2019]

Tutor comment:

My placement at Twynham School was a true pleasure; the discussions in tutorials were always insightful and the quality of the work every student produced was impeccable. In his final assignment that was awarded a high 1st, T. demonstrated an advanced understanding of a challenging topic area and produced a concise, well researched and novel final assignment. I have every confidence he will make an extremely valuable contribution to the course and university he will progress onto in the future.



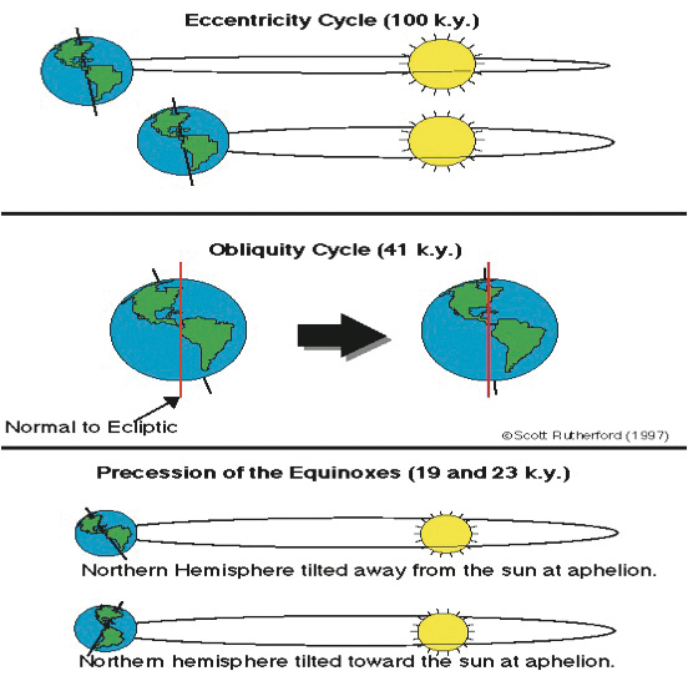
Climate has always been changing, so humans cannot possibly be responsible for the current climate change. Discuss.

Year 8, Key Stage 3

Pupil: O. Maxwell
School: Blessed Thomas Holford Catholic College, Trafford
Supervised by: A. Smith
Tutor University: The University of Manchester
Course Title: The Anthropocene vs. deep time – A journey through Earth's climate history

Today I will be assessing the reasons why climate change is and is not human induced. Climate is the weather conditions in a geographical location over a long period of time and climate change is when the weather patterns differ and last for, or over a certain time period - this can be due to humans or because of natural causes. The natural Greenhouse Gas Effect use to change climate change minutely, however, nowadays the Enhanced Greenhouse Gas Effect has a more prominent effect on climate change. The Natural Greenhouse Gas Effect is when just enough solar radiation is kept inside the Earth by Greenhouse gases that surround our planet. The Enhanced Greenhouse Gas Effect is when the Greenhouse gases surrounding the Earth are too thick to let any radiation reflect into space off the Earth's atmosphere, and the Earth's surface, therefore leading to more solar radiation trapped inside the Earth causing it to heat to a ruinous temperature. In this essay I will be discussing the argument about human induced climate change and natural induced climate change using examples such as orbital change, volcanic eruptions, solar output, fossil fuels, deforestation and dangerous aerosols.

The climate has always been fluctuating due to orbital change which is the Earth's warming and cooling periods. The warming and cooling periods are caused by Milankovitch cycles. This evidence is shown in source A below (ATMO). Every 1000 years the Earth changes from spherical to elliptical which impacts how much of the Sun's energy the Earth receives. Also, the tilt of the Earth (obliquity) changes over a 41,000-year cycle between 22 degrees and 24.5 degrees which changes how much of the Sun's energy the Earth receives. As well as this, the precession of the Earth is when the Earth's axis wobbles so the Sun varies depending on how close the Sun is to the Earth. (TBC 2017). This could infer that natural causes such as orbital change can affect climate change therefore humans could not possibly be responsible for something that occurs naturally. The Brilliant Club is a reliable source because it was written by someone who has the title of "doctor" therefore they must be educated in the specific academic genre the book was written in.

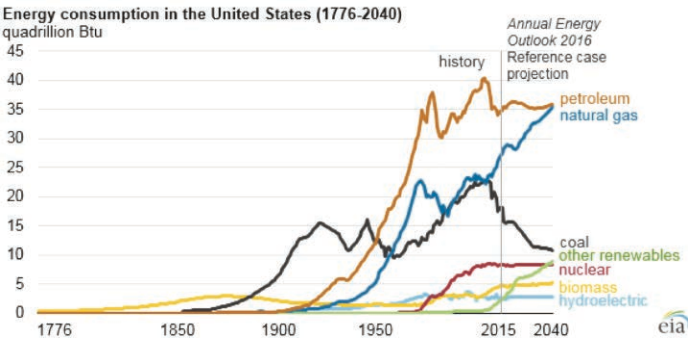


Source A - Eccentricity, obliquity and precession cycles. (Arizona Education 1997)

Climate change has been naturally changing due to volcanic eruptions. This happens when carbon dioxide is released into the atmosphere after a volcanic eruption which contributes to global warming. When the heat melts ice it increases the sea level. It is estimated that about 5 to 6 volcanoes erupt every year on Earth which calculates to be 50 to 60 eruptions over 100 years. (Working scholars 2003-2019). This statistic is reliable because it is from a government run website. If these many volcanoes are erupting there will be a considerable increase in carbon dioxide entering the air. This may support the fact natural induced climate change such as natural disasters or volcanic eruptions can contribute to factors like global warming which leads to climate change. Therefore, humans cannot be responsible for climate change.

Finally, another natural reason for climate change is because of solar output. Sunspots are the fluctuations in the amount of radiation from the Sun. If there is a high amount of radiation emitted there will be an increase in the Earth's temperature. In addition to these solar fluctuations there is an eleven-year cycle in TSI measurements (total solar radiance) that relate to sunspots (Union of Concerned Scientists, 2017). This fact is reliable because it has been scientifically proven. Sunspots increase the Earth's temperature which leads to global warming. This supports the fact the climate is changing naturally.

On the other hand, climate change can be caused by humans; burning fossil fuels such as coal, gas and oil produce carbon dioxide that enters the Earth's atmosphere causing heating which leads to global warming. From source B we can see the petroleum and coal consumption has increased exponentially since 1900 and could continue to increase greatly up to the year 2040 in the US. This infers because of the energy consumption there will be an increase in greenhouse gases which massively impact climate change which implies climate change is human induced. Source B is reliable because graph shows realistic values about energy consumption

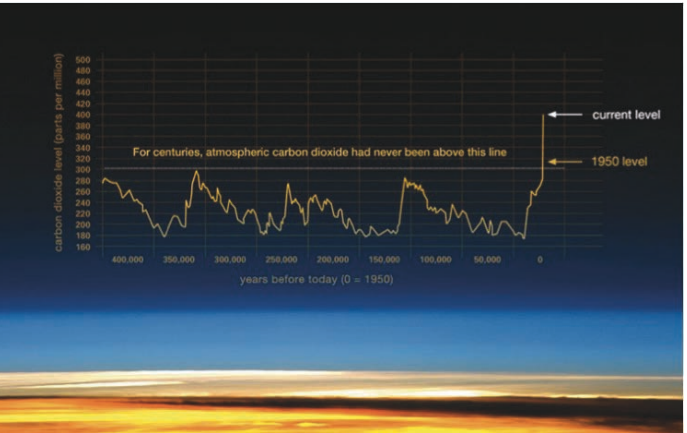


Source B - Energy consumption in the US (1776-2040). (Flickr photos 2016)

Another reason climate change has been caused by humans is because of deforestation. This occurs when trees are cut down. 7 billion trees are cut down yearly. (Food and Agriculture, 2016). This fact is reliable it was from a rainforest action corporation, because due to the fact trees absorb carbon dioxide during photosynthesis when they are cut down there will be a higher amount of carbon dioxide released into the atmosphere. Therefore, this could prove that humans are to blame for climate change.

To add to this, another reason humans are to blame

for climate change is the damaging use of aerosols, which adds to the ozone layer. When the ozone layer is damaged, harmful UV rays can enter the Earth and raise the temperature of the planet as well as affecting are health. Source C shows that atmospheric carbon dioxide has never been above this level before. Source C is reliable because the diagram is from NASA. Chlorofluorocarbons (CFCs) also contribute to destroying the ozone layer. CFCs destroy ozone molecules which cause ozone holes which also result in sunburn and damage of plants from harmful UV rays. CFCs were used in fridges and aerosols such as hair spray cans. Some scientists say the ozone layer over Antarctica could disappear within 50 years as ozone levels are stabilising. (TBC 2017). This fact is reliable because the book was updated recently so it will be valid. This piece of evidence reflects the fact climate change is human induced. Source C is reliable because the diagram is from NASA.



Source C - Increase in carbon dioxide consumption from 1950 to our current time period. (NASA 2019)

In conclusion I believe that humans are responsible for the current climate change because even though orbital change, volcano eruptions and solar output are all natural ways in which the climate has changed, things such as fossil fuels, deforestation and aerosols impact the climate more. I have considered both sides of the argument by analysing each reason that supports both sides of the cases, however, I disagree with the statement as a result of the evidence that supports my decision; in both source A, B and C the scientific graphs clearly show an obvious increase in global warming related to human driven activities such as farming, burning fossil fuels, deforestation, using harmful aerosols and participating in the cement industry – so overall, I have decided that humans are responsible for the majority of climate change.

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Tutor comment:

I thoroughly enjoyed my time teaching at Blessed Thomas Holford Catholic College. Both the staff and pupils were welcoming and really engaged with the programme. O. was an absolute joy to have in my Brilliant Club tutorials! I was particularly impressed by the outstanding level of O.'s work for her age. It was a pleasure watching her confidence in her academic ability grow and I have no doubt that she will go on to do exceptional work at university.



Design a strategy to help prevent the outbreak

Year 8, Key Stage 3

Pupil: M. Subhani
School: Willows High School, Cardiff
Supervised by: K. Crawford
Tutor University: Cardiff University
Course Title: Disease detectives

Currently, Fleming City is going through a major outbreak of the flu where many people have caught influenza type B. Consequently, this exposes further people to the disease. The disease can be lethal dependent on the host of the virus and can be contagious. Furthermore, to contain the outbreak, we must formulate an outbreak control strategy (OCS).

Fleming City is the capital city of its country, contributing a major percentage toward the national economy and creating most of the nation's produce and talent. If this city is inactive for even less than a day, it would collapse the nation's economy and currency. Essentially, chaos would ensue. So, ultimately, an OCS that keeps the city's lifestyle and pace the same is ideal.

Infectious agents, agents which infiltrate other beings whether they are birds, cows, or humans, cause every infectious disease; the influenza virus causes the flu which comes in three common strains. Influenza is an extremely common virus but an outbreak on this scale is severe and rare. The strain we must combat is type B as aforementioned.

Symptoms of the influenza type B^[1] include^[2]:
Fevers - the body temperature of the host will usually rise above 38°C. The host also feels warm, cold, or have shivers.^[3]

- Coughs - rapid expulsions of air from the lungs, typically to attempt to get rid of an infectious agent.^[4]
- Sneezing - rapid expulsions of air from the lungs through the nose and mouth, usually caused by irritations.^[5]
- A runny nose - nasal cavities fill up with mucus and this drains through the nostrils.^[6]
- Discomfort in the stomach - pain or discomfort in the upper abdomen near the ribs.^[7]
- Diarrhea - loose, liquid, or watery faecal matter.^[8]
- Body ache - pains in the body.
- Headaches - discomfort and pain in the head.
- Loss of Appetite^[9] - a lack of interest in eating, causing the host to eat extremely little.

The medical community of Fleming City has done the first step in combating the outbreak, which was to recognise the outbreak; to prevent further cases, they must identify the cause and origin. This is important owing to the fact that the cause and origin can show how the outbreak started, how it transmitted, and how to stop it.

There is a high possibility that the outbreak originated from a migrant or someone who encountered a carrier of the virus before entering the city. This is naturally out of anyone's control but what the medical community can learn from this potential event is that contact is a major factor in how influenza transmits from host to host.

The influenza virus spreads through droplets in sneezes, coughs, and even talking. This was discovered in 1918 by Dr. M. J. Rosenau as part of a study to find out how the flu was transmitted during the pandemic of that era.^[10] The period of contagiousness is typically from one day before becoming sick to five to seven days after becoming sick.^[11] This will be something one will want to focus on minimising later in the OCS.

One case of flu may have turned into an epidemic because patient zero of this outbreak was either:

- a) Unaware that they had the disease and spread the disease in the one day of symptomless contagiousness. or
- b) Knew they were ill yet encountered multiple people.

Patient zero is the first person infected with a disease^[12] and although patient zero of our case is not the first influenza victim ever, they are the first influenza victim of this outbreak. A patient zero is different from an index case because an index case is the first recorded case of the given disease.

The most likely scenario is that they spread the disease before they had any symptoms. One can make such an assumption since people ordinarily try to stay at their home and care for themselves instead of going anywhere ill. This is also something that one can take advantage of when creating an OCS.

Possible solutions to the current epidemic include:

1. Vaccinating everyone, quarantining everyone, and providing medicine for all.

The concept involves asking the uninfected population to go to their nearest surgery and get the vaccination for the flu; this will also create herd immunity, the idea that a vaccinated person cannot spread the given disease and so prevent others from getting the disease, especially those who cannot receive the vaccination.^[13] Moreover, the already ill would get drugs to soothe and lower the flu and the temperatures it brings even for the immunocompromised.^[9] The immunocompromised are people with weakened immune systems which results in them being unable to receive a vaccination because it may do harm to them. Along with this, we could quarantine everyone and oblige everyone to stay at home. This would be a highly effective strategy that would eradicate the illness quickly. Nevertheless, the expenses would exceed that of the city's budget so the city cannot execute it without risk of economic failure, it would nullify the growth of the economy, and it would be unethical as we have seen from the Middle Ages and Renaissance when British soldiers protested against being quarantined.^[14]

2. Wait for the outbreak to go.

This would be cheap as fatality rates are low. Moreover, not everyone will die. Notwithstanding the price of this strategy, if an immunocompromised person catches the flu, this would hospitalise them. Currently, doctors are scarce and so this would create chaos and stress in hospitals; this strategy may not work effectively for certain groups. In a worst case scenario, these people would die from the flu; not only is it consequential for the victims and their families but also the city as approval of

the council would suffer.

3. Vaccinate the vulnerable. Quarantine children and the immunocompromised.

Ideally, one would like to keep expenditure at a low and prevent the flu from killing anyone. The elderly, young children, and the pregnant are the most at risk of having complications with the flu^[15] and so to vaccinate only them would keep costs at a low and reduce fatality rates severely. Those who can survive the flu simply need to stay at home and rest if they have the flu or carry on with life normally. Since the flu vaccine puts the immunocompromised at severe risk of complications^[16], quarantining them would help them from catching the flu which would have also caused complications. We should also close schools as children can have complications with influenza and are more vulnerable to it, as well.

Ergo, the best OCS is the latter as it nullifies the fatality rate to near zero percent, uses less money and is extremely effective. The fatality rate is calculated by assuming that we can get herd immunity in place and stop most immunocompromised people from catching influenza. It is not absolute zero because some immunocompromised people will inevitably catch and suffer from complications and fatalities. Plus, the vaccinations are not fully effective and only reduce the risk by 40% to 60% with better protection against type B as it is the least dangerous type.^[17-18]

The effectiveness comes from the strategy not interfering with those who would survive nonetheless, and the decreased fatality rate comes from the vaccinations and quarantining of those who would have major consequences from the flu virus.

In order to accomplish this, the Council should notify the headteachers of all the primary schools and request a few days off for schoolchildren across the city. This will put them at less of a risk of contracting the influenza virus. This will decrease contact rates in the city and control the situation.

Along with this, we must request those at risk of flu fatalities requesting potential victims to get vaccinated at their nearest surgery. In this century, this should be done through social media, an advertisement campaign, and contact with those most at risk. Good examples of successful flu campaigns include the World Health Organisation's 2013 campaign in Europe^[19] and the NHS' 'Catch it, kill it, bin it' campaign^[20].

Twitter promotions, Facebook and Google AdSpace, and billboards/posters are recommended for such a large-scale request. These should notify the population of the outbreak and will benefit everyone as it will make people more careful about being around others. Simple influenza facts should be highlighted in the advertisement campaign.

For long term control, as the WHO recommends, we must introduce annual flu vaccinations for the vulnerable.^[21] This type of situation should not occur after such an intervention.

Overall, I recommend this OCS and the Council must use this and other consultations to execute an OCS which involves quarantining young children and vaccinating the vulnerable and immunocompromised. This will prevent deaths that are easy to stop and will help the Fleming City community survive throughout this outbreak and the problems it brings along with it.

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Tutor comment:

The pupils at Willows were very high energy and had some fantastic ideas. Throughout the programme M. produced work of a consistently high standard. He gave a very sophisticated answer in his final assignment and approached the essay with a remarkable maturity. I was particularly impressed with his determination, academic ability and diligence. I think any university would benefit from his presence or that of his peers – I will remember my time at Willows fondly.



Climate has always been changing, so humans cannot possibly be responsible for the current climate change. Discuss.

Year 8, Key Stage 3

Pupil: E. Walker
School: St Gregory's Catholic College Bath
Supervised by: T. Abdel-Magid
Tutor University: University of Bath
Course Title: The Anthropocene vs. deep time - A journey through Earth's climate history

People often get confused with the difference between weather and climate. Climate is the average weather and it is measured over a longer length of time, whereas weather is the temperature or amount of precipitation for a shorter duration. Some scientists define climate as 'The average weather for a particular region or time period.' Climate changes no matter what, and has done since the dawn of life. However, recently there has been an argument over whether the current rate of change has been magnified to by humans and our industrialised society.

The sun influences both weather and the climate, it is the

main reason for temperature fluctuations. The location of a particular place plays an important role in determining the climate in that area. The Earth is spherical and so around the equator the sun's rays focus on smaller areas, whereas closer to the poles the solar energy is distributed over a much larger area. Solar radiation is also responsible for the albedo affect, the Earth would usually absorb some of the solar radiation and reflect some back into space.

The albedo affect is the measure of how much the surface will absorb the radiation. If it is snowy or icy, because of the pale colour, the surface would reflect more heat. The more ice there is the more heat is reflected and the more heat is reflected the more the ice expands. This eventually cools the Earth and can possibly be responsible for major climate changes as the ice spreads and an ice-age is likely to occur. However, some surfaces are darker like sand, grass and seas and these darker colours will absorb the suns solar radiation which will produce a positive feedback causing a rise in temperature. The climate can change in a cycle like this; during the winter the ice forms over a river and because of the albedo affect this can cause a rapid drop in temperature in the area around it. Triggering even more ice to form and therefore causing a cycle which can go on until a significant part of the Earth is covered in ice and snow. This is often how ice ages begin. (The Big Freeze 2010) Over the last 800,000 years, the Earth has fallen into a natural cycle between glacial and interglacial periods. A glacial period is a time that is marked by a global decrease in temperature and an interglacial period is a time marked by warming global temperatures. For the past 15,000 years we have been in an interglacial period which has allowed a significant rise in temperature and is a natural cause for the current global warming. (glacial period- Wikipedia, May 2019). The last ice age ended approximately 20,000 years ago and so the global temperature has increased by around 3-8 degrees (committee on climate change). The climate of the Earth can also depend on the angle of the tilt of the Earth's axis towards the sun. The larger the tilt the more exaggerated the seasons will become; this means that the summers will become much warmer and the winters much colder. But if the angle of the tilt decreases the different seasons will become less exaggerated. The size of the tilt varies from 22.1 degrees to 24.5 degrees.

Currently the tilt is roughly 23.44 degrees but will not reach its minimum till approximately 11,800CE. (Milankovitch cycles- Wikipedia) There is a theory that the climate also changes due to solar output (sunspots). Sunspots are caused by intense magnetic storms and increase or decrease in number in an eleven-year cycle. There was a period of time where the temperature dropped in the late 17th century and during this period solar activity was extremely low. Therefore, some people believe that this contributed to the falling temperature during this time. Some believe that the increase in solar activity from the sunspots was responsible for 20% of global warming during the 20th century. (Hunt & Jordan 2017).

However, there is also plenty of evidence to suggest that humans have played a key part in global warming; in the last 60 years the rate of climate change has dramatically increased. Industrialisation in the western world has caused extra greenhouse gases to be emitted into the atmosphere; this is called the enhanced greenhouse effect. The enhanced greenhouse effect is caused by extra gasses being allowed into the atmosphere through human activity: like cars and factories exhaust fumes. This creates a thicker layer of gasses in the atmosphere, decreasing the amount of radiation that can reflect off into space. Without

the enhanced greenhouse effect the Earth would naturally absorb some of this radiation and usually the rest would get reflected back into space. The natural greenhouse effect keeps some radiation close to the Earth, this provides the optimal living temperature for humans, but then the enhanced greenhouse effect lets less radiation reflect off into space. Instead, the extra radiation reflects back on to the Earth. Research suggests that this causes the Earth's temperature to rise (Hunt & Jordan, 2017). This is increasing the amount of solar radiation being trapped in the atmosphere as less radiation is able to just bounce off the Earth back into space. Instead the solar radiation is just being absorbed by the greenhouse gases and reradiated back to the Earth; dramatically increasing global temperatures. Another way some believe humans are responsible for the recent climate change is deforestation. Deforestation is cutting down large areas of trees and rainforests that store the carbon dioxide and use it to photosynthesise. The carbon dioxide stored in the trees doesn't affect the greenhouse effect as it isn't in the atmosphere, but if you cut down trees in large quantities there are less trees to absorb the carbon dioxide and so it builds up in the atmosphere. Also, as the trees decompose it releases the stored carbon dioxide back into the atmosphere, adding to the greenhouse gases in the atmosphere. Trees are our main source of oxygen and so the more trees we cut down the less oxygen there is being emitted. (Stolte 2013) Cattle ranching is another of the many human induced causes for climate change. Although it isn't a particularly well-known reason for climate change it's a key contributor.

It is a two-fold reason for climate change as many trees are cut down to make room for the cattle to graze. The cattle themselves also produce a greenhouse gas called methane when they burp. Although cows have always been there and producing the gases, it wasn't anywhere near as bad until us humans started to overbreed them. On average a cow produces between 70 and 120kg of methane per year. This might not seem like a lot but the negative impact of methane is twenty three times higher than the negative impact of carbon dioxide and so even just farming can have a very negative impact on global warming. Agriculture is the cause of 18% of greenhouse gas emission across the globe and has a huge impact on global warming. Plenty of animals produce methane but cattle are the main culprits responsible for this climate change, lambs closely follow though and so this shows that eating meat does more than just hurt an animal. It makes demand for meat higher and so the number of animals needed will increase as well. This creates a cycle of the more meat needed the more meat produced and the more meat produced the more meat is eaten and this is what produces the increasing rate of climate change. There is nothing wrong with eating meat and there is also nothing wrong with cows, but obsessive consumption has more long-term problems that many people don't even realise. (Juerg November 2008).

In conclusion, there are arguments for and against humans contributing to climate change. Although climate change naturally occurs and always has done, I believe that humans have massively affected the rate of this change since the industrial revolution. However, I believe that humans have to be partially responsible for the increased rate of global warming currently. Even without humans there would be fluctuations in temperature, however we have made a negative impact on the Earths current environment and temperature changes. Although the sun drives natural climate change, human interaction with the environment has altered the natural cycles of

the climate. This will have lasting effects on our planet for several generations to come. So, our laziness and lack of enthusiasm to reduce our impact on our globe won't just affect us it will affect all our future generations. Although there are natural reasons for climate change that we can't do anything about, I believe that we can reduce the amount of human induced climate change that is warming up our planet so that we are able to sustain human life on Earth.

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Tutor comment:

It was such a pleasure to do my first placement in St. Gregory's Catholic College in Bath, such friendly staff and hungry-for-knowledge students! E. was on top of this exquisite group of students. She had always astonished me with her quick understanding and interesting points of views. She preceded her first-class final assignment with a number of very good articles throughout the course, her final result came as a crowning for her impressive work. I have no doubt E. will thrive in her undergraduate studies as well as in life after university.



Should humans be able to use genetic engineering, or has it gone too far?

Year 9, Key Stage 4

Pupil: M. Kala
School: Essa Academy, Bolton
Supervised by: Dr B. Stutchbury
Tutor University: The University of Manchester
Course Title: How to make a glow in the dark pet

In this essay, I am going to explain what genetic engineering is, how it works and why it is used. I am also going to evaluate the benefits and downsides of it, as well as include my own opinion on whether genetic engineering is acceptable or not.

Genetic engineering is the process of taking a gene (a piece of DNA that carries the instructions or code to make a certain protein [1]) from one organism and inserting it into another. Protein is a molecule that carries out most of the processes for a cell (the smallest structural and functional unit of an organism [2]) to work. Different proteins are used to determine different characteristics — for instance, eye colour is determined by protein.

Making an ordinary pet such as a rabbit able to fluoresce green is an example of genetic engineering. Fluorescence is when light is reflected by a molecule so that it appears as a bright colour, but light, usually ultraviolet, must be shone on the molecule for this to work, unlike bioluminescence, which is when light is produced by an organism due to a chemical reaction [3]. In order to make the pet glow in the dark, you need the gene for Green Fluorescent Protein (GFP), which you would

have to take from a jellyfish known as Aequorea Victoria [4]. After using a restriction enzyme to cut the DNA, you would need to use the same restriction enzyme to cut open a plasmid, which is a circular piece of bacteria that can be inserted into a bacterial cell [5]. The plasmid will act as a vector (something that is used to carry a gene from one organism to another). Then, using ligase, which is an enzyme that sticks two cut ends of DNA together [6], you would stick the cut ends into the plasmid. Put the plasmid into a fertilised egg to incorporate the gene into the organism's DNA, then finally, implant the embryo into a mother.

However, there is a lot of controversy caused by genetic engineering as there are several downsides to it in both plants and humans. In plants, the gene could transfer to other species which would cause many problems that could change the entire world. The pollen could be toxic or harmful to insects, which is seen as unethical by a lot of people. Genetically modified seeds have a risk of being harmful or causing allergies [7], and are just generally expensive. In humans, some people are unable to see the purpose of genetic engineering as we are discovering new information in the medical and technological field every day; it is actually highly likely that a method of preventing genetic diseases that does not involve genetic engineering will be possible soon anyway. Genetic engineering has extremely high risks because science is seen as unpredictable by many people. There are problems if the wrong people start doing it as they could abuse the control that they gain from it: an example of this is "designer babies", which are babies that are genetically modified to have desirable traits [8], which can be seen as immoral due to the fact that genetic engineering is very expensive, which means that all of the rich people will have no diseases and look more attractive, whereas the poor people will have all of the diseases and possibly look less attractive than the rich people — this is seen as immensely unfair by many people. Furthermore, genetic engineering could be seen as "playing God" if looked at from a religious perspective [9].

On the other hand, there are a lot of positive things about genetic engineering that, for a lot of people, outweigh the negative things. It can do a lot of good for the world — in plants, it will improve crop yields and crop quality while being much more efficient than the farming methods that are currently being used [10]. This is a much better alternative to pesticides. Also, genetic engineering is very well known for preventing genetic diseases in humans in order to save lives [11]; this is obviously a massive upside to it. It also does not cause as much harm as most people think it would. In animals, it does not appear to be that bad when you look at the facts: genetic engineering must follow the animal cruelty laws [12], anesthesia is used in order to make sure that the animals feel no pain, genetic engineering is almost always successful and animals can go back to their regular lives after the procedure. As for humans, it is injected into the embryo which means it is a painless process. Another important thing is that people seeking genetic engineering would be informed of any risks the genetic engineering may have (which are seen as okay to a lot of people because ordinary surgery has very similar risks anyway) and exactly what would happen during the process.

In my opinion, the reasons why genetic engineering should be allowed outweigh the reasons why it should not. I believe the downsides are not as bad as they seem. For instance, people worry about the fact that it could harm animals, despite the fact that it is not at all worse than killing

animals for food. Genetic engineering is already somewhat done in animals by selective breeding anyway. In plants, genetic engineering is a far better alternative to pesticides, which have been scientifically proven to be linked to cancer, Alzheimer's disease and many other terrible problems [13]. I believe it is also okay in humans because humans do not get to pick their genes anyway — they did not even choose to be born. It would also be safe because it would not be done if scientists were not certain about what could happen. Genetic engineering can do a lot to improve our lives and the lives of future generations such as lowering pollution [14], ending world hunger, and even creating humans with supernatural abilities via CRISPR [15], a very powerful tool for editing a genome (an organism's complete set of genetic instructions [16]) — almost anything is possible with genetic engineering. Therefore, I believe that genetic engineering is definitely worth it.

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Tutor comment:

Tutor comment: M. was an extremely keen and interested student to work with during the tutorials. He made some insightful contributions as the group learnt about the uses of genetic engineering for laboratory research as well as some of its broader uses. His essay demonstrates not only an excellent understanding of the advanced scientific content covered, but also an impressive level of thought and reasoning to discuss the ethical issues that surround genetic engineering. These skills will support him well as he progresses beyond his GCSEs to A-Levels and, I hope, university study.



The most important mushroom in the forest: Research 2 examples of forest fungal species and explain which of your researched species would be most important for the response of the forest to climate change

Year 10, Key Stage 4

Pupil: A. Islam
School: Holte School, Birmingham
Supervised by: A. Baird
Tutor University: University of Birmingham
Course Title: The wood-wide-web: The importance of fungi in the forests of the future

This essay will provide an understanding into the importance of fungal species in the forest and its role in balancing the ecosystem, as well as the impact of climate change on fungi. Fungi are classified as kingdom and is categorised as multicellular eukaryotes. Fungi have a profound impact on the environment as they play a major role as decomposers of nature. The fungus kingdom is large and diverse with an estimate of 1.5 million species. John Dighton, author of 'Fungi in Ecosystem Processes' states the "role that fungi play in some of the major ecosystem processes, namely the process of transforming carbon dioxide and nutrients into plant biomass". Dighton highlights the significant role fungi plays in nutrient cycling and their role in combating the green-house effect. Fungi play a major role in the storage and release of carbon from organic matter. Dighton emphasises the importance of fungi in the ecosystem and its interaction with the abiotic factors, which refer to the non-living components and biotic factors which are the living components within the ecosystem.



Figure 1 shows a picture of a wood blewit (*Clitocybe nuda*)

Mikayla Roberts in her examination of 'How does global warming effect fungal growth and decomposition of organic carbon from plant material?'² identifies that the effects of increased global warming have created a "positive feedback on the carbon cycle" due to the increase in fungal decomposition. This essay will explore how two different forest fungal species are important to the response of the forest to climate change. Fungi play a vital role within all habitats therefore, the change in the fungal species fruiting pattern will have a drastic impact on the nutrient cycle in ecosystems.



Figure 2 shows a picture of a chanterelle (*Cantharellus cibarius*)

In studying the importance of fungus, it is significant to understand the different groups of fungi and its key function. Decomposers are fundamental to the ecosystem in their role of breaking down organic matter in order to release nutrients into the soil. Fungi such as the Wood Blewit, (*Clitocybe nuda*), is an essential recycler which breaks down dead tissues and returns essential nutrients back into the ecosystem. In identifying the Wood Blewit, the fungus has a distinguish cap and gills with a distinct purple colour [Figure 1]. As The Wood Blewit is saprobic, meaning its environment is rich in organic matter. It grows in leaf litter in deciduous woodlands, where the trees lose their leaves annually. This fungus is widespread across Britain and grows during autumn and winter.

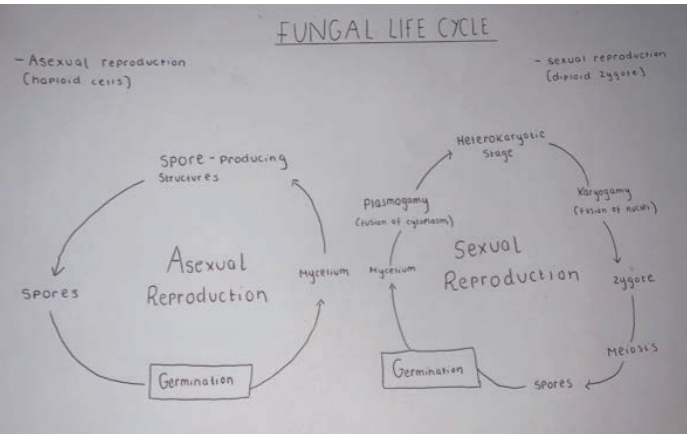
Decomposers are an essential component within the nutrient cycle, without decomposers in the ecosystem plants would not be able to access crucial nutrients. Thus, the reduction in fungal decomposers will result in the accumulation of organic matter and increase the rate of climate change. This is because "human activity and pollution are causing forests to lose these fungal carbon guardians, and the loss of these fungi may be accelerating climate change".³ Fungi are vital contributors in reducing the impact of climate change and therefore are necessary elements to the forest ecosystem. In order to release nitrogen from decaying matter the fungi contain enzymes in the hyphae to digest the decaying matter. Decomposers are important in the maintenance of the ecosystem and act as housekeepers. Fungi are vital components of nutrient cycling in woodlands, along with the many organisms sharing the habitat.

Also, mycorrhizae are a crucial element in exchanging nutrients between the roots of plants in order to gain carbohydrates. This mutualistic relationship is significant as it benefits the soil in many ways by improving water availability. This is due to the increased surface area within the soil which allows the increased absorption of nutrients and water. The article titled 'The Importance of Mycorrhizal Fungi'⁴ includes the statistic that "mycorrhizal fungi form relationships with over 95% of plant species" this indicates how mycorrhizae relationship are vital to the ecosystem. The article proceeds to emphasise the various advantages that mycorrhizal fungi provide as they are "essential to optimum plant growth and health". An example of this is the Chanterelle, a common fungi found throughout the United Kingdom within coniferous forests. Its Latin name is *Cantharellus cibarius* and is adapted to temperate climates. This type of fungi is a mycorrhizal fungi, which forms around the plant roots providing a system which gives greater access to water and minerals. The Chanterelle has a convex cap with a light orange yellow colour. It has thick blunt ridges instead of true gills which run down the stem. The mycorrhizae fungi form a symbiotic beneficial relationship, as the fungus benefits from the partnership between the tree and plant roots and can be found on a variety of woodland forests.

The Wood Blewit is found under most tree types with a liking for organic matter and blooms in October to December⁵. In contrast the Chanterelle [Figure 2] is found commonly near maple and oak trees. Its fruiting season is in July to September and are most abundant in moist conditions⁶. Both species are found in the United Kingdom meaning they share similar temperate conditions. The fundamental difference between both species is their

role in climate change. The Wood Blewit is an important decomposer within the ecosystem, breaking down dead organisms and have a key involvement in the nitrogen cycle. Nitrogen is an important component for all living organisms and is a common limiting nutrient in nature.⁷ Nitrogen components are broken down by decomposers into the soil⁸. In contrast, mycorrhizal fungi have a major function in their ability to exchange nutrients between their environment and host plants. The fungus plays an important role in protecting the plant's roots and improving soil quality.

Mycorrhizae have a complex mycelium network made up of hyphae that runs through the soil, leaf litter wood and living plants. Fungi can reproduce either sexually or asexually, by producing spores via mitosis. Fungal spores germinate and grow into new fungi identical to their parent species. This demonstrates how the fungal cycle is necessary, in order to increase the biodiversity and genetic variation of the species.



Mycology is crucial in understanding the impact of climate change and its effects on the fungal forest network. Forests fungi are important for future climates, and therefore need to be managed by humans in order to minimise the effects of climate change for the future of the planet. The ecosystem is greatly interdependent which shows the importance in maintaining the equilibrium'. Climate change can cause detrimental damage to the ecosystem due to the increase in emissions of greenhouse gases. In particular carbon dioxide released mainly by combustion; burning of fossil fuels contributes largely to the increase in global warming. Fossil fuel consumption increases the concentration of carbon dioxide in the atmosphere resulting in a warmer planet. Forests are imperative in protecting the world from the accelerated rates of climate change by absorbing carbon dioxide.

Evidence from the article published by BBC news written by Helen Briggs argues that "fungi receive little protection under conservation policies, which makes it hard to assess which species are rare or declining"⁹. The article suggests the impact of climate change has caused a decrease in the biodiversity of fungal species which will directly impact the stability of the ecosystem. Briggs substantiates her argument by using research carried out by the Royal Botanic Garden, Dr Laura M Suz emphasises the importance of mycorrhizae and how "trees need this fungus to get nutrients and water from soil and there are factors like pollution that are affecting this fungi". This highlights the role of mycorrhizae fungi in plant nutrient uptake and increased drought resistance.

The effects of global warming have increased and

changed the pattern of extreme weather. The scientific article titled ‘Rapid and recent changes in fungal fruiting patterns’¹⁰ demonstrates how the seasons effect the fruiting of fungal species. In carrying out research on fungal fruiting records, the author has identified that the “increase in the overall fruiting period is dramatic”.

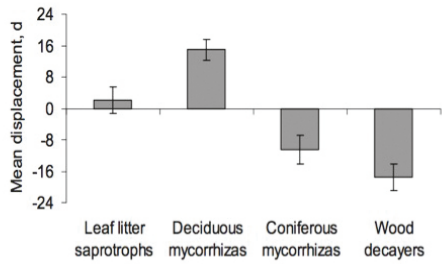


Fig. 3. Average change (± s.e.) in FFD of species in each functional group, between 1950s and 2000s.

Figure 3 is from the Article ‘Rapid and recent changes in Fungal Fruiting Patterns’⁷

Figure 3 shows the different functional groups of fungi and their phenological response, which is the study of a periodic biological phenomena that are correlated with climatic conditions to the displacement in fruiting time. It is evident that coniferous mycorrhizas (fungi associated with trees that retain their needles) and wood decayers (breaking down of components) fruit earlier than in the 1950s. In comparison deciduous mycorrhizae begin to fruit much later than expected, whereas leaf litter saprotrophs appear at the same time indicated by the error bar and the mean displacement near to zero. The graph shows that the changes in fungal fruiting patterns for ‘deciduous mycorrhizas’ has a positive correlation to the changes in the climate. The research paper ‘The impact of climate change on woodland saprotrophic and mycorrhizal fungi’¹¹ highlights the change in fruiting season and how saprotrophic and mycorrhizal fungi have responded to climate change differently. Gange has identified that “saprotrophs are more affected by changes in temperature and rainfall, while mycorrhizal species are tied to their host phenology”. As the fungi are influenced by the host plant and the variation caused in climate and habitat. This demonstrates that the impact of climate change on woodland fungal activity has caused significant changes to the ecosystem in woodlands.

To conclude, it is clear that fungi play a vital role within the ecosystem. In studying fungi, it is evident that they are extremely responsive to the changes in climate indicated by the drastic changes in the fruiting pattern shown in paper 11. This shows the significant impact climate change can have on the fungal community in the forest, having the greatest effects on the nutrient cycle, decomposition and overall woodland ecosystem.

In order to determine which fungi out of the Wood Blewit and the Chanterelle is the most important within the forests, it is key to assess the impact each species has on the ecosystem. The functions of mycorrhizae are imperative for growth and development of most plants. There are numerous advantages of mycorrhizae as they increase the absorption of roots and also increase the availability of nutrients in the soil. Furthermore, mycorrhizal fungi can establish defence against infectious pathogens which causes disease, as well as influencing seed germination. The importance of mycorrhizae is further emphasised in its role in afforestation. Evidence suggest that “mycorrhizal infection is essential for normal growth for many forest trees”¹² research indicates that mycorrhizal fungi when

applied to land can help grow trees and behave as a fertiliser. Overall mycorrhizal is highly beneficial for silviculture which is the growing and planting of trees, as they protect the roots from pathogens and are helpful in restoring degradable soil.

However, the role of decomposers cannot be undermined. The process of decomposition is important in recycling organic material in an ecosystem. Decomposers play a pivotal part in woodlands. As they are heterotrophic, they require nutrients for energy which they gain from ingesting organic material, this is needed in order for fungi to grow and reproduce. Fungi are the main decomposers in many environments and use the structure of hyphae to carry out its function. “Wood-decay fungi are the only producers of [specific] enzymes, so they play a very important role in decomposition”¹³. Decomposers are involved in all nutrient cycles and provide nutrients for plants in the consumer level. Excreted waste from organisms is recycled by the decomposers in the constant nutrient cycling in an ecosystem. Additionally, decomposers are crucial in ecosystem maintenance as they remove decaying material and return the nutrients to the soil.

In evaluating the importance of forest fungal species there is undeniable evidence to support the argument that both fungal species are vital to the ecosystem. The Chanterelle and Wood Blewit equally have a vital role in maintaining forest biodiversity. When carrying out research into the functional groups, the Chanterelle, which is a mycorrhizal fungi are necessary components for the growth and development of plants in the forest. Furthermore, decomposers such as the Wood Blewit are major species in the forest ecosystem. Their role as natures recyclers are important as they break down organic matter, and without them the nutrient cycle will be prohibited due to the reduction of nutrients within the soil. In Conclusion it is evident that both fungal species are important in the response to climate change. Understanding mycology in the woodland environment, particularly in forests is significant and the effects of climate change are observable in the fungal activity demonstrated by both fungal species.

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 Figure 2 available on website: <https://practicselfreliance.com/chanterelle-mushrooms/>
 Figure 3 available on website: https://www.treeworks.co.uk/downloads/s12speakers/Prof_Alan_Gange-Climate_change_impacts_on_Woodland_Saprotrophs_Mycorrhizas.pdf
 Figure 4 available on website: Bio.utexas.edu (Figure 31.3)

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Tutor comment:

A. was a diligent student who was always hard-working in tutorials and homework outside of class. A.'s essay was extremely thoroughly researched, with sources used from a variety of scientific papers which are significantly above the comprehension level I would expect from a year 10 student - which is very impressive. Well done A.!

Arts and Humanities

Produce a piece of creative writing that describes a natural setting as an introduction to a story

Year 5, Key Stage 2

Pupil: **K. Chukwuma**
 School: **St Winefride's Catholic Primary School, Newham**
 Supervised by: **Dr S. Bankes**
 Tutor University: **The Open University**
 Course Title: **Into the deep dark woods: A Journey through literature**

I found myself in a beautiful jungle filled with lush verdant bushes, an orange sky, pink trees and a tranquil azure blue lake which swept around me. This was the best experience of my life: I felt free, as free as I could ever want to be, with the animals of the kind waters surrounding me. There was no fear in my way and I felt a deep peace and stillness knowing that joy was surrounding me like a gargantuan benign tornado, in which I could express all my feelings with the animals of the Jungle. I was climbing with the agility of the lemurs, swooping and soaring like birds of paradise and running as fast as the cheetahs!

The endless stretches of rich deep viridian brought me comfort as I felt I would never have to be scared again and I would have no reason to feel guilty because I had nothing to feel guilty about! The popping vibrant colours of the horizon were soaking into you while you settle in, feasting on the beauty of the landscape. I felt relaxed and settled with all the heat hitting me like a beach ball with a simple little kick that comes with it. You can be as free as a micro-organism and I would never be seen and never be hurt ever again. The bright orange sky was filled with bold clouds with thin outlines around them: it was as if I was in a magical world! Or was I...

The natural rich, splashy, multi-coloured jungle was an extraordinary experience and it would be a wonderful home for anyone to live in! I enjoyed only the very best company with the cute, tiny and decorative insects cornering me, speeding and fluttering past me! The texture of the smooth green leaves as they dance around in the wind charmed me, while the trees sway in harmony side to side, like a crowd of friendly protective

giants. I am surrounded by the rustling in the bushes, the tune of the wind and the beautiful singing of the birds as they hum their song.

The jungle begins to envelop me in its embrace and the beauty of its nature. Birds begin to dance in synchronised waltzes, revealing the magic of their natural beauty before my captivated eyes. I feel the luscious green grass as it brushes between my fingers, then I catch a glorious glimpse of the swiftly flowing waterfall as it creates a sweet melody while the tall pink trees arch above me creating a roof for this beautiful Greenhouse.

Above me the orange sky paints pictures in my head delicately with its soothing paintbrush whilst the sweet bees buzz around happily. The wiggly worms begin to perform their jazz number in a awesome show while the snails of the bushes crawl around next to my feet leaving a glistening and glittery trail of their natural magic like a fairy sprinkling her dust around me.

While I drink my refreshing cup of coconut water, it tastes like life- giving nectar! I sit under the arch that the trees created as I read a little story and it was about the beauty of nature and that’s when I recognised that nature is a beauty! I walked around the glowing forest while I continuously opened my book! I saw the silky swans in the clear cerulean waters. The sun begins to pour its radiant rays of gleaming light on my face, I smile allowing the beams to reflect off of my dazzling teeth.

The sun begins to set ever so slowly, the sky turns red beckoning me to sleep. It captures me and I begin to lie down on the soft, fresh grass, that lie beside the pure, translucent waters, I was in nature at its finest condition!

As I woke up the forest was full of waterfalls pouring down onto the bushes, while it hypnotised me as I stared at the clear waters! If you look around you could see the sparkly, crystalline waters spraying on you as if you were in the shower! I ran after a butterfly and fell into the lake of warmth, and as I got out, I felt like I was at home! I started to interact with the animals as we were playing hide and seek while I hid in the burgundy bushes waiting to see if I would be found. Once the tigers discovered my hiding place, we all started to giggle and that made my day! The beautiful jungle wrapped me around in its embrace.

If only this wasn’t a glorious fantasy!

Part II: Write a commentary analysing your creative writing
I really like this setting because it makes me feel at home and really relaxed and when the story said ‘you can be as free as a micro-organism and I would never be seen and never be hurt ever again’ it helps me feel calm and get over any fear that is stopping you from doing something good. It helps you learn if you have a place that makes you calm and being in a natural setting can help people relax. Even once you have left a natural space, you can always imagine it and that might be the medicine to make you happy and joyful! If you think of something you love it makes you feel at ease.

One of the ways that writers help us to picture the settings they create is by using figurative language such as metaphors and similes. A metaphor is a literary device which enables you to compare a thing to something else so that you draw attention to a particular quality. This is used most commonly in poetry. In William Wordsworth’s description of the city of London early one morning, he helps us to visualise

the view he discovered as he was crossing Westminster Bridge. I found the lines he wrote “The City now doth like a garment wear’ interesting and surprising at first because it sounded like a city was wearing clothes. He describes the view as being so beautiful and he had just realised how lovely it was, but because he compares the beauty to clothes, he reminds us that these can be removed and the view will become ordinary again. In my writing I have used an extended metaphor in the first paragraph: “joy was surrounding me like a miracle from God coming upon me, sucking me into a gargantuan benign tornado, in which I could express all my feelings with the animals of the Jungle.” This compares the happiness felt to a huge whirlpool picking me up and surrounding me. It is effective because it shows your joyful spirit and you are completely powerless in a tornado and so this shows that you are fully swept up by feeling of happiness, joy and creativity!

There are several examples of personification to suggest the beauty of the animals I describe. For example, I have written, ‘Birds begin to dance in synchronised waltzes, revealing the magic of their natural beauty before my captivated eyes. The wiggly worms begin to perform their jazz number in a awesome show while the snails of the bushes crawls a around next to my feet leaving a glistening and glittery trail of their natural magic like a fairy sprinkling her dust around me.’ This comparison shows that the birds are joyful, graceful and lively like dancers.

I have also used a simile to enrich this description. One example is ‘I felt relaxed and settled with all the heat hitting was me like a beach ball with a simple little kick that comes with it!’ This compares the heat to the way a beach ball automatically bounces once it hits a surface. It is harmless and colourful fun. This is a useful comparison because a beach ball always bounces back like the heat.

I love this setting because it makes me feel happy, joyous, safe and secure, knowing that everything will be alright because you are being guarded and protected. You will know that you cannot ever be hurt because friendly people, insects and mammals are surrounding you and passing their love around to you! You will feel like everyone loves you no matter what you are going through. I also chose this story setting because it feels like a little fantasy will not hurt anyone but it will make you relaxed and in your own world that you can enjoy when you feel in the blues, and a magical setting can spread your imagination and help you to express all your feelings even though it may not be simple. Many of us dream of being close to the natural world and I have tried to create that dream in this writing.

Tutor comment:

K.’s writing takes us all to a wonderful world of harmony and colour in its celebration of nature. I was so delighted to see her using creative and evocative metaphors and similes to describe her magical setting. Her work has such exuberance and energy as she demonstrates how imagination, stories, and dreams can bring us joy, solace, and escape. She very cleverly reveals the importance of literature in our lives through the power of her writing. I really enjoyed working with the group from St Winefride’s and congratulations must go to the whole group for their hard work. Many thanks too, to Mr McAteer and all the staff who supported the children during this course and made me very welcome. Well done again, K.!



What is fairness?

Year 5, Key Stage 2

Pupil: **T. Harridence**

School: **Ormiston Meadows Academy, Peterborough**

Supervised by: **Dr T. Jayne Lynn**

Tutor University: **University of Reading**

Course Title: **What is fairness?**

Fairness is not black and white. A person’s view of what is fair and what is unfair depends on the situation and upon what side you are on. In the fable ‘The Grasshopper and the Ants’, the grasshopper expects the ants to share the food they have gathered all year while the grasshopper did nothing. He thinks it is ‘fair’ that they share their food, but the hard-working ants think it is ‘unfair’ as he is lazy. Fairness is where something is balanced and equal in the view of all of the people involved but an individual’s view of fairness is affected by their education, character/personal beliefs, emotions, experiences and peer behaviour. As every individual has a different mix of these, they will have a different view on what is fair. This essay considers each of these factors and the effect on someone’s view of fairness. To provide evidence to support my views, I will focus on two case studies: the fairness between the CEO and plantation workers of Chiquita Bananas in Ecuador; and the fairness of people being homeless in the United Kingdom.

Firstly, a factor influencing perceptions of fairness is education. It is common to think increasing your knowledge and education means you will do better in the world and have more money, status and possessions. Ben Stein, an American writer, said, “Poor people who get an education and work hard in this country will stop being poor.” [1]

This is a view a lot of people support and facts say support it - in the UK, people who finish school on average earn 30% more than those that do not and those who go to college or university earn on average 90% more than those that drop out of school. [2]

The plantation workers will have not had much education as children, but the CEO of the company probably went to school and university where he learned to be successful at running the banana company. Many people would say he has spent time learning and so it is fair he gets more money than the workers but if there is no education for the workers when they are children, then that is the unfairness.

Everyone should have the chance to be educated, giving them the chance to work in better jobs and earn more money for their families.

A second factor affecting someone’s view of fairness is their character/personal beliefs. A person’s views can change because of the world they grow up in and what their character is like. People from the same family can be nice or nasty, generous or selfish. If you were caring, you might give a homeless person some money or food but if you are selfish you would walk past them and may even laugh because they are poor and have nowhere to live.

Things like someone’s religion or their importance in the world can make them think about fairness in different ways. A religious person might think that everyone should be equal and be very giving and fair to people who are



Chiquita banana plantation

A person’s emotional state can also influence their view of fairness. The way you are feeling can affect your thoughts and view of fairness. In our examples the plantation worker might feel angry because they are not getting enough money to live and give things to their family and this will affect their view on whether their pay is fair. If you are feeling generous you might be fair and give someone on the streets something but if you’re feeling angry or in a hurry you may just walk by. It is very hard not to let the way you are feeling change your view on whether something is fair or not.

Life experience is a fourth factor that can influence someone’s view of fairness. What happens to people in their life can make them think that things which are unfair, are actually OK as they are used to the unfairness and no longer think it is unfair. For example, the plantation workers might be so used to low pay that they do not think it is unfair any more, but when they are paid less than they need to live above poverty [3] this cannot be fair. If people have bad experiences of unfairness in their lives, they may take the view that everyone should have to experience it. It is hard to ignore personal experiences or accept that sometimes something can be unfair to an individual but can be fairer for everyone else.

Finally, peer behaviour can have an influence of a person’s view of fairness. Even when someone has a clear view on whether something is fair or unfair it can be hard for them to do the fair thing if other people do not agree - if your friends walk past a homeless person and laugh at them, it can be hard to not join in even though you know it is not fair. In the same way if all the top people in the company do not care about how poor the plantation workers are, it might be hard for the CEO to give them more money.

It takes a strong person to stand up against this sort of peer pressure to be the same, but it is this sort of courage that makes things change and become fairer for everyone.

Conclusion

Although the fairness of something is an individual’s view, it is affected by history, culture, society, education and many other things. It is particularly hard for someone to block out of all of these things to make a “fair” decision, knowing that it will not be seen as fair by everyone. The best we can hope for is that fairness is judged against a common set of things that the majority of people think are right and reasonable.

Many people have tried to write rules to ensure fairness in the world but as soon as you try to tell people what is fair, people will disagree. Perhaps the best rule to use is one

taught very early to most children by their parents: “Treat people the way you want to be treated.”

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- [2] OECD (2012), “How does education affect the economy?”, in Education at a Glance 2012: Highlights, OECD Publishing, Paris.
- [3] Fairtrade review on impact of Fairtrade on banana plantation workers

Tutor comment:

It was a pleasure to tutor T, who was keen to engage within tutorials and applied a unique perspective to the discussions we held. T.’s essay demonstrated a level of advanced thinking and understanding of the complex themes we discussed in tutorials and applied this to examples of CEO and plantation workers of Chiquita Bananas in Ecuador; and the fairness of people being homeless in the United Kingdom. Outstanding approach to the complexity of fairness in a succinct way.



In the eleventh century the matter between an invader and a native was a matter of perspective. Do you agree?

Year 6, Key Stage 2

Pupil: **H. Abdul Haleem**

School: **Beaconsfield Primary School, Ealing**

Supervised by: **J. Field**

Tutor University: **Newcastle University**

Course Title: **Invasion, Integration & Identity**

In the 11th century, many different peoples settled in Medieval Britain. The Vikings, Welsh, Normans, Celts, Romans, and Anglo-Saxons all stayed there at some point in time. At times many of them did not get along well with each other because they fought over land. A group would believe that the territory was theirs only and they were the true natives – which was not true: if any other group trespassed, they believed that they were invading. Some writers from the 11th century were biased against diverse groups: they would write praises about themselves yet curse the others. They considered themselves as natives and others as invaders often because they were perceived as outsiders. This assignment will be explaining why the difference between native and invader is only a matter of perspective, whilst also exploring many writers, including Geoffrey of Monmouth, William of Newburgh, Archbishop Wulfstan, Geoffrey Gaimar and Gerald of Wales.

Geoffrey of Monmouth was from Wales, however, he thought of himself as a Briton. He believed that the Britons were the true natives of Britain since he wrote: ‘...the Britons first occupied it... before the others’ (Geoffrey, in The Scholars Programme, Invasion, Integration and Identity: Britain in the Eleventh and Twelfth Centuries: Tutorial Handbook, p. 17). He saw the foreigners as the Normans, the Saxons, the Picts, and the Scots. In his book ‘the Prophecies of Merlin,’ a wizard, who is named Merlin, tells the King of Britain that the Anglo-Saxons would invade and tyrannise the country. He called the Saxons cruel foreigners and said that they would oppress the people of Britain. ‘The Prophecies of Merlin’ clearly made it seem as if the Britons were innocent and had nothing to do with the Saxons, whereas the ‘foreigners’ (The Saxons) were

seen as wicked and evil. He was not fair on other backgrounds and he was in favour of his own country. Even though the Saxons had settled into the country for a long amount of time, he thought of them as invaders. William of Newburgh was also a writer, but he was an Anglo-Saxon. He wrote the history '*Historia Regum Anglicarum*' which described the years 1066-1198. He was not very pleased about what Geoffrey had said about his own nation. In fact, he was rather enraged about it. He even wrote about how deceitful Geoffrey was of the Saxons and that he had drawn fantasies. Undoubtedly, he did not believe in the '*ridiculous fictions*' which were written by Geoffrey of Monmouth. However, William trusted what Gildas had scripted, just because he, a Briton writing about the Britons, had written about his own countrymen in a bad way.

'*Wulfstan (sometimes Lupus; died 28 May 1023) was an English Bishop of London, Bishop of Worcester, and Archbishop of York. He wrote his most famous work, a homily which he titled the Sermo Lupi ad Anglos or the Sermon of the Wolf to the English.*' [1] In this homily, he mentioned how the Danes (Vikings) were enslaving the people, killing them, and attacking vulnerable young English women, often in gangs. '*We pay them continually, and they humiliate us daily; they ravage, and they burn, plunder and rob*' (Wulfstan, '*Sermo Lupi Ad Anglos*'). He believed that the reason for their suffering was because the people of England had committed many sins such as murder, theft, adultery, and many other bad deeds. Certainly, the English would consider the Vikings as invaders; since the Vikings were violently intruding on their land; it was them suffering and not the Danes! Whilst Wulfstan thought the Vikings and savage and evil, Geoffrey Gaimar's '*Havelock the Dane*' portrayed the Vikings as noble and brave, not at all wicked. In '*Havelock the Dane*' there was a warrior called Havelock, who fled to Denmark with a fisherman and married the princess Goldboru. He defeated the villain Godrich, and then he and Goldboru fairly and justly ruled over the Danish people. In this story, Vikings were represented positively, unlike the homily that Wulfstan had written, in which they were aggressive and ruthless.

Gerald of Wales had an Anglo-Norman father and a mother who was related to the Welsh princes. Therefore, he considered himself as both. His brothers became knights; however, he became a bishop. He used to write about how the English were quite selfish and greedy whilst the Welsh only wanted freedom and defence. 'The English want power, the Welsh want freedom, the English are fighting for money, the Welsh want to protect themselves, the English soldiers are hired mercenaries, the Welsh are defending their homeland' (Gerald, '*Description of Wales*', in The Scholars Programme, Invasion, Integration and Identity: Britain in the Eleventh and Twelfth Centuries: Tutorial Handbook, p. 55). This extract was written at the time when England was trying to invade the Welsh people's homeland; even though the Welsh wanted peace and freedom. Moreover, Gerald described the Anglo-Normans as invaders and the Welsh as natives despite the fact that he was both. In the early middle ages, Wales was split into different parts which were ruled over by Welsh princes. The Anglo-Norman kings often tried to take over the country. In one of his passages, a priest called Guaidan picked up a handful of grass and ate it in front of an Anglo-Norman knight. When the knight told the king about the event, they got the impression that Wales was a primitive country with no riches and not much food. Furthermore, Gerald mentioned that the Welsh were descended from Brutus, who was a survivor of the

Trojan War and whom Britain was thought to be named after. '*Therefore, by saying that they are descended from Brutus, Gerald of Wales is suggesting that they are noble and may be great again, like their ancient kings once were.*' (The Scholars Programme, Invasion, Integration and Identity: Britain in the Eleventh and Twelfth Centuries: Tutorial Handbook, p. 56)

To conclude, after reflecting on the well-explained arguments that I have written, I can determine that different peoples were biased against each other, because perspective made different groups appear as natives or foreigners. Geoffrey of Monmouth considered the Anglo-Saxons as invaders whilst William of Newburgh believed that they had a right to be in Britain; Archbishop Wulfstan thought that Vikings were evil whereas the book of Havelock the Dane showed that Viking can be an important part of society, and Gerald of Wales described the Anglo-Normans as invaders and the Welsh as natives despite the fact that he was both. In my opinion, I believe that, in the 11th century, people thought of each other as invaders because they were only taking their own nation's side and they only thought of the other side in general and not individually. This is because of perspective.

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Tutor comment:

It was an absolute pleasure working with the pupils and staff at Beaconsfield Primary School; it was a wonderful experience and I loved my time there. All of the pupils were incredibly enthusiastic and eager to learn about eleventh-century Britain and I always enjoyed hearing contributions and reading their work - they are all very hard-working scholars who are capable of great things! In particular, I would like to commend H. for her final assignment - her essay was very well-argued, written in a sophisticated fashion and supported by cogent references to primary sources throughout. She is a real credit to her school and a very promising young historian!



How democratic is the United Kingdom? Is there anything we should do to make it more democratic?

Year 6, Key Stage 2

Pupil: Z. Riasat
School: Cheetham CE Community Academy, Manchester
Supervised by: C. Carey
Tutor University: Manchester Metropolitan University
Course Title: Power to the people

This essay will discuss the level of the UK's democratic system and the ways we can improve it. A democracy is a system of government by the whole population or all the eligible members of a state, typically through elected representatives. In the UK, we have a certain type of democracy called Representative Democracy. This is when the democracy is founded on the principle of elected officials representing a group of people, as opposed to a direct democracy, which is a way of making decisions in which everyone has a vote on each issue, according to The Brilliant Club: power to the people.[1] We elect officials to represent each

constituency in parliament and take our ideas and thoughts for change into parliament. Democracy is made up of different dimensions which include freedom of speech, speed of response, amount of unchangeable laws, equal opportunity and quality of deliberation.[2] In this essay, I will discuss the lack of equal opportunity for women, young people and people from ethnic minority backgrounds in our parliament.

While the UK's democratic system is already stronger than many other countries' democracy, there is still room for improvement. One of the substantial issues we face in our democratic system is that we have unequal opportunity, meaning that we have a greater amount of men than women and there are less young or ethnic minority people etc in our parliament. This means that minorities such as the ones listed above are poorly represented in parliament. To begin with, there is an astonishing amount of difference between the men and women in parliament. Currently, there are 209 female MPs, out of a total 650 members of parliament. This means that 441 members of parliament are men and that is the majority of the total amount.[3] According to the GOV. UK website, females make up 51% of the UK, but they don't even make up a third of the UK's parliament.[4] If a person were to agree and vote for a woman MP they would have significantly lower chances to have their MP voted in. Due to prejudice against women or certain politicians, people who agree with them because of their point of view don't have an equal opportunity at getting their voice heard by the representatives they want.

As well as this, some politicians are given unequal opportunities to represent us in parliament due to their age or ethnicity. To further explain, if they are a younger politician or are from an ethnic minority background, they may not have the same opportunity become an MP, as they may not be seen as equals to their peers. For example, if they are of a younger age then they may not be seen as the ideal candidate for an MP due to people's mentality that they lack knowledge, experience etc. This is usually not true, with younger candidates having more modern and recent knowledge and a more of a fresh approach to things. According to Parliament UK, the youngest MP is Mhairi Black, Scottish National Party MP for Paisley and Renfrewshire South, aged 22 when re-elected in June 2017.[5] You can become an MP as soon as you're 18 and the youngest person has already waited 4 years to do so.[6] If you think about it, what good does it do to have a 60 year old man talking about matters that are going to affect 18+ people as it will possibly affect them in later life whereas the 60 year old will probably be dead by then.[7]

In addition to my previous point, it also isn't fair to not have equal chances of being an MP because of your ethnicity. If a candidate is from an ethnic minority background, then they may be discriminated against and not be voted in because of their ethnicity and not because of their ability to be an MP. According to the BBC, in the 2017 general elections, 52 MPs were from non-white backgrounds, 8% of the total. They include Preet Gill, the first female Sikh MP, shadow home secretary Diane Abbott, who became the first ever black female MP in 1987, and Manchester's first Muslim MP Afzal Khan.[8] In my opinion, I believe that we should have an equally differentiated parliament because when

making certain decisions different peoples viewpoints and perspectives are needed to make decisions which will benefit everyone. Having an equally differentiated parliament is a sign of democracy as everyone gets to have equal representation in parliament. Altogether, the lack of equal opportunity in our parliament is unacceptable and needs to be altered on immediately.

A number of people may consider the point that although parliament may not have enough women or young or ethnic minority MPs etc, our country can't just add more of them because we don't have an equal amount. They actually need to be able to be a good MP as well. What is the point of having an equally differentiated parliament which does no good for the people at all? Isn't that the sole purpose of parliament? If we were to be voting people into parliament only so we can have a diverse parliament, our parliament would be broken, therefore lost its intention of actually helping to run our country. We need to put the needs of our country first and choose our elected officials based on their abilities to better our country. Even though this is a valid point, this is a possibility and not a reality like my beginning points.

In conclusion, the UK democracy needs a lot of changes to it and as I previously mentioned, there are many things we have to amend, the one I have discussed is unequal opportunity. As I have discussed, the ways in which our democracy needs reform include equal opportunities to be MPs for women, young people and people from ethnic minority backgrounds etc. To have a stable democracy, we need to have equality in our parliament, otherwise there is no point in democracy at all as it is all about getting an equal say in things. Ultimately, we need to have all the different types of people in parliament to represent all the different types of people in our country so we can always make the best decisions for everyone. As a country, we embrace diversity so we should begin by making the parliament who help run our country diverse as well.

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Tutor comment:

This was my first assignment with The Brilliant Club and teaching at Cheetham Church of England Community Academy was an absolute pleasure. The staff and pupils were welcoming, accommodating and incredibly passionate about the programme. Z.'s essay reflected the level of sophisticated thinking and in-depth knowledge of the complexity of the issues we studied. This essay articulated the barriers faced by minority groups when entering politics and carefully examined the impact this has on minoritized individuals within wider society. Z. dealt with the complex theories very well, for example, dimensions of democracy, and used great examples to substantiate their argument. Z. received a mark of 77 out of 100 (1st) for this work, which means they are already performing to an excellent standard for someone who is in Key Stage 2.



To write a literary analysis of Cinderella using Horace's theory of literature and evaluating his theory's usefulness for studying literature

Year 7, Key Stage 3

Pupil: J.Todd
School: Chantry Middle School, Northumberland
Supervised by: K. Ugwuanyi
Tutor University: Northumbria University
Course Title: Through the looking glass: Introduction to literary theory

This essay analyses the fairy tale Cinderella (Perrault, 1697) using Horace's theory of literature and evaluates his theory's usefulness for studying literature. Horace was born in Italy in 65 BC and died in 8 BC. He was a great Roman poet whose works include: Epodes, Odes and Ars Poetica [1]. Horace defines the goal of poetry as "dulche et utile" (to please and to teach) [2]. Horace thought that, 'Poetry is a useful teaching tool...precisely because it is pleasurable. The pleasure of poetry makes it popular and accessible, and its lessons thus can be widely learned' [3]. He believed that stories should entertain and teach the reader something about how to lead a better life.

Cinderella is a fairy tale written by Perrault in 1697. It is about a girl called Ella who gets nicknamed Cinderella by her stepmother and sisters because she picks up the cinders from their fireplaces. She lives with her wicked stepmother and sisters who despise her. In the story, everybody who lives in the village is invited to go to the Prince's ball at the royal palace apart from Cinderella who has to stay at home and do chores for her stepmother. Then Cinderella's fairy godmother appears and makes her dreams of going to the ball come true by turning her old rags into a beautiful ball gown, a pumpkin into a fine carriage, six mice into six majestic horses and a rat into a jolly coachman. Her fairy godmother then tells her to return at midnight for if she does not the magic will wear off and she will change back to herself. As she runs away, at the stroke of midnight, she loses her glass slipper on the stairs out of the palace. The Prince declares that he will marry the woman whose foot fits the slipper. He then searches the kingdom to eventually discover that Cinderella's foot fits the glass slipper. After that, they get married and live happily ever after!

Cinderella adheres to Horace's theory of literature because the tale entertains the reader whilst also teaching them principles of right and wrong behaviour. It entertains young children in particular by using magic. It sends readers to a fantasy world for example, when Cinderella's Godmother magic's her up a ball gown and her beautiful glass slippers and her majestic carriage out of fruit and rancid rats!

However, as well as entertaining people, fantasy serves another important purpose; 'Fantasy is vital for the human mind. It begins as the psychological process by which a child learns to fill the gaps between knowledge, reality

and experience, and becomes a vital adult coping mechanism. Taking one step away from reality to that "safe" place of pretend, prepares us to look the world's harsh realities in the face. From there we can name the horrors and celebrate the joys before going back, with a clearer perspective on situations that bother us.' [4] The fantasy element of fairy tales may help to prepare children for their future lives.

Cinderella entertains as it may give a sense of hope to people if they are having a bad time. Although her wicked stepsisters abused her and made her life a misery, she battled on and went to the ball to meet her future husband, the Prince. She is oppressed then goes on to defeat her oppressors which entertains the reader with a feel good factor.

As Perrault was born at a time when there was a strict class system the reader might find it amusing to have a poor servant rise to become a wealthy princess. Cinderella adheres to Horace's theory of literature because it teaches you many morals. One of these morals is to always be kind no matter what. Even though her stepmother and sisters disrespect her she stays calm and kind. For example, after her sisters tease her about how ridiculous it would be to, "see a Cinderwench at a ball," Cinderella is still thoughtful and considerate. "Anyone but Cinderella would have fixed their hair awry, but she was very good, and dressed them perfectly well." [5]

Another moral in Cinderella is to never give up. Cinderella believes her circumstances can change and remains optimistic. She takes her chance to go to the ball when her fairy godmother offers to help. Cinderella, with support from her godmother, believes in herself enough to go to the ball. Despite her wicked stepsisters abuse she remains kind, brave and resilient.

One of the greatest morals in Cinderella is that graciousness is of greater value than beauty alone. 'Graciousness is more important than a beautiful hairdo. It is a true gift of the fairies. Without it nothing is possible; with it one can do anything.' [6] Cinderella shows graciousness throughout the entire story for example, when she moves into the castle at the end she allows her stepmother and sisters to live with her in the royal palace even after their appalling attitude towards her.

Although Cinderella follows Horace's theory of literature because it entertains and teaches you many a moral, it does not always follow this theory. For example, the stepmother and sisters behave in an atrocious way towards the caring Cinderella but instead of being punished for their behaviour they are rewarded by being able to have, 'lodgings in the palace, and that very same day matched with two great lords of the court' [7] This could make children believe that if you behave awfully there may be no consequences for your behaviour and you could go unpunished and maybe even benefit from your bad choices. So in this instance good things happen to bad people, which may be seen to frustrate Horace's theory. Applying Horace's theory may tell us something new about Cinderella and help us to understand why it is such a successful story. Cinderella was written in 1697, therefore it has been around for 322 years. Even after all this time, many children can retell the story in fact it is so famous that it has been rewritten in many different versions, and made into numerous films, including a Disney film released in 2015. Horace believes good literature should entertain and teach and as Cinderella largely adheres to his theory, this may explain why this story has been so long lasting

and eternally popular. 'Horace's theory could be useful in understanding and explaining why a piece of literature is so well enjoyed. Perhaps if this story did not teach you morals but was only entertaining it might not be as popular today as it was in 1697. Horace's theory is useful in helping us to understand the success of fairy tales as a genre of writing. Fairy tales bring together fantasy, humour, hope, entertainment and moral lessons and are the perfect example of literature that is 'dulche et utile'.

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Tutor comment:

Although I absolutely enjoyed the time with all my pupils at Chantry, J. stood out in many respects. He was very engaged in class discussions and made very insightful contributions. His writing and analytical skills were nothing short of stunning when compared to his age. His ability to apply the theories we studied in the course to the literary texts was way beyond his mates. It gives me special joy and pride to have tutored J. at this stage, and I'm happy to recommend him to any school. He's a student to watch!



Why was there a French Revolution?

Year 8, Key Stage 3

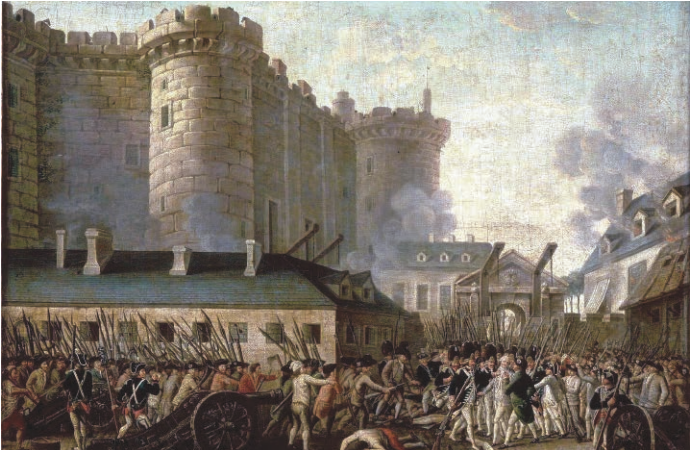
Pupil: I. Chorlton
School: Bingley Grammar School, Bradford
Supervised by: S. Browne
Tutor University: University of Leeds
Course Title: Why was there a French Revolution?

This essay will explore why the French Revolution took place using a range of historical perspectives and I will evaluate which theory I think is the best explanation for why the French Revolution took place.

The French revolution occurred between 1789 - 1799 and was responsible for the lives of 40,000 people, including royalty (ultimatehistoryproject, May 2019). The monarch, at the time, was King Louis XVI. He, along with the Estates General (a form of government), exploited the vast population (98% being lower class citizens), and ever increasing the taxes for the minimum wage workers. Revolution was inevitable. On July 14th, 1789, the storming of a heavily armed prison was launched thus marking the widely accepted beginning to the French revolution. Was revolution a cause of human nature? Or do other factors need to be taken into account?

One of the three internationally accepted theories for why the French Revolution took place is Marxism, developed by Carl Marx in the mid-19th century (britannica.com, May 2019). It proposes that lower class struggle and class consciousness was the cause of the French revolution. Marxists ideal form of communism promises no poverty, no social class and no possessions. Marxist historians also believe that communism is the only contrivance to escape the cycle of society where dictatorship is followed

by revolution caused by the ever-attendant feudal system, which always greatly benefits the dominant, higher classes. This then always leads back to the exploitation of the lower-class citizens. The lower-class citizens are the people who work hard for little money and the higher-class citizens: the opposite. A world without flaws is what Communism is trying to achieve. Although it seems impossible to accomplish, many people believe it is the only solution.



The Storming of the Bastille, 14 July 1789

Marxist historians explore and explain how the French revolution is a model idea for what class struggle is. The French revolution was influenced by the recent famine and how the monarch had been too selfish to even lower the price of bread. In March 1789, the price of 1.8 kg of bread nearly cost the same amount of sous (the French currency) that an average French peasant earned per day (The Brilliant Club handbook, source4). The price of the bread dropped, however, when the public began to revolt, like the fall of Bastille (a heavily armed prison) showing that the Estates General knew the possibility of becoming overthrown and so lowered the prices. After the ten years of terror the Revolution caused, the fighting was brought to an end, with the monarchists defeated and a young Army general called Napoleon Bonaparte swooped in and took control as 'Supreme Emperor' of the country. His cruel, disciplined aspects of leadership caused many people to beg for the old, familiar way of governing the country. This example proves Communism correct as it demonstrates the imminent, selfish hunger for power in any ruler, even one who played an important part in defeating the monarchists.

For centuries the Marxist explanation for the cause of the French Revolution was accepted by most historians. Starting in the 1950s, however, new evidence was discovered, and historians began to challenge the Marxist theory arguing that the cause of the French Revolution was not about class struggle but a struggle of ideas. Carl Marx's theory was based on the fact that history is all about class struggle and social organisation changes when one class overthrows another but their challengers, the intellectuals, believe that the French Revolution occurred because of the national class consciousness and ideas of the lower class population.

During the 1600s and 1700s, Europe was the epicentre of all new developing ideas where people were encouraged to use reason to solve their dilemmas rather than tradition or the national religion Catholicism. This time is commonly referred to as The Enlightenment. During this time, prodigious scientific discoveries like Isaac Newton's laws of motion further proved the capability of this new method of thinking (Reading three, third paragraph, The Brilliant

Club handbook). The Enlightenment also supported the development of a social contract: a set of laws based on the premises of natural rights not to be constituted by the bias, higher class population, but democratically so people from all classes get represented in a civil manner. Two famous historians, Montesquieu and Rousseau, advanced on these theories to portray what the best type of government is. Montesquieu, born into a wealthy family with no financial problems, making his theories slightly biased, argued that the best type of government is one where power was split into different groups, preferably three, preventing one group from becoming too powerful (Source7, The Brilliant Club handbook) (www.biography.com, May 2019). Rousseau, raised by only his father and home schooled to the age of ten, believed that the people in the country should be sovereign over themselves, implying that the King and Queen should be removed from a position of power. The fact that his family had a simple life with not much excessive money tells me that his opinions would most likely be just and that he would understand the importance of education (plato.stanford.edu, May 2019).

Francois Furet was another highly respected historian who profusely challenged the Marxist interpretation of the French Revolution. He believed the French Revolution might have been driven by political aims as much as class dissatisfaction. However, his background varies from Montesquieu and Rousseau's. Francois Furet was born into a wealthy family with no financial problems at all meaning he had no personal experience being dissatisfied with his class. As he grew older, his political opinions were directed to the Communist party (who were in league with Marxism) but seven years later he fell out with them and left (en.wikipedia.org/wiki/François_Furet). His hatred for the Communist party may have influenced his theories to oppose them, making his ideas potentially biased. Education was spreading rapidly across France, allowing ordinary people to read these ideas of Enlightenment, Rousseau and Montesquieu so forming their own opinions. This leads on to the theory that it is the changes in ordinary people's lives that encouraged the French Revolution.

The final explanation for why the French Revolution took place, developed by Roger Chartier, was the changes in ordinary people's lives happening over a long period of time. After a certain number of events happening prior or during the revolution, people expected change in the government. Royalty, clergy and nobles denied the request thus instantly losing respect. Since these thoughts of exploitation had been around for many years and with the food crisis simultaneously nowhere near being resolved, peasants and bourgeoisie began to revolt. Alternate images of the king and Marie Antoinette (the last queen of France) as a goat or a leopard in cartoons were becoming popular and since ordinary people had started to become educated in the past few years, they could read exactly what was going on and form their own opinion on how their country should be run (The Brilliant Club handbook, source11). Not to mention that in recent years the monarch had been seen as weak or indecisive, meaning that the general population didn't see the monarchy as a powerful figure, but someone that shouldn't be trusted.

In the 18th century, Catholicism was the national religion, however, de-sacralisation occurred meaning the religion lost a great deal of respect as a consequence of recent disputes (The Brilliant Club handbook, Reading 4, De-sacralisation). This dramatic, national adjustment brought about the uncertain thoughts that anything could change in the country since Catholicism was cherished

and had seemed permanent. Roger Chartier specialised particularly in the importance of literacy in people's lives and in these recent fifty years his work has become much more popular showing that more and more people have considered his theory correct. In my opinion, I think that the combined rise in literacy rates, the change of something seeming so permanent and the rising expectations of the commoners for a better lifestyle built up the biggest cause of the French Revolution: the unfamiliarity of change and the expectancy that other unfair components of life must change as well.

The three main theories for why the French revolution took place all have complex understandings and people have different interpretations of them. In my opinion, however, I think that the cultural explanation is the most convincing as it concludes the other two theories. More specifically, I think that the education of people and illiterate to literate population caused more people to be able to read all the pamphlets and information so forming their own ideas and beliefs of the events happening in their own country. In 18th century French Catholic schools promoted literacy and because Catholicism was the national religion, many people got educated properly, despite Catholicisms' major loss of respect. For the first time in French history, 'ordinary' people could discuss political matters. These common people knew that they were the majority and could change these laws based on whether or not revolution was reasonable or just an idea.

It is very clear that after a thorough analysis of all main theories, the cultural explanation for the French Revolution (the huge changes concerning the normal person) is the most convincing as it covers a variety of topics all separately explaining the cause of the Revolution.

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Tutor comment:

I did a really great job with this essay. His use of terminologies, theories and explanations exemplify how well he engaged with the material throughout the tutorials. I have put forward some seriously compelling explanations for the reasons why there was a French Revolution, and this combined with a sophisticated writing style make this assignment a dream to read – well done!!



What is war?

Year 8, Key Stage 3

Pupil: **M. Gould**
School: **Bodmin College, Cornwall**
Supervised by: **Dr K. Bramhall**
Tutor University: **Exeter University**
Course Title: **What is war?**

Tactics and ethics: how ethical are military tactics?

War is very complicated and has no single definition, but heavily involves tactics and ethics. I will be looking at the

correlation between ethics and tactics, essentially; how ethical are military tactics?

The ethics of war primarily relies on the just war theory, which is meant to prevent unnecessary loss of life and suffering by providing conditions on when, how and why a war should be fought. It was originally thought up as a solution for upholding the Christian ideals of its medieval creators, even in times of war, and modern times, to minimise suffering, death and human rights abuses. Most scholars agree that, to be considered just, a war must meet several *jus ad bellum* requirements. The four most important conditions are: (1) the war must be declared openly by a proper sovereign authority (e.g., the governing authority of the political community in question); (2) the war must have a just cause (e.g., defence of the common good or a response to grave injustice); (3) the warring state must have just intentions (i.e., it must wage the war for justice rather than for self-interest); and (4) the aim of the war must be the establishment of a just peace. Since the end of World War II, it has become customary to add three other conditions: (1) there must be a reasonable chance of success; (2) force must be used as a last resort; and (3) the expected benefits of war must outweigh its anticipated costs.^[1] The theory has been developed by many philosophers over time, most Christian, but some not. It has influenced international and national laws, including rules of engagement and the Geneva Conventions. It incorporates two important sub-theories, *jus ad bellum* (the right of any sovereign nation to go to war), and *jus in bello* (laws in war about how war should be fought to prevent unnecessary suffering of non-combatants and soldiers). I will specifically use *jus in bello* to dictate whether the tactics to be examined are ethical or unethical.

Firstly, unethical tactics will be analysed, the first being deployment of chemical weapons, amongst the most infamously unethical tactics to have ever been used in war, for good reason. They can have unforeseen effects, be extremely cruel, be untargeted and kill civilians, dangerous to produce and are not always fatal, but leave life changing injuries. Chemical weapons were originally used in about 600bc in the form of Greek fire and poisoned water supplies. The first modern use was in 1914, where the French used non-lethal tear gas. The first use of lethal chemicals was in 1915, when German military leaders agreed to let Fritz Haber use chlorine gas at Ypres on the 12th June. Chemical weapons were used as a psychological weapon to keep the enemy soldier's heads down and neutralize them (put them out of action, killing or wounding). Chlorine and mustard gas were most effective as psychological weapons, as you could both smell and see them, which would instil a sense of fear into soldiers. Most gasses used were fatal if gas masks weren't used. The effects of both the chlorine and phosgene gas (the most lethal due to being transparent and having a long period where symptoms don't manifest after ingestion) make you effectively drown, as they asphyxiate you. Mustard gas on the other hand, makes you blister up wherever it touches you. Throughout World War One (WWI), upwards of 1.3 million were killed or wounded by toxic gasses. After WWI, chemical weapons progressed, and one of the most infamous after WWI was napalm, used in the Vietnam War, a flammable chemical dropped from bombers that stuck, flaming, to anything it touched, including people.

Subsequently, I have analysed untargeted bombing, highly unethical, but not obviously so. Civilian and medical targets can be destroyed, an obvious breach of the Geneva Conventions. Aerial bombing started in WWI when the

Germans gave Zeppelins bomb-bays and bomb racks to drop bombs on London and other British cities. It's modern form, bombing from planes, started later in WWI: some fighters were equipped with bomb racks or threw grenades down from their planes. Later still, there were purpose-built bombers. One of the most infamous examples of untargeted bombing was the Dresden bombings, British and American planes dropped high explosive bombs and incendiary munitions on the German city in such a way that they caused a firestorm, that sucked air in, and with it, people, in its hunger for oxygen. It caused massive damage to the environment, burning trees, houses, and anything that would burn. The death count was estimated to be 25,000 people!

My last unethical tactic is old, but the source of many tales of grief from the earliest wars up to today. It is the malicious burning, destruction and stealing of civilian property.

The reasons for the previous tactics being unethical are because they cause more harm than necessary, and by that logic, ethical tactics prevent undue harm to combatants and civilians, so a perfect example of a more ethical tactic is the use of precision bombing as opposed to untargeted bombings, as it is less likely to harm civilians, especially if military bases are targeted.

The rules of engagement (ROE), although not specifically a tactic, is one of the best ways to operate an ethical military, as it dictates that soldiers should only fire when fired upon. Also, extra orders to do with how, when and who to use force on, issued by commanders on a mission specific basis. A more detailed description follows: the ROE are a set of rules that dictate how, when and who to use force on, and how much force is appropriate, for example, a soldier wouldn't fire when they see someone, they may only fire when fired upon, or whether to fire upon certain targets, or if and when they can take prisoners. *During the Cold War, both The United States and the Soviet Union realized that the potential advantages of attacking were not worth the consequences of retaliation. The possibility that a minor incident could result in nuclear warfare inspired a need to establish procedures defining allowable actions.*^[2] They cover both actions taken by a soldier on his own and orders given by commanding officers.

The Geneva Conventions, although again not a tactic, are very important in terms of the ethics of war, including tactics and all other areas of war. The Geneva Conventions are a practically globally accepted set of rules and laws that embody *jus in bello* and ethical war. The Geneva Conventions were started by the Red Cross' founder to negate unnecessary suffering of all parties in war and was accepted by all major European powers, and some others. It started with just protection of wounded personnel, non-combatant medical personnel, medical buildings, impartial treatment of combatants and recognition for the Red Cross being the symbol of medical people and property.

The second Geneva Convention added improvements but changed none of the core values of the original Convention. The Hague Convention adapted it for maritime use, and the third Geneva Convention added rules to prevent mistreatment of Prisoners of War giving them more rights.

Due to abuses of the Conventions in WWII, an international Red Cross conference was held, which extended and arranged the existing Conventions to prevent misuse and was formalised not long after. On 12th August the

four conventions were approved: (1) the Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, (2) the Convention for the Amelioration of the Condition of the Wounded, Sick, and Shipwrecked Members of Armed Forces at Sea, (3) the Convention Relative to the Treatment of Prisoners of War, and (4) the Convention Relative to the Protection of Civilian Persons in Time of War.^[3]

The Geneva Conventions have had a huge impact on both the people fighting wars, and those civilians caught up in them. Leading to international tribunals and international criminal court!

In summary, how ethical are military tactics? To answer this, we have to think about if they are ethical or not, as there will always be ethical, unethical and morally grey areas, but factor in how many are ethical or not. Most unethical tactics are becoming or have become obsolete due to ethical values in most military administrations, due to this, most of the tactics seen today used by major militaries are ethical, hopefully it keeps moving in that direction.

Technology always changes in war, new technology means new tactics, whether ethical or not, which will always prove a challenge to military ethics boards worldwide, for example, when napalm was used in the Vietnam War, there was uproar from the public and groups pushing for more ethical military practice, the USA had to eliminate their usage of the chemical. A much more modern example of a new technology providing a challenge to those involved with ethics is the problem of drones, is it ethical to use unmanned weaponry against people? The debate about drones and Artificial Intelligence driven weapons is ongoing, being globally debated. Another ethical technological advance is the improvements in communication, letting commanders' direct soldiers more precisely, and decreasing the chance of a soldier doing something irrational and possibly immoral.

As stated, just war theories and specifically *jus in bello*, have led to and influenced the development of many conventions, laws, and techniques to deal with the problem of unjust and immoral war and human rights abuses it brings. Some of these are the Geneva Conventions, ROE and the creation of international and national laws and courts to do with ethics. As a result of the increased attention paid to human rights abuses and the significant growth in international human rights law, the traditional notion that a head of state enjoys sovereign immunity for human rights abuses committed by the armed forces of his country has been challenged.^[4]

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Tutor comment:

It was a wonderful experience working with Bodmin College. The committed and engaged approach shown by the pupils and Lead Teacher R. Stott made my time there a delight. Over the course M. made a valuable contribution to our tutorials sharing his response to the issues we studied in a thoughtful and critical manner. His in-depth understanding of the complexities of war clearly came through in the essay. M. skilfully crafted a sophisticated argument using carefully researched examples in relation to the theory going beyond our taught content. The level of independent thinking as well as his conscientious approach towards the development and presentation of his ideas will be an asset to undergraduate study - congratulations M.!



We have looked at how science answers questions, how philosophy (and religious faith) answers questions; and how both types of questions are part of life. How could a scientist use these two different perspectives to form their own worldview?

Year 8, Key Stage 3

Pupil: **K. Granados**

School: **Longfield Academy, Kent**

Supervised by: **S. Fincham-Campbell**

Tutor University: **King's College London**

Course Title: **Why are we here? Answers from physics and faith**

In order to answer the question of 'How a scientist would form their own worldview', I will consider the two different perspectives that people commonly use to answer life's most intriguing questions. Science will ask 'How' questions and will use scientific research, experiment, examination and data analysis to find their answers. Philosophy & Religion will ask 'Why' questions and use historical documentary information, personal experience and religious tradition as the evidence for their answers. A scientist forming their own worldview should try to answer both types of question and look at both types of evidence.

Science can answer lots of questions such as; 'how was the Earth formed?' and 'how did we humans evolve?' Scientists have, over time, produced many accepted theories such as Darwin's theory of evolution published in his book 'On the Origin of Species' [1] and the more recent Big Bang Theory about the formation of the Universe. However, theories developed and supported through the scientific method do not always stay accepted. Sometimes, new observations are made which challenge an already accepted theory and can even disprove it [2].

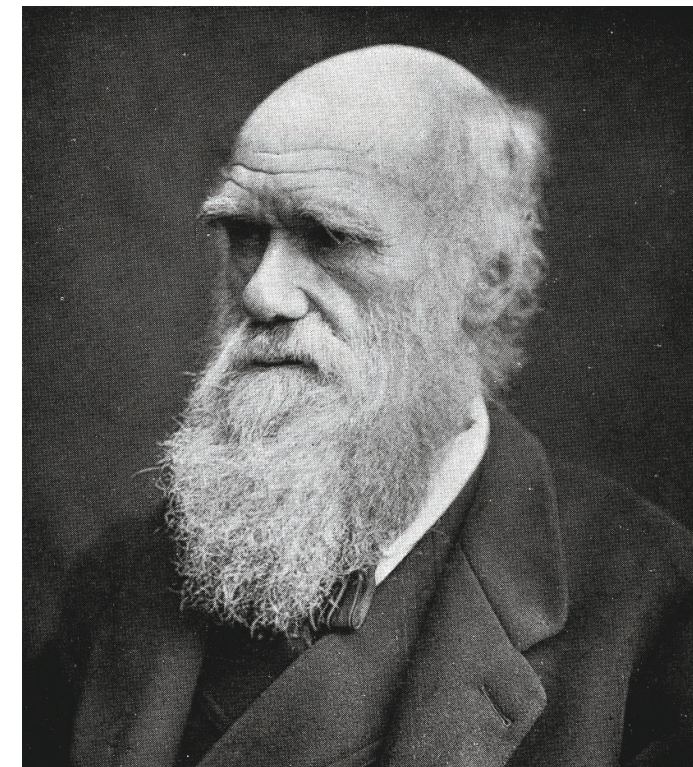
Philosophy and religious faith can answer questions such as; 'why are we here?' 'What is the meaning and purpose of life?' 'If God created life, did he do it for a reason?' 'Why did any form of life come to be?' For example, the Christian Bible has its own story of God's creation of the universe. In the book of Genesis, God made the Earth and everything living on it, including humans, in 6 days and rested on the 7th day. The story is more concerned with making it clear that God is in complete control and that the universe exists because God wants it to [2].

Scientists go about answering questions by using the scientific method doing research on something they want to be able to explain. Then they use their ideas to write a hypothesis and go about experimenting, testing and analysing them to try to prove or disprove them. If there is evidence to prove their hypothesis, they repeat the process many times, sometimes using different instruments and different researchers. If their hypothesis is tested many times in many different ways and is not disproved it can become a theory and they can use this

with other facts to write a conclusion. If the results are what they expected or are close enough to their hypothesis, they can publish the results of what they have found out and the question they have been able to answer. A published theory that is accepted by other scientists may later be replaced by another theory if it is disproved [1], [2].

An example of scientists answering the question 'How did we get here?' would be the Big Bang Theory. The Big Bang Theory is about how the Universe came into being. About 14 billion years ago, all matter and energy in the universe was at a point of infinite density and temperature. Then it expanded quickly and eventually stars, galaxies and planets were formed. The expansion was the beginning of time and continues to this day. Scientists think the earth was formed about 4.6 billion years ago, from a cloud of dust and gas known as a solar nebula, left after the sun was formed. Gravity collapsed the material in on itself as it began to spin, forming the sun in the middle of the nebula. As the earth gradually began to cool, conditions were created that allowed life to be possible and living things started to appear on the new terrestrial planet we now call Earth [2], [3].

Scientists went about investigating this by using Albert Einstein's original research ("Cosmological considerations of general theory of relativity"), published in 1917 [4] which showed everything in the universe was pulled towards each other and was unstable and will collapse. However, in 1922 Alexander Friedmann, a Russian mathematician, predicted that the universe had actually expanded; this established that Einstein's theory was correct, but without his Cosmological Constant. Einstein rejected Friedmann's ideas. Later in 1925, Georges-Henri Lemaitre, a Belgian physicist, who was also a Roman Catholic priest, developed the Big Bang hypothesis describing the universe starting from a 'primeval atom' which decayed and expanded. Two years later, Lemaitre met Einstein and told him about his ideas. Einstein told him about Friedmann's work, but still outright rejected it. In 1929, Edwin Hubble, an American astronomer, measured the speed of galaxies and found out that the further away a galaxy is, the faster it is moving.



Charles Darwin

This was inconsistent with Einstein's original theory that the universe was static. However, in 1931 Hubble published more improved data and invited Einstein to visit his observatory on Mount Wilson in California to see the raw data for himself. Einstein then publicly renounced his own eternal static universe view and finally supported the expanding Big Bang model [2], [5].

Scientists go about answering philosophical questions by using scientific and religious points of view and use already existing evidence to discover or find out more about what they are trying to answer.

Some examples of scientists asking philosophical and religious questions are; 'does God exist and is the universe his creation?' 'Why did he create it?' 'What is the meaning of Life?' Some scientists have used their religious faith to try to answer these questions whilst also looking at 'How' the universe was created. For example Charles Darwin, a British scientist and Christian, studied creatures he had seen on his overseas travels and used his data and evidence to put forward a theory that all living creatures that exist today, including humans, have evolved over millions of years from primitive life forms by a process he called 'natural selection'. When he published his theory, although it was not his intention to challenge religious beliefs, he was criticised by many people because it seemed to dispute the religious idea that God is the designer of the universe and that he had created the creatures and their perfect environment in one go, rather than the idea that they evolved over a long period of time. Many scientific theories were first put forward in the 19th century, when Christianity was still a very important influence on people's lives and the way they thought. Many people saw them as a direct attack on their faith. God was seen as the source and explanation for everything. The study of science was a relatively new phenomenon [2].

A worldview is the set of assumptions and beliefs that we hold about the makeup of our world. Our beliefs may be true, partially true or not true at all and we might hold these beliefs consciously or sub-consciously. A person's worldview can also be referred to as one's philosophy of life, mind-set, out-look on life, ideology, faith, or religion [5].

Worldviews are formed by questioning, researching and gathering information from a variety of sources. As we grow up, we learn things from all our experiences of life and these help form our worldview. Our worldview can be shaped by our own beliefs and experiences and by those of other people around us. We might start out with one worldview, but it might be changed if something that happens causes us to doubt or question what we already believe. We then might analyse what we have observed and test it in our minds before partially or completely changing our worldview [5].

I think a scientist would form their worldview by; coming up with a question, then research into what has already been discovered, obtain evidence, write a hypothesis, use this to experiment and study, then use the facts and observations to write an analysis. If their conclusion is what they expected it to be then they might publish what they have found out and update their worldview because it may help wider society to have a better knowledge of this world and help provide meaning to our life on Earth [5].

My conclusion is, although scientists (many of whom have

a religious faith) have developed accepted scientific theories of how the universe was created, they haven't yet been able to answer the question of why? Many also feel that even though they have worked out the 'how', they still believe that God was in control of this awe-inspiring creation and that their quest for knowledge of this world is also the continued exploration of God's reason for creating it [5].

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Tutor comment:

It was an absolute joy to work with K. during The Brilliant Club programme. I was particularly impressed with K.'s engagement throughout the course and that she completed ALL of the homework tasks. It was great to see K. gain confidence during the course, and in the final tutorial she asked several important questions that were helpful for all students. In this essay, K. demonstrated that she had really thought about several points of discussion that arose during tutorials, had done independent reading and developed her thoughts further, used evidence and examples to support her points of view, and was able to articulate complex debates around the question 'Why are we here?' from both scientific and philosophical perspectives.



Is there an external world?

Year 8, Key Stage 3

Pupil: K. Joseph
School: All Saints Catholic School, Barking and Dagenham
Supervised by: E. Omotola Ayoola
Tutor University: University of Brighton
Course Title: Is there an external world?

In this essay, I will be arguing in favour of the existence of an external world. I will be doing this by outlining and evaluating evidence from a range of philosophers, scholars and academics. I will be focusing on a realist point of view rather than a relativist point of view. This is because I believe that there is one external world, which we can all perceive differently.

In philosophy, the external world is the world containing of all the objects and events which are experienceable or whose existence is accepted by the human mind, but which exist independently of the mind [1]. This means that there is a 'reality' outside of our perceptions. The idea of this external world has been pondered by many philosophers in both recent and past years. John Locke, Rene Descartes and George Berkeley were some of the first philosophers to dive into the idea of there being an external world, each with their own varying opinions and so they will be also focused upon.

Ontology is the study of existence. This means that ontology investigates anything that exists and why it exists. It focuses on questions such as: What exists? (Trees, yes, Unicorns, No) What categories do these 'things' that exist fall into? (Are numbers just ideas and so do they exist) [2] Therefore, ontology can be used to find an answer to whether there is an external world or not. This is because if there is an external world it exists and will then

be pondered by people of ontology.

Whereas, Epistemology is the study of the origin and limits of human knowledge.[3] This means that epistemologists investigate how we know what we know but also what we cannot know. It focuses on questions such as: How can we prove anything? How do we know we are real? Therefore, it can help us find out how we know or do not know that there is an external world.

The idea of realism proposes that there is one and only one 'universal objective truth' and that we cannot perceive the exact external world, that this idea proposes to exist, in its true self. This belief, which states objects exist independently to whether anyone is thinking about or perceiving them [4], means that we only know our own interpretations of the world around us and can never know the true external world. This can be shown through optical illusions, which are made to deceive our brains into seeing things incorrectly. An example of this is the Muller-Lyer Illusion, which displays two lines that are of identical lengths, which people normally perceive the line with outwards facing inducers as longer.[5] Consequently, in most cases viewers of the two lines observe the image incorrectly. This proves that our intuition is often wrong, and they also display how our senses are fallible as they often make mistakes. This is the reason it could be argued that we do not perceive the external world in its true self. However, this is not to say that our senses are totally unreliable as they have provided us with enough reliable information to have kept us as a human race alive long enough to prosper. Furthermore, if we did not have these senses, we would often suffer serious injuries e.g. if you didn't pull away from severe heat [6]. Even with this taken into consideration I still believe that there is one external world, and no one can perceive it properly.

Alternatively, Bishop Berkeley (George Berkeley 1685 – 1753) proposed that there was no external world but the existence of anything relies on the body in question being perceived. He called his idea 'immaterialism' [7]. He argued that when we attempt to picture an external object, we are just recalling our own past perceptions of that object. He also believed objects only exist if it is a mind or being perceived by a mind. This leading him into believing that 'to be is to be perceived' [8]. Berkeley also argued that sounds are just vibrations in the air that are interpreted by our brains, which leads to the question: If a tree falls deep in the woods and no one hears it does it make a sound?[9] This question's answer can be answered using the definition of sound. This is because sounds are vibrations that can be heard if the vibrations reach the ears of a human or animal. Even if it is not heard it was still a sound. Although his argument heavily relies on the existence of an omnipotent and omnibenevolent God. This is because his philosophical system depends on his God's mind to be constantly perceiving everything and this being the reason why objects continue to exist when no one is perceiving it. This is flawed as he has no legitimate and trustworthy argument to prove that God exists, hence the grounds on which his theory is based upon are shaky. If it were to be believed that an omnibenevolent and omnipotent God described by Christianity [10], then there must be a Heaven, Hell and Earth which are all also described in the Bible [11]. Therefore, I believe that the implication of religion to believe that objects can only exist if they are being perceived by a mind cannot be used as a legitimate and reliable argument.

Contrastingly, the idea of relativism states that individuals' views are relative to differences in perception and their considerations about what they are perceiving [12]. Therefore, relativism suggests there is no one 'universal objective truth' but rather each person's viewpoint of the external world contains its own truth. However, this theory has its own flaw as if each viewpoint was accurate there would be many unanswerable questions raised. One of these would be if a person's viewpoint is correct and they have their own correct external world, what would happen to it after the person dies? Moreover, with this way of thinking it would be true to say that if a person with schizophrenia who could see things no one else can, they would be seeing the external world as it is. If this was factual, then you could not correctly diagnose and treat them. This is dangerous as schizophrenia can cause extremely serious physical, emotional and behavioural problems if left untreated [13]. This argument shows that there are different ideas about 'the external world', with some being more reliable than others. Another example of this can be seen in colour-blindness. As an object cannot simultaneously be two colours and so a person who is colour blind cannot be true. Therefore, I believe that this idealism cannot be possible.

Another famous philosopher is Rene Descartes (1596 – 1650). He made it his mission to find certain knowledge. The French philosopher, mathematician and scientist that believed that our senses are an unreliable source of information we attempt to use about the external world. He also believed that there is no way for us to know that what we are perceiving is true. He used the idea that there could be a demon of incredible power that could have capture our consciousnesses and minds and tricked us into believing that there is an external world when there is truly not [14]. If this was to be true, then all our past experiences of the world would be hallucinations. This problem challenged him as the theory could not be proven or be disproven and hindered his search for certain knowledge [15]; the deeper he thought into the problem, the more he realised that he could not trust anything that he perceives about the world. His idea challenges the idea of an external world existing as it says we can never truly know for sure that we are perceiving the world correctly, however, this could not be used to argue against there being an external world as if there were to be an demon of incredible power, that demon would have to exist somewhere external to our bodies. Thus, I believe that his argument supports there being an external world.

In conclusion, I believe that there is an external world, which I believe we can all perceive differently. I believe that this is shown through optical illusions. I agree with Descartes in his search for certain knowledge. However, I disagree with Bishop George Berkeley in his idea of immaterialism. I agree with the argument for a realist's description of an external world. Therefore, I disagree with a relativists point of view.

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Tutor comment:

Watching K. evolve as a philosophical thinker throughout the course was a truly humbling experience. Seeing his determination to succeed, his capacity for logic and ability to reflect not only on his own beliefs but on the beliefs of others, in addition to analysing PhD-level content and applying this to his argument on how our world views are shaped was extremely insightful for me as a researcher. I look forward to seeing him flourish at university and hopefully progress to become one of the most captivating speakers and minds of his generation!



What makes a good prime minister?

Year 8, Key Stage 3

Pupil: L. Rigamonte
School: Tiverton High School, Devon
Supervised by: E. Marsay
Tutor University: University of Exeter
Course Title: The British Prime Minister in the post-war years

What makes a good prime minister?

In my opinion, there are lots of different aspects that a prime minister has to cover, when they are in power, to be considered in later years as a 'good prime minister'. I have listed most of the characteristics that I think are the most important and critical below.

Leadership

One of the main aspects that makes a 'good prime minister' is their leadership. In my opinion, there are many ways of running a country. Two differing ways that were demonstrated by Margaret Thatcher and Clement Attlee were to either listen to and value everyone else's ideas before acting or to just do what the prime minister thinks is right for Great Britain and its economy. Margaret Thatcher could be accused of going with her own ideas and not letting anyone stop her even to the point that now she has the nickname 'Iron Lady'. This nickname was first used to describe her by the 'soviet press' because of this political style. Though in 1976, she reclaimed her nickname of 'The Iron Lady' while presenting a speech. In this speech, she said 'I stand before you tonight in my Red Star chiffon evening gown, my face softly made up and my fair hair gently waved, the Iron Lady of the Western world'².

In my opinion, she picked her cabinet with people who shared her views. Though, part of her cabinet was tactically picked with different views to her. She listened to her cabinet to an extent. Though, the Telegraph claims 'she spent more time listening to Heseltine than any other Cabinet minister'³. Overall, she and her cabinet did make a lot of vital decisions that were beneficial for Britain then and now. For instance, she

gave millions of UK citizens a stake in society when they were able to buy their own council houses and shares.

Contrasting with Margaret Thatcher, Clement Attlee was known for listening and valuing everyone's ideas. Even if he had an idea, he would discuss it with other MP's, normally his cabinet, before acting on the idea. He would listen to everyone's ideas, even if they were from another party. In his time in power, he passed many useful and some life-changing laws and schemes. Some of them are still used today. An example of a scheme that he passed, is the National Insurance Scheme. A proportion of everyone's wages are payed into the scheme. If anyone gets sick, injured or hurt (they basically can't work), then their wages would still be paid by the scheme. Though Clement Attlee passed the law, the concept for the National Insurance Scheme actually came from two economists, John Maynard Keynes and William Beveridge. These two economists were from the Liberal Democrats, which is one of Labour's opposing parties.

In my opinion, I think that a 'good prime minister' would value and listen to everyone's ideas. Clement Attlee was well known for this as mentioned by Denis Healey, 'A conversation with a normal man is like a game of tennis; a conversation with Attlee was like throwing biscuits to a dog, all you get is yup, yup, yup'⁴. Though, I don't think a 'good prime minister' would always rely on other MP's and their cabinet to give them the most beneficial decision. However, I think a 'good prime minister' would make the last and final decision. Margaret Thatcher was best known for this, as she was called 'a bold, decisive leader'⁵.

Strong Ideology

Most of the prime ministers that are considered a 'good prime minister' have had a strong ideology. This means all of their decisions that they make will all contribute to this one idea. The prime minister chooses an idea that will result in a positive impact on Great Britain.

For example, Clement Attlee's ideology was socialism. This meant that he believed everything should be owned by the community, not individually. He wanted to bring everyone in the country together. I think this happened because Great Britain had just finished the war and he wanted to unite everyone, so they felt protected. I believe this since Clement Attlee nationalised lots of industries like the railways, road transport and the Bank of England⁶. He did this because he thought that the country would feel stronger as a whole.

On the other hand, Margaret Thatcher's ideology was neo-liberalism. Her aim was to give power back to the individuals since, she thought, when people worked for the government, they didn't work very hard. She believed that people would work harder if they were in charge of the company they worked for. The results of her ideology meant that she privatised lots of companies.

Although the things they did were exact opposites, both ideologies had a positive impact on the economy of Britain. Concluding, I believe the ideology has to be right for the time. This may be why Winston Churchill was not elected as prime minister after the war even though he was a major part of winning it. I think people wanted someone with a different ideology to him at that time.

Coming up with and listening to good Ideas

To make a big impact on Great Britain and to be considered a 'good prime minister', past prime ministers have had to pass many laws (Margaret Thatcher passed 19,827 new laws⁷). However, most don't come up with their ideas themselves. They all had a source, it could have been from people or a person from their party, cabinet or government. Clement Attlee was known for getting most of his ideas from anyone in government, especially his cabinet but even if they were from other parties. Whereas, Margert Thatcher had a very small number of advisors in her cabinet that she listened to and trusted. Both of their true skill was in spotting the good idea.

Running Government effectively

All 'good prime ministers' are able to turn ideas into laws and then pass them. In order to pass laws, they have to get through every level of Government, The House of Lords and the Queen backing their ideas. To achieve this, they all have used strong leadership qualities. Clement Attlee and Margert Thatcher were strong leaders, although they had very different styles.

Clement Attlee's leadership style was to listen and then be decisive with making the final decision. Yet, Margert Thatcher's leadership style was more to tell or instruct everyone what to do. She was even described as a 'mirthless bully' by Allen Bennett in 2013⁸. I think he thought this since she had a very strong and decisive attitude to everything that she did.

How you deal with urgent threats

I think that how a prime minister deals with a critical task can have a massive influence of how they were perceived by the general public and their colleagues. For example, if Britain was targeted by extremists, and the prime minister completely ignored the whole situation, then as you may expect, the citizens of Britain would not be very happy with them. After all, in my opinion, one of their main jobs as a prime minister is to keep Great Britain and the citizens in it safe. Alternatively, if they responded quickly and decisively, like Margaret Thatcher's response when the Falklands Islands where invaded by Argentina in 1982, then I think the prime minister would be perceived well by their citizens.

Perseverance and resilience

In my opinion, all 'good prime ministers' have demonstrated perseverance and resilience some time in their career as a prime minister. An example of this was in 1984, Margaret Thatcher was negotiating a rebate in Europe. All of the other European leaders were against her, but she was resilient and still went on and was finally successful with the negotiations.

Similarly, Clement Attlee showed perseverance and resilience when he introduced the NHS against all of the doctor's opinions. They all didn't want to become part of government and threatened to strike. At that time, doctors were very well respected by many people and Clement Attlee was worried that people would turn against him because their doctors said it was the wrong thing to do. Despite this, he continued to pass the law to create the NHS. The law was finally passed, and the NHS established in 1948. It still exists today and is considered to be one of Labour's most effective changes to Great Britain. It is seen as a great achievement both in this country and all around the world.

Image and Use of media

In my opinion, now that we are in the 21st century, the

Internet is a major part of many people's lives, image and the use of media is another key aspect to become a 'good prime minister'. When Clement Attlee was prime minister technology, media and television were just starting to come into people's lives, so he didn't have to present himself as much as Theresa May does now. Margaret Thatcher was also often on TV as she realised it was important if she wanted to be seen as a 'good prime minister'.

In conclusion, I think leadership; strong ideology; finding and listening to good ideas; running government affectively; dealing with urgent threats; perseverance; resilience; image and use of media are all very important aspects of a 'good prime minister'. In my opinion, Clement Attlee and Margaret Thatcher have both shown these skills, so I think that they could be considered 'good prime minister'. In summary, this is what makes a 'good prime minister'.

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Tutor comment:

L. was an absolute pleasure to teach, she was a thoughtful and engaged student who always made interesting contributions to our tutorials. This essay is a great demonstration of her hard work. She received a mark of 74 which means she received the highest grade possible, a '1st'. This means that she is working to an excellent standard at GCSE, despite still being in KS3. She has clearly thought carefully about the topic of what makes a good prime minister. I was really impressed with her knowledge of the differing ideologies of Attlee and Thatcher: socialism and neoliberalism, as well as with how she was referring to sources outside of our coursebook, well done!



What is war?

Year 8, Key Stage 3

Pupil: **H. Saleem**

School: **The Cumberland School, Newham**

Supervised by: **E. Amoateng**

Tutor University: **University of Warwick**

Course Title: **What is war?**

Humanity's struggle for survival has led it to create various inventions, such as medicine, communal residence, hygiene and educational systems etc. On the other hand, there are other human creations which also cause pain and destruction. From amongst these, is an activity which is unique to humans: war. This creation has undoubtedly affected the greatest changes over the course of human history and has defined many aspects of its existence and behaviour to this day.

War has influenced, amongst other things, the technology we use, the food we consume, the clothing we wear even the languages we speak and the beliefs and principles we uphold and more. Some of the inventions that are an essential part of our daily life and we may not even recognise them as tools of war, death and destruction have actually originated due to war. For example, tinned food, the internet, medical surgery, ultrasound and sanitary towels.

The internet was initially designed to allow the military to share information over a secure computer communication; ultrasound was designed to find underwater lost ships and also submarines; tinned food was designed to allow armies to march for longer periods of time without having to return home or hunt for provisions; sanitary towels were first introduced on the battlefields to treat casualties which required immediate medical attention but later became useful for civilian life also.¹ Therefore, from the above examples we can appreciate that war is more significant to our present life then we generally understand it to be.

Since war is such an influential aspect of human existence, this investigation will attempt to explore its nature with the aim to better understand how to define war. The essay will aim to critically analyse examples of various WW1 events in support of its claim and as evidences, to answer the question what is war? The essay will reflect these arguments in-light of the laws of war principles to determine the veracity and objectiveness of these principles.

The essay will argue that there is no actual purpose of these principles besides them informing of a past case in point. This is because wars generally do not follow them and since this is not done by anyone side, therefore, all the parties involved in the war are in one way or another are in contravention of these laws. Therefore, these Latin worded principles are ineffectual, when considering whether a war is just or unjust, as they are subjectively used by each warring-party to achieve its own aims.

The law of war principles are divided into three themes: *jus ad bellum* (prior to war), *jus in bello* (law during or in war), and finally *jus post bellum* (post-war law). These abstractions are the rules every state should consider and rightfully follow for a war to be just. They include the intentions of warring-countries before a war, fair treatment of each other during the war, and a public declaration of the war's end after the war. As there are many points under each theme, the essay will discuss only a few of the points mentioned under these three themes to argue its claim.

Firstly, the essay will analyse *jus ad bellum*. This principle cites that a country must have a correct intention and justified reason to go to war. However, during WW1 the Triple Alliance (Germany, Austria-Hungary and Italy) and Triple Entente (Britain, France and Russia) were fighting against each other simply due to alliance treaties. This resulted in a chain of nations entering a war (which initially was called The Great War and then eventually WW1) due to their alliances to one or the other opposing states, even though they had no reason to actually go to war. This example shows how simply being signatory to a treaty caused several countries to go to war with each other for literally no reason other than their mutual treaties and caused the largest war in human history.² How can a signed treaty be a good enough reason to justify the killing of thousands of innocent people?

This example has revealed the subjective nature of this principle and its ineffectiveness in preventing an unjust war. The subjective nature of this principle is shown by the fact that each party could simply justify their involvement in the war by citing a signed treaty which required them to do so. However, in this example, the points of proportionate response and last resort of the use of lethal force have clearly been overlooked and thus, this highlights the ineffectiveness of these laws.

Another point the essay will analyse is the proportionality on

both sides of the war. This means that if you know or feel, you have a greater chance of winning the war against the enemy, than you should not go to war as it is unjust and incorrect to do so. In our case study, during WW1 both sides had alliances as mentioned above. However, the Triple Alliance (Germany, Austria-Hungary, Italy) were fighting against much greater nations, as The Entente also had Russia to support them, and that they were also surrounded by them on both fronts. Furthermore, Italy backed out from its treaty, and this war became more unfair then when it originally began, as two countries were fighting against three.³

Additionally, *jus in bello* states a distinction must be kept between attacking soldiers and harming ordinary people. However, over and over again whenever there is a war and especially in our case study, many people died or were displaced or imprisoned due to simply being in the enemy's country. This also supports the essay's claim, as it shows the inadequate nature of the war principles. This also clearly supports our main argument that these principles are not objectively adhered to. A further argument is that wars should be restricted to some weapons and the warring-parties should not use disproportionate weapons just to win the war, as it would be unfair. In WW2, America used the Atom Bomb twice against Imperial Japan, killing thousands of innocent people just to quickly end the war.⁴

Furthermore, *jus post bellum* states there should not be any unfair discrimination or a generalised opinion about the war, as it could be used as mockery of another country. This could result in a country potentially feeling threatened and consequentially cause more problems in the future just as it happened at the end of WW1. Germany was forced to surrender under humiliating circumstances and pay large amounts of money as well as having to accept various trade and military sanctions. This is widely regarded as one of the major reasons for Adolf Hitler to justify beginning WW2.⁵

On the other hand, one could say that these principles create boundaries and allow for a country to follow a set of rules (the laws of war principles) to justify whether a war is just or unjust. Thus, this suggests that there is a positive application of these rules for future scenarios because they can be interpreted objectively. However, as this essay has argued, the laws of war principles cannot be followed objectively as there is a lot of room for interpretation and this would always allow for disagreements and even possibly result in more wars. Furthermore, if there is no independent body to govern these rules and monitor the effectiveness then, no one party can claim their own integrity in following them properly.

Another possible argument in favour of the usage of these principles is that the next generation of historians could use these principles to form laws regarding future wars and warfare, and also for the purpose of de-escalation in future crises. The essay disagrees to this also, as any retrospective study can only show a weakness of a past case study and cannot be cited as a positive for a present conflict. I believe this because if this idea has not be tested or experimented by many, what is the point of hoping when there is no base or instructions to this idea let alone new way of considering war.

To conclude, the essay finds that the laws of war principles are ineffectual in their objective to determine the just or unjust nature of an armed conflict. This is firstly because they can only possibly serve as a catalogue of past events and are unable to assist in determining the just or unjust nature of a present conflict due to being subject to interpretation. Furthermore, these principles are

subjective in that there is no independent body which can determine whether one party has met the threshold of proof to permit a military action or not. Finally, through the examples cited of the WW1 case study it has become clear that no one party can be categorically guilty of not adhering to these aforementioned principles.

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Tutor comment:

H. began the tutorials with limited knowledge of war. This was a good motivation for her as she was highly determined to understand and evaluate the usefulness of the war concepts that we discussed in class. It was an absolute joy to see that her hard work paid off in the final assignment as she offered an excellent critique of the just war principles.



Write a literary analysis of one of the extracts using a literary theory of your choice, evaluating its usefulness for studying literature

Year 8, Key Stage 3

Pupil: M. Shafi
School: The Royal School, Wolverhampton
Supervised by: J. Marie Smith
Tutor University: The University of Birmingham
Course Title: Through the looking glass: An introduction to literary theory

The literary theory I have chosen is Horace's theorem of literature or "*Ars poetica*, the poetic art (Handbook p.10). Horace's theorem of literature states that "Literature should instruct people as well as entertain them" (Handbook p.10). This means that books or stories should not be too entertaining for the reader or listener; This view came to prominence during the Renaissance when the Church controlled what people read, as they thought it would lead to the people overthrowing them and would make them have thoughts that they shouldn't have. The story shouldn't be too instructive either by telling the reader what to do; this will be thought as rude by the reader and they won't be wanting to read the book or script because of this and won't pay attention to what it is saying anyway, they should be a mix of both. The text I have chosen is *Little Red Riding Hood* by Perrault. In this essay, I will evaluate Horace's theory and discuss its usefulness. I will also analyse *Little Red Riding Hood* by Perrault and evaluate the usefulness of Horace's theorem usefulness for studying literature.

In *Little Red Riding Hood* by Perrault, Horace's theory

can be seen by the author not making everything go well for the main character (Little Red Riding Hood). The girl is confronted by a wolf, who asks "Does she live far off?", "Oh, I say," answers Little Red Riding Hood: "it is beyond that mill you see there, at the first house in the village." (Handbook p.37). The wolf then challenges her to a race, befriending her, and reaches grandmother's house first, and eats her all up. This gives a sense of motion in the story, and it gives a meaning or a moral (don't tell people information of which is personal). This makes the story instructive, as it tells you what to do, but it is also entertaining, as you don't know what the wolf can, or will do with this valuable piece of information to the main character. This part of the fairy tale adheres to Horace's theorem of literature, as it is instructive, but it doesn't tell you to do it in a too obvious way, or by forcing you. It has a balance of instructiveness and entertainment, as it tells you in an entertaining way, by making you think about what is about to happen, and by creating suspense. In other words, it is not done explicitly, but implicitly.



In *Little Red Riding Hood* by Perrault, after the Little Red Riding Hood tells him where her grandmother lives, "It is beyond that mill you see there, at the first house in the village." (Handbook p.37). The wolf goes to grandmother's house, and convinces her that it is Little Red Riding Hood, by impersonating her voice, and when grandmother tells him how to get in, ("pull the bobbin, and the latch will go up"(Handbook p.30)) he eats her all up. This adheres to the Horatian notion of literature, as it gives a moral that you shouldn't tell people personal information, as when Little Red Riding Hood did, the big bad wolf went to her grandmother's house and ate her all up. The tale is also entertaining, as you do not know how Little Red Riding Hood will react to this, so it also adds suspense. However, in the fairy tale version that we all know, when the wolf reaches the grandmother of Little Red Riding Hoods home, he locks her in the cupboard, and puts on her clothes. Unlike Perrault's version, this frustrates to the Horatian notion of literature,

as it is entertaining to some readers or viewers, but it isn't instructive, as nothing happens to the girl, so it has no moral, it doesn't have a balance between them.

In *Little Red Riding Hood* by Perrault, Little Red Riding Hood, reaches her grandmother's house after the wolf as she took a longer route than him "entertaining herself by gathering nuts, running after butterflies, and gathering bouquets of flowers along the way" (Handbook p.37) and the wolf took a quicker way, sprinting to the house. When Little Red Riding Hood got there, she said the same thing as the wolf "it is your grandchild, Little Red Riding Hood, who has bought you a cake and a little pot of butter mother sends you", and the wolf says, "pull the bobbin and the latch will go up.", same as grandmother (Handbook p.37). As Little Red Riding Hood goes in the house, she gets in bed with 'grandma' and says "What big eyes you have" which is followed by "What big ears you have" and finally leads to the almost fatal expression "What big teeth you have" (Handbook p.37) after which the wolf "Eats her up" (Handbook p.37). This adheres to the Horatian notion of literature, for the same reason as the grandma example above, as it gives the story a meaning and a moral, that being don't talk to strangers, and don't tell them personal information, as bad things will happen, like grandmother, and Little Red Riding Hood both getting eaten by the wolf and dying. It is also entertaining, so it has a balance of the two, instruction, and entertainment. However, in the fairy tale version that we all know, the woodcutters overhear them, and come to grandmother's house after them, and when they hear that the wolf is about to eat Little Red Riding Hood, they come in, and save the day. This fairy tale ingredient frustrates the Horatian notion of literature, as it has no moral, and is entertaining, but not instructive.

At the end of the story, after the wolf eats both grandmother and Little Red Riding Hood, Perrault leaves a written moral for the viewer or reader, he puts "Moral: Children, especially attractive well-bred young ladies, should never talk to strangers, for if they should do so, they may provide dinner for a wolf. I say 'wolf,' but there are various kinds of wolves. Those who are charming, quiet, polite, unassuming, complacent and sweet, who pursue young women at home, and in the streets. And unfortunately, it is these gentle wolves who are most dangerous ones of all." (Handbook p.38). This moral suggests that Perrault was trying to and did adhere to Horace's theorem of literature, or *Ars Poetica*, as he is trying to inform the people, or the reader or viewer, that you shouldn't talk to strangers, or bad things will happen. In this case, Little Red Riding Hood and her grandmother both die, as she meets the wolf, and talks to him, and then tells him personal information that she shouldn't have, and he finds her grandmother's house, and eats her. But Perrault is showing this moral in a more implicit way by putting it in a story, not only to explain and show it to you, but to also make the reader or viewer think about it more than if he had forced it upon them, so this is a balance between both instructiveness, and entertainment.

Overall, whether it is telling the wolf information, getting eaten, or the final moral, *Little Red Riding Hood* by Perrault adheres to the Horatian notion of literature. It has morals, such as Little Red Riding Hood talks to the wolf, and telling him personal information that you shouldn't tell to strangers (like where Little Red Riding Hood's grandmother lives) and because of this, the wolf finds her grandmother's house, and eats her followed by him also eating Little Red Riding Hood. Although this aspect has been changed in the

newer versions of the fairy tale of which Horace's theorem is not seen in the text, Perrault's version has a moral that the reader or viewer can see and work out by reading the text as well as the written moral by Perrault. Horace's theory says that literature should be a balance of the two things, informativeness and entertainment, and as Perrault puts it in a story, and creates suspense, it is entertaining and informative. The literary theory I have chosen is Horace's theorem of literature, or *Ars poetica*, this theory is very useful for studying literature as it helps the reader understand why the writer may have included a particular piece of information, or plot point. Also, it helps the reader to analyse the text, and to study it in a particular way, and to know how and why the author intended to the text, whether it is to inform or entertain or in this case it does both, and who they intended their text for, or the audience they wanted to read their novel or extract.

Tutor comment:

M. was an absolute joy to have in class. His level of engagement with the materials was outstanding and his contribution to discussion always thought-provoking. This essay shows exceptional skills in developing an argument and evaluating the available evidence, and demonstrates strong capabilities for university study in whatever subject he chooses to pursue. I wish M. all the best for his future!



Critically discuss the notion that textspeak is destroying the English language

Year 10, Key Stage 4

Pupil: **K. Wilson**

School: **Burton Borough School, Newport**

Supervised by: **T. Summerfield**

Tutor University: **University of Wolverhampton**

Course Title: **OMG! Is textspeak destroying the English language?**

Is Textspeak Destroying the English Language

Some would say that the evolution of language is inevitable, that our ever-changing way of speaking is a part of human nature and a vital part of our culture, but others would disagree. This essay intends to explore the idea that textspeak is destroying the English language. Textspeak is defined as abbreviated or informal language that is often used in text messaging and on social media. In order to discuss the statement, I will present evidence that both supports and denies this claim and seek to make a balanced judgement based on these findings.

In their study, Wood, Jackson, Hart, Plester and Wilde (2011) monitored the impact of text messaging on a group of one hundred and fourteen 9 to 10 year-old's literacy skills. The children were split into two groups, the control group, who didn't have access to mobile phones for the duration of the study, and the mobile phone group who were encouraged to send text messages that incorporated elements of textspeak. To enable the study to accurately measure the effects, the children sat tests - pre and post study - to ascertain their ability in spelling, reading and phonological awareness. This demonstrated that whilst there was no significant impact on the children's tested abilities, which therefore neither proves nor disproves the notion that textspeak is destroying the English language,

there was some evidence to suggest that the long term use of textspeak had the potential for a significant positive impact on the children's literacy skills.

Although, it is worth mentioning that whilst there was an insufficient difference - in terms of the results of the post study literacy tests - between the control group and the 'mobile phone' group to be able to accurately prove the hypothesis, this may be due to the restrictions on phone time due to the schedules of the children and the short duration of the study. It is also important to consider that children were all from a very specific age group and only came from twelve schools throughout the Midlands region of the United Kingdom, meaning that the sample is limited and is not representative of the entire population with full accuracy and therefore cannot give a definitive answer into whether the use of textspeak has an impact on the English language as a whole. Another key factor that should be considered is that, during the course of the study, the average number of text messages that the children sent each week, fell significantly - from a high of 45 messages per week down to a low of just 6 per week by the end of the study. This considerable drop in number of text messages sent could have had an impact on the final results - in that a child who consistently sends high numbers of messages may suffer a drop in literacy due to the use of very high levels of textspeak, but the children in this study simply weren't sending enough messages for this effect to be felt and so the study was unable to achieve an accurate measure of all the potential outcomes or side effects of textspeak on literacy skills.

Furthermore, in their study Kemp and Bushnell (2011) investigated the effects of the texting method used and experience with texting on the children's understanding and use of textspeak. They managed to find a significant positive correlation between the time taken to read and compose text messages written in textspeak, spelling and 'real-world' reading when studying from a sample of eighty six children aged 10 to 12 years old. The study also found that although there was no significant difference between the general reading and writing skills of the children who used text messaging and the children who didn't, better literacy skills were associated with a higher ability to accurately read and write messages in textspeak. Which suggests that whilst the use of textspeak doesn't negatively impact literacy skills, high literacy skills are a benefit to enable children to master and use textspeak effectively.

It should be noted though, that the study only took into account the habits of children and their use of textspeak, much like the study by Wood *et al* (2011) that was mentioned previously. This means that again, the study is not an accurate representation of the population on a whole. It is also worth mentioning that the study found that 'multi press texters' (those that choose not to use predictive text) were 'significantly slower' at reading both messages which contained textspeak and messages formed with standard English, leading to the conclusion that exposure to textspeak may not improve reading fluency, although this could be due to 'multi press texters' just being generally slower at reading than the children who chose to use predictive text.

On the other hand, a report by Rosen, Chang, Erwin, Carrier and Cheever (2010) managed to link an increased use of textspeak in everyday life to a negative impact on one's formal writing and a positive impact on one's informal writing. The report combines the findings from two studies that surveyed the texting habits of a combined group of

seven hundred and eighteen 18 to 25 year olds, by asking them to write two pieces of writing, one formal and one informal. They found that the impact on a participant's ability to write informally was only apparent in the writing of those who had no or only some college education, leading again to the suggestion that there is no impact, either positive or negative on informal writing due to textspeak and that it is just in fact down to a person's educational level.

Therefore, it is important to note that there was a disparity between the educational status of the participants in the two studies (group one having more university educated students), meaning that although the two studies were more or less identical in intent and quantitative details, there were some differences that could have affected the results. It is also important to note that 'when combined across educational level' the women who took part in the study reported using a significant amount more textspeak and sending more text messages per month than the men who participated, this particular disparity could negatively impact the results as all the scores were combined to form an average even when it was shown that men and women have different habits, therefore lowering the actual average for women and bringing the average for the men up, even when they used 'significantly' less textspeak than the women. Another limitation with the study was that they asked the participants to report how many messages they send on average in a month, so the data given was an estimate and possibly not an accurate one, when added to the fact that this study was also conducted in a very artificial environment (conducted online without any face to face interactions with the participants) this has the ability to have had a significant impact on the individual study variables and therefore the results of the entire combined study.

This is further evidenced by a study into textspeak and its effects, carried out by Drouin and Davis (2009) who, when surveying eighty college students, (thirty four textspeak users and forty six non textspeak users) showed that when tested on textspeak vocabulary, the textspeak users showed more proficiency in understanding but both groups had familiarity with the words and abbreviations and that there were no significant differences between the groups when tested in their basic literacy skills. This shows that there is no significant link to say that textspeak is detrimental to a person's literacy skills, but when asked about their thoughts, the large majority of the participants said that the use of textspeak was 'hindering their ability' to use and comprehend standard English.

However, the study was conducted by using a series of self-reported statistics on the student's usage of textspeak, leading to, as I have mentioned before, a possibly inaccurate answer. The study also utilised standardised testing which often doesn't take into account the individual levels of literacy and understanding in the students before they have even begun the study.

Tayebinik and Puteh (2012) studied the effect of textspeak on forty undergraduate students (all from a number of different courses) through a set of semi-structured, formal, face to face interviews. The study focused on the 'student's perspective on the use of abbreviations or textisms in Computer Mediated Communication (CMC)' and the effect of this on the students. The study found that the use of textspeak in day to day communication, text messaging and using unstructured sentences as a result of textspeak, had a negative impact on the grammatical skills of the students, such as forgetting to capitalise letters, being unable to use correct punctuation and even led to

many of them being unsure or uncaring of which tense they should be using. The use of textspeak reportedly also caused the participants significant confusion with certain spellings and some of the participants reported using abbreviations such as 'ASAP' when having face to face conversations with others.

Although, this study has a few drawbacks, the first being the fact that the sample that was selected is very small and limited only to undergraduate students, meaning that it doesn't fully consider the effects textspeak had on the whole population. Secondly, the research was carried out over a number of formal interviews and not through the observation of the participants, unlike the studies that I have mentioned that seem to fall in favour of using textspeak. This could impact the results as the participant's predictions of their habits would probably have been shown as less accurate had they been observed instead of interviewed. This means that this particular study is most likely was not as accurately carried out as the others that have been spoken about in this essay.

Having considered the evidence that has been given and discussed above, it seems that textspeak has obvious positive effects when used sparingly, this is particularly true with regards to its use by children and young people, however, when used by adults, the studies have shown that any negative impact is lessened where a higher educational standard had already been achieved by the texter. However, having considered the many studies that in fact show the opposite and have linked textspeak to issues with literacy, it seems very likely that when used in excess, textspeak can have incredibly detrimental effects on a person's writing, reading, comprehension and even communication skills. But it is also very evident that to draw the best conclusion, there needs to be more studies conducted into this area that are both of a better quality, and are over a longer period of time, to gauge a better and more accurate set of results which could once and for all prove whether the use of textspeak is destroying the English language.

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Tutor comment:

Working with K. throughout the programme was an absolute pleasure. Throughout the course, K.'s input into sessions was engaging and thoughtful, and her homework was always an interesting read! Working with such difficult concepts, K. managed to display a very mature understanding throughout, and was never afraid to ask for further guidance where needed. Scoring 90% on her final assignment, K.'s essay was a joy to read, and her work far surpassed that which I would expect from a pupil of her age.

