

The Scholar

HOW MANY ENGINEERS
DOES IT TAKE TO
MAKE ICE CREAM?

100

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The **Brilliant** Club

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+ 15 NEW ACADEMIC
ESSAYS FROM THE
YOUNG SCHOLARS OF
THE BRILLIANT CLUB

COMPONENT SIDE

● This Issue

Contents

■ Page 4
Guest Article
How Your Scholars Programme Experience can help you Approach University
by Amelia Wilkinson

■ Page 6
Guest Article
Me and my Mentor
by Mauro Mantega

■ Page 7
Introduction
What is The Brilliant Club?

■ Page 8
● Year 5/6 ● Key Stage 2
Between 1834 and 1948 provisions for the poor changed but the attitudes towards them did not. Discuss.
Woodlands Primary School
E. Faisal, supervised by: A. Montgomery, Birkbeck, University of London

■ Page 9
● Year 5/6 ● Key Stage 2
Who discovered Pythagoras' Theorem?
St Helen's Primary School
M. Adjei, supervised by A. Occhipinti, University of Cambridge

■ Page 10
● Year 9 ● Key Stage 4
Animal Testing: Does the Means Justify the Ends?
Lutterworth High School
A. Rostron, supervised by I. Dagli, University of Warwick

■ Page 12
● Year 7/8 ● Key Stage 3
Horace's Literary Theory and how it relates to Roald Dahl's "The Three Little Pigs"
Painsley Catholic College
I. Wilson, supervised by E. Connelly, University of Nottingham

■ Page 14
● Year 5/6 ● Key Stage 2
What representations of nature tell us about ourselves and how do writers use literature in nature?
Sir John Heron Primary School
R. De Guzman, supervised by I. Nedelcu, University of Edinburgh

■ Page 15
● Year 7/8 ● Key Stage 3
Analysing Bluebeard using Bettelheim's psychoanalytic method
St Marylebone CE School
D. Willing, supervised by H. Goodman, Royal Holloway, University of London

■ Page 17
● Year 5 ● Key Stage 2
Between 1834 and 1948, provision for the poor changed but attitudes towards them did not. Discuss
Holycross Catholic Primary School
D. Jacobs, supervised by E. Magrath, University of Aberdeen

■ Page 18
● Year 7 ● Key Stage 3
Ebola: The next global pandemic Focus question: Why is Ebola so dangerous?
Sydenham School
M. Hyde, supervised by C. McClure, Imperial College London

■ Page 19
● Year 7/8 ● Key Stage 3
Do the Ends Justify the Means? The case of Euthanasia.
St George's C of E Foundation School
R. Grieve, supervised by A. Draganova, Canterbury Christ Church University

■ Page 20
● Year 5/6 ● Key Stage 2
Using Literature Devices to Express Human Emotions
Corpus Christi Primary School
O. Elliott, supervised by L. Schrock, University of Warwick

■ Page 22
● Year 8 ● Key Stage 3
What do you think was the most significant turning point in English history?
Jane Austen College
R. Cracknell, supervised by O. Palko, University of East Anglia

■ Page 24
● Year 7 ● Key Stage 3
My amazing new Woodruff Ice Cream
Portway Primary School
J. Weyand, supervised by E. Ojo, University College London

■ Page 26
● Year 7/8/9 ● Key Stage 3/4
A literary analysis of Much Ado About Nothing using feminist theory, evaluating its usefulness for studying literature
Chiswick School
S. Powell, supervised by H. Goodman, Royal Holloway, University of London

■ Page 27
● Year 7/8 ● Key Stage 3
Taming the Bristle-bot
The Compton School
L. Malhamoub, supervised by D. Birrenkott, University of Oxford

■ Page 29
● Year 5/6 ● Key Stage 2
An investigation into differences in returning heart rate in people of different ages after aerobic exercise
Barons Court Primary School
L. Booth, supervised by V. Lee, University College London

■ page 30
● Year 5/6 ● Key Stage 2
How Many Engineers does it take to make Ice Cream?
St Mark's Primary School
L. Reeves, supervised by W. Watremez, University of Manchester

● Updates

News from The Brilliant Club

New University Partners in the North of England

This term we have continued our work with several new partner universities in the North of England, including the University of Sheffield, the University of Manchester, Manchester Metropolitan University, the University of Salford and Newcastle University. Being able to recruit new PhD tutors from across the North of England and take pupils on trips to local universities has had a huge impact on our programme provision in the North East and North West. You can read several articles from scholars in the region in The Scholar too.

The Brilliant Club Annual Conference

We are delighted to announce that this year's annual conference will be taking place in Stoke-on-Trent on the 19th July. The theme will be geography, and how we can break the links between where you grew up and access to highly-selective universities. Tristram Hunt, MP for Stoke-on-Trent Central, and Professor Les Ebdon from the Office for Fair Access will be giving keynote speeches, and we will be joined by pupils, teachers, researchers and commentators on education. To hear more, please see our website, and tickets will be launched over the next few weeks.

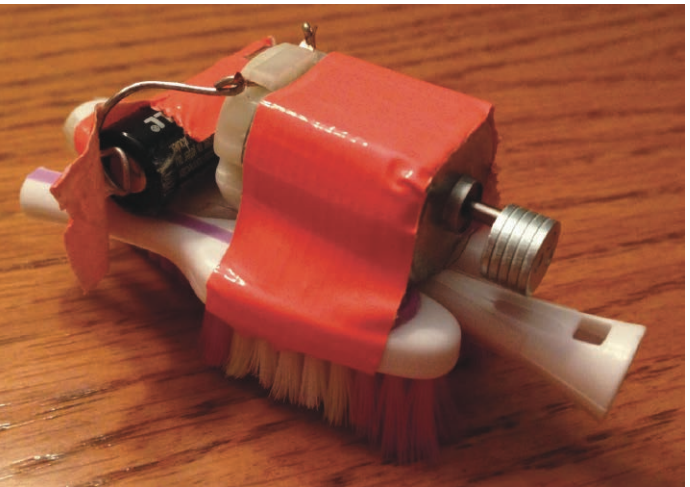
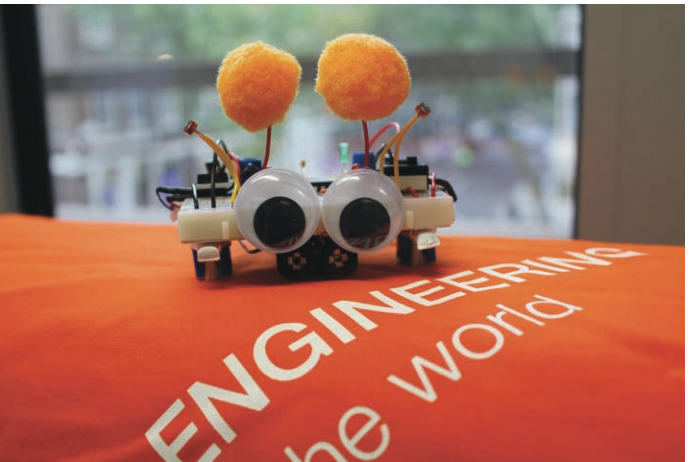
Nuffield Research Placements

If you know of any Year 12s who are fascinated by STEM subjects and keen to spend their summer learning more about the world of science, you could encourage them to apply for a Nuffield Research Placement. The placements put students into real life science roles in universities, commercial companies, voluntary organisations and research institutions. Students are particularly encouraged who don't have a family history of going to university or who attend schools in less well-off areas, and there are bursaries available as well as travel costs being covered. The Brilliant Club is looking after co-ordination of Nuffield Research Placements in London and Surrey and the person to contact for this region is Amelia at nrp@thebrilliantclub.org.



10 year-old Engineers!

This autumn term, we launched our first joint Scholars Programme courses with University College London Engineering Department, an ambitious programme with the aim of getting UCL's Integrated Engineering Programme into the hands of primary school pupils and early teens, in a bitesize version! The two programmes developed were Taming the Bristlebot, where pupils were challenged to create a moving robot from an electric toothbrush, and How Many Engineers Does it Take to Make Ice Cream?, which saw pupils inventing and running their own ice cream factories. The programmes were a great success and you can read several final assignments about the topics in The Scholar on p27 and p30. It was a great experience to work with Dr Elpidia Makrygianni and the team at UCL, and to get real engineering projects in the hands of our youngest scholars.



● Guest Article

How Your Scholars Programme Experience can help you Approach University

by Amelia Wilkinson, alumna of The Scholars Programme,
now studying Education and Modern Languages at the University of Cambridge

Prior to completing The Scholars Programme in 2014, the consensus amongst my peers and I was that the prospect of applying to university was daunting and rather intimidating. Yet after following a six week programme of tutorials with a PhD tutor and two fantastic visits to Warwick University and Keble College, Oxford, the application process and the university experience were de-mystified, and I am now in my first year at the University of Cambridge, reading Education with Spanish. I completed the programme whilst in year 12 at Lordswood Sixth Form Centre, and I owe much of my decision to apply to Cambridge to the encouragement I received from my PhD tutor, and to the exciting taste the course gave me of the academic rigour and intellectual stimulation that attending a top university could provide.

Attending six tutorials with a PhD tutor proved to be the most engaging component of The Scholars Programme, as the small group structure I worked in with three other students encouraged an exciting intellectual debate and discussion that had not been possible previously in a class of thirty students. This is undoubtedly an element of the programme that gives you a taste of what the seminar and tutorial sessions you may go on to attend at university could be like. I was working with a specialist in the subject, each session gave me the opportunity to deepen my understanding and insight into the topic, I was able to clarify anything I was unsure of, and the small groupings meant that regular feedback was possible. This session-style is very similar to the supervisions I now attend at university, and was incredibly valuable in highlighting that I wanted more of the academic challenge that my tutorials with The Brilliant Club had given me. Another key feature of the programme that mirrors seminars and tutorials was being asked to produce preparatory work for each session, whether this be reading a short text, writing a summary of a tutorial, or reflecting on a topic before going on to discuss it in the next session.

Whilst I was used to completing homework independently for my usual classes, The Scholars Programme prepared me to approach questions that were of greater complexity independently, even if I was unsure. For me this was an important learning curve, as going to university does not mean you should know everything on your subject, nor are you expected to. What is important, however, is that you have a go. The analysis and problem-solving involved in tackling a question are the higher level skills that will be required at university, not necessarily your ability to ‘solve’ the question.

Not only was the style and structure of the tutorial sessions I attended thoroughly engaging, but so too was the content. The fascinating question to be answered in the form of a university-style or dissertation-style piece of writing following my fifth tutorial was ‘Is Utopia possible?’’. My group explored historical, literary, philosophical and even psychological interpretations of utopian and dystopian worlds across the six sessions, and I enjoyed that the programme took a broad, multi-disciplinary approach to the topic, enabling me to explore a wide range of interests. One week we were discussing Orwell’s critique of political tyranny in ‘Animal Farm’, the next we explored the possibility of a utopia with respect to utilitarianism and another we were discussing disastrous real life attempts, for example that of Jonestown, to create a utopian society. A multi-disciplinary approach is also made use of by other scholars in this edition, such as the use of psychoanalytic theory to explore literature in D.Willing’s piece. This part of the programme helped me when applying to university and selecting my course, as I saw that my interests were very broad and were not isolated to one subject. Thus, I chose a degree that is enabling me to study a range of subjects, from linguistics, to literature, to philosophy and history.

The breadth of The Scholars Programme also meant that there was a freedom to focus, if I wished to, on the disciplines that I engaged with more. This freedom and control over the areas I could explore was extremely exciting when it came to writing my dissertation-style piece, as I was writing about what truly interested me. This is something that becomes more of a possibility at university, and reinforced to me that I

wanted to go on to further study. Writing the piece is also an excellent way to get a head start on how to go about research and referencing, skills that will be essential on most university courses. The dissertation mirrored the type of work that I am now expected to produce on a weekly basis, and one question to ask yourself is whether you find some enjoyment in writing extended pieces of work in a very thorough style on a topic of interest. This is not to say that you love spending your days writing essays of thousands and thousands of words, but rather that you need to have a keen interest in your subject. This is essential if you are to go on and enjoy your degree.



Pupils from Hethersett Academy enjoy their Graduation Event at Jesus College, University of Cambridge

My top tip for any students currently following The Scholars Programme would be to ask as many questions as possible! The programme provides so many opportunities to talk to individuals who have successfully completed the process of applying to university that you will soon experience, whether that be your PhD tutor or the students ambassadors you meet on visits to another university. Take advantage of this! Ask about their experiences and tips for the application process - how did they choose which universities to apply to? How did they craft a great personal statement? Are they enjoying their course? Asking my PhD tutor these types of questions and talking to students on visit days helped me understand what I needed to do to create a successful university application, and also prompted me to think about the type of environment and university experience I wanted. I visited Warwick University and Keble College at Oxford University, and both trips included a range of presentations and skills sessions, including tips for writing personal statements from an admissions tutor at Oxford, and advice on how to make a university application stand out. These trips also focused on practical considerations such as accommodation and financial support at university, giving me an idea of the things I needed to consider besides my academic application.

Overall, the support and encouragement I received on The Scholars Programme from my PhD tutor, as well as the enjoyment I found in the intellectual and academic challenge provided by the course, were vital in my decision to apply to the University of Cambridge. Whilst it was daunting to make an Oxbridge application as the only student who was applying at my school, the support and advice I received from my PhD tutor was invaluable, and achieving a starred-first in my dissertation piece instilled the confidence I needed to apply. The success the programme has enabled me to achieve has also encouraged my own interest in students’ entry to top universities in schools where access is low. In January I volunteered for Cambridge University Students’ Union shadowing scheme, which brings students from schools without a tradition of university entry to Cambridge for three days to follow students on a day-to-day basis to their lectures, supervisions and social events. The Scholars Programme, in my experience, facilitates and demystifies the process of applying to University, and can boost students’ confidence in their own ability and potential to attend a top university. Make the most of the experience, as well as of the expertise of the student ambassadors and PhD students who are there to support you.

Amelia Wilkinson

● Guest Article

Me and my Mentor

by Mauro Mantega, Maths teacher on the Researchers in Schools programme at Feltham Community College, London

When you are training to be a teacher, you are automatically given a mentor who looks after you during your year-long training period, and I struck gold with mine. I work as a Maths teacher at a school in London with a scheme called Researchers In Schools which is specially designed for PhD holders. As someone used to working in academia and having spent a few years working at a technology company I knew the ins and outs of my subject really well – but that doesn't mean I was prepared to teach it to school pupils! Growing up in Italy, I also wasn't familiar with the UK's Key Stage system – I read up about it before going into school but it wasn't the same as being 'inside' it.

Alex was my guide. We met every day for the first two weeks. I quickly found that he was a really inspiring teacher and very understanding. He gave me personal advice, explained how to organise my time, helped me chill out when I got stressed and guided me to think through a huge amount of classroom scenarios. He showed me what to watch for in my observation classes and gave me small duties – look at how this pupil behaves, follow this questioning method.



When I started teaching myself, I began by taking over his lessons, and he observed me back. His feedback was invaluable. We gave our sessions a really strong structure, fixing one small aspect of my lesson plan and teaching at a time and being very open and honest in our discussions. We delved deeper into Maths too. I remember a really interesting discussion we had about theorems involving right angled triangles. In Italy we learn about sine angles in a totally different way – it is more theory based, whereas here is very practical. Similarly, at our school we have a specific way of teaching conversion from decimals to fractions which was new to me. We always met before and after lessons, and would talk through my lesson plan to make sure we were going about things the right way. This year I ran an intervention for my Maths classes to improve their mental maths – a competition where we updated all the scores on the board every day. I piloted this and then discussed this with Alex. He was really supportive and proposed that we extend the course. The kids loved it and it was a massive success. By constantly practising they improved their skills. It took me a while to realise how to plan the competition – to notice that the bottom set were finding their mental maths tricky and that it was slowing down the pace of the class. Observing how Alex taught and learning to watch the pupils intently definitely helped me get to the point where I could best help them.

It's very important to have a mentor in teaching. You find out your own style of teaching after a period of time, but I still see a lot of things that Alex does in class that are really effective and try them out for myself. I like the way he asks questions to the students, bouncing back from one to another – making each student repeat what another has said. Students have to pay attention and think deeply about what others are saying. Now Alex has a different role in the department so we don't see each other as much. I need less mentoring than I used to. We still have a good relationship, and hang out a lot. I would like to say thank you to him – he is a wonderful person and a fantastic mentor. He is very good at what he does, with very high subject knowledge, a huge amount of curiosity and a great deal of openness to discussion. I would recommend him with my eyes closed.

● Introduction

What is The Brilliant Club?

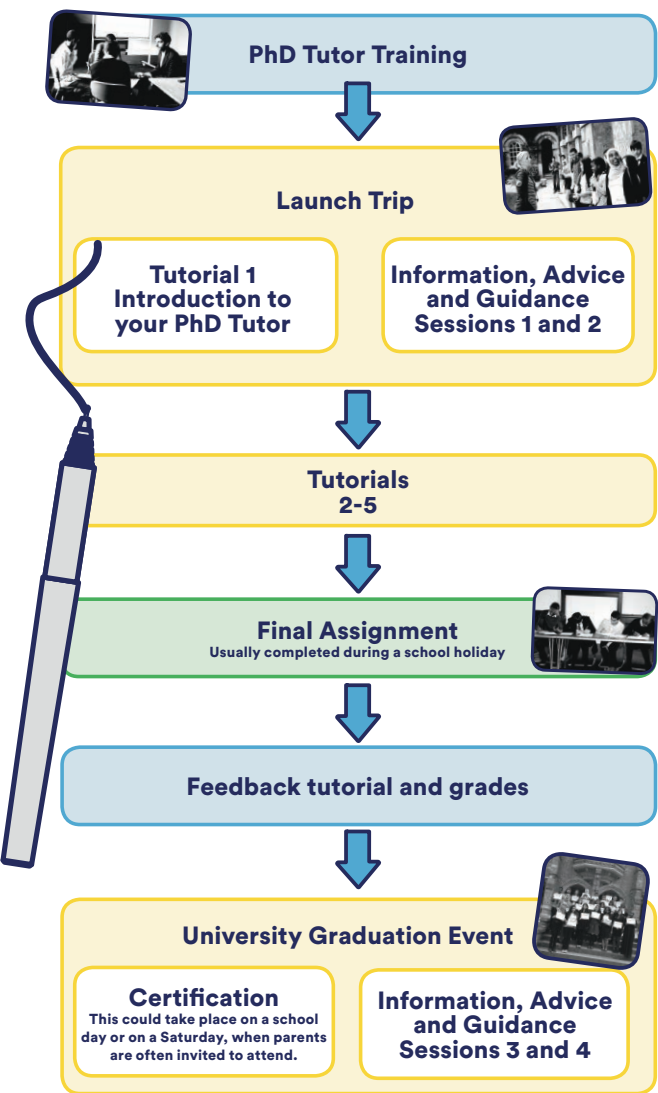
The Brilliant Club is an award-winning charity that exists to widen access to highly-selective universities for under-represented groups, by mobilising researchers to bring academic expertise into state schools, through two key programmes. The Scholars Programme trains PhD and post-doctoral researchers to deliver university-style courses with tough academic challenges to groups of pupils, beginning and ending with information, advice and guidance visits to highly-selective universities. Researchers in Schools is an initial teacher training route for researchers to become classroom teachers and in-school champions of higher education and education research. Both programmes are designed to support pupils in developing the knowledge, skills and ambition that help them to secure places at highly-selective universities.

The Brilliant Club is building a national movement to mobilise doctoral and postdoctoral researchers to engage with schools serving low HE participation communities. We are currently working with nearly 300 schools and colleges across the country, placing over 450 PhD tutors a year to work with more than 7,000 pupils. Our PhD tutors are placed in schools to deliver The Scholars Programme to pupils from Year 5 through to Year 12. As the diagram below shows, the programme consists of a series of tutorials, trips and assignments. It is whilst pupils are on this programme that they produce the final assignments that are included in The Scholar.

The Scholars Programme represents an authentic university-style challenge for the young people that we work with. Key Stage 2 and 3 pupils are asked to produce 1,000- and 1,500-word assignments respectively, which is often the longest piece of work that they have tackled so far in their time at school. By the time pupils reach Key Stage 5, they are asked to complete a 2,500-word assignment, which is at the same level as a piece of university coursework. Pupils receive marks at the key stage above their current level, and are marked in the style of university grades, gaining a 1st, 2:1, 2:2 or 3rd.

We are delighted to be able to showcase our pupils' work and celebrate their achievements in an academic manner and we feel that a journal of academic articles by young scholars is not only the ideal format, but also a natural fit given the charity's work. Publishing original work is an important part of academia and it is enthusing for us to introduce our pupils not only to the world of research but also to the next stages of circulation and response from the academic community.

In creating The Scholar, we have brought together what we feel are the most exciting and compelling of the hundreds of assignments submitted as part of the 2015 Scholars Programme. We hope that all pupils who completed the programme are proud of their achievements but, given the number and quality of assignments submitted, we think that the pupils whose work is included here can be especially pleased. As well as highlighting the achievements of pupils, we would also like say thank you to the PhD tutors, teachers and parents who supported them throughout the programme.



● Year 5/6 ● Key Stage 2

Between 1834 and 1948 provisions for the poor changed but the attitudes towards them did not. Discuss.

Woodlands Primary School
E. Faisal, supervised by: A. Montgomery,
Birkbeck, University of London

Like many societies, Britain has also faced the issue of poverty over years. However, the attitudes towards the poor did not always stay the same. The 19th century saw some harsh attitudes towards the poor which slowly changed for better with time. Therefore I partly disagree with the statement because both provisions and attitudes changed between 1834 and 1948. This essay explains the change of attitudes of the people and government towards welfare of poor people.

Two nations between whom there is no intercourse and no sympathy; who are ignorant of each other's habits, thoughts and feelings, as if they were dwellers in different zones or inhabitants of different planets; who are formed by different breeding, are fed by different food, are ordered by different manners, and are not governed by the same laws ... THE RICH AND THE POOR.

This extract is from Benjamin Disraeli's novel *Sybil*, published in 1845 and it best describes attitudes towards poverty in 19th century.

Up until the early 19th century it was widely believed that poverty was self-inflicted due to excessive drinking, gambling, laziness, wasting money and other immoral activities. Poverty was considered natural and an unchangeable condition for the poor. This strongly led opinion, led to aggressive treatment of the poor by both upper classes and the government as they believed that it was none of their responsibility to help the poor.

The Poor Law Act was so complex that many poor were unwilling to apply for any relief. The society did not look kindly upon those who asked for help. Workhouses were shelters in exchanged for doing jobs such as breaking big stones. These workhouses' conditions were very harsh and much worse than the lowest living standards. These were often referred to as prisons.



<https://en.wikipedia.org/wiki/Workhouse>

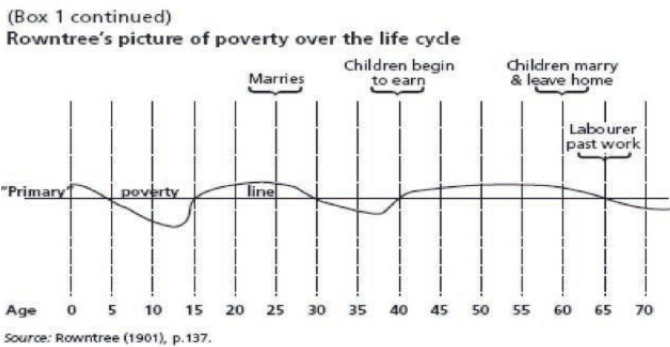
At this point politicians were not tackling the actual causes of poverty or did much about it, which was most probably because there was no demand to do so from the voters. The following lines, taken from the hymn 'All Things Bright and Beautiful', illustrate the attitudes towards poverty.

*The rich man in his castle,
The poor man at his gate,
God made them, highly and lowly,
And order'd their estate*

This hymn shows that in the late 19th century, rich people and government thought that if God had made them higher, better and richer then it was none of their responsibility to help the poor and needy.

From 1899-1902, the Boer War revealed the poor state of the health of the nation which proved that Britain had an unfit workforce as well as an unfit army. This poor physical health was a concern for the national efficiency as well as the national security. By the end of the 19th century Britain was no longer the world's strongest industrial nation. Countries such as Germany had a better system of welfare benefits and old age pensions. Such countries were taking over Britain in terms of industrial productivity which was a huge concern. This was the time for Britain to improve national efficiency and national security by revising the attitudes towards poverty and social reforms. Some research was carried out as well during this time on reasons of poverty whose findings affected politician's opinions and to some extent helped towards social reforms.

In Seebohm Rowntree's work he surveyed rich families in York and drew a poverty line in terms of minimum pay levels. He carried out a series of studies to understand poverty and defined primary and secondary poverty and concluded that poverty was result of poor wages as opposed to generally held view that it was the poor's fault. The general public began to be more aware of poverty and realised it was not always the person's fault if they were poor. Also people began to feel more responsible and tried to play their part in helping the poor.



<http://www.cencomfut.com/poverty/18.htm>

In 1906 the liberal government was elected and decided to make some reforms. From that year free school meals were available for poor children. In January 1909 the first old age pensions were paid for over 70s. Although it was hardly generous, nevertheless it was a start. Also in 1909 wages councils were formed by the government which set minimum pay levels for certain industries. In 1910 the first labour exchanges were set up where jobs were advertised. Then in 1911 the government passed an act establishing sickness benefits and also provided employment benefits for workers in certain trades such as ship building. There was also an increase in the number of charities. Improvements to provisions were made but still poverty existed and slowly the attitudes towards it were changing too.

During the World War 2, attitudes towards poverty changed to great extent. All classes were mixed in the air raid shelters which led to socialising between the poor and rich and people became more aware and sympathetic to the plight of poor. Also evacuation of poor children to the towns and cities made the middle classes aware of real poverty that still existed. Because of rationing everyone had the same entitlement to rationed foods which helped to promote the idea that the rich and poor were fighting the war together and facing the same hardships, and should have equal share.

After the World War 2 a lot of laws changed for the poor including the National Insurance Act 1946 which covered all people for sickness and unemployment. It also allowed for Old Age Pensions, widows' and orphans' pensions and maternity and death grants. There was National Assistance Board 1948 which covered all those people who had not made enough National Insurance contributions whilst working. Another new change was Industrial Injuries Act 1946 according to which workers temporarily put out of work due to injury were given payments. In 1948 the National Health Service was formed, which was another positive step towards the health of the society.

From the above evidence I conclude that both provisions and attitudes changed between 1834 and 1948. Over time people started to understand the real definition of poverty. They also realised it was not always the poor person's fault and became more aware and considerate towards the poor. Slowly they accepted their own roles and responsibilities towards bringing change to the society. The different researches determined the real causes of poverty and on that basis solutions were determined. Many laws were changed for better and implemented more. Surveys showed that the percentage of poor has greatly decreased over time.

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● Year 5/6 ● Key Stage 2

Who discovered Pythagoras' Theorem?

St Helen's Primary School
M. Adjei, supervised by A. Occhipinti,
University of Cambridge

In this essay my aim is to prove which civilization first came to the realisation of Pythagoras' Theorem, which states: "In a right-angle triangle, the square on the hypotenuse is equal to the sum of the squares on the legs." Many methods have been implemented, both geometrically and numerically, to demonstrate the validity of the formula.

It bears Pythagoras' name because it was first associated with him, although throughout the years there have been many controversial theories about where it first originated.

Pythagoras was a Greek mathematician and philosopher who founded his own school. There was lots of secrecy surrounding the Pythagoreans; many things Pythagoras has been credited with may actually have come from his students.^[4]

Many civilizations seem to have some knowledge of the Theorem and they are: Babylonians, Chinese and Indians.

The Babylonians are the earliest civilization where proof was found supporting the Theorem. Dating back to circa 2000BC, they were in a way the first to come to the realisation of this Theorem.

The main Babylonian proof is a clay tablet which was excruciatingly carved by a scribe. This tablet is called Plimpton 322.^[1] The 4000 year old tablet has 4 columns which indicate, with a margin of error, the Pythagorean triples with astonishing accuracy..



Figure 1

Other tablets, such as YBC 7289, indicate the value of $\sqrt{2}$ as a diagonal line of a square. It is impressive - considering they adopted a sexagesimal system - that they managed to record the value correctly to the fifth decimal place.

The Chinese offer us a geometrical demonstration of the Theorem in a book called Jiuzhang Suanshu (“Nine Chapters on the Mathematical Art”)^[2] dated circa 200BC. It was a textbook bearing problems such as the calculation of the length of a reed in a pond. The resolution of the problem involved the application of the Theorem. A geometrical proof of the Theorem is displayed; it includes a tilted square surrounded by 4 right-angle triangles. The square itself is divided into 4 right-angle triangles, with the exception of a square in the middle. The triangles are then re-arranged to prove the Theorem.

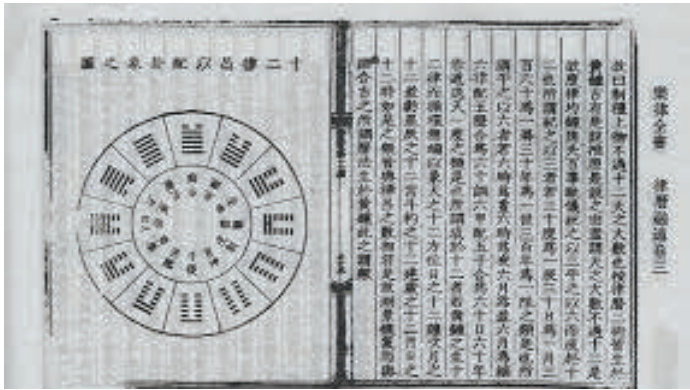


Figure 2

Finally, it is also proven that Ancient Indians were fully aware of the Theorem. The main aspects of Indian mathematical knowledge are contained in a book called the Sulbasutras, dated circa 800BC. It contains a geometrical proof of the Theorem where the right-angle triangle is isosceles.

All the civilizations mentioned above, as well as Ancient Greeks, have come to the application of the Theorem. There is a lot of deliberation about who first understood, demonstrated and proved the Theorem but it is not easy to give an outright answer. In fact, as Professor Manjul Bhargava from Princeton University stated,^[3] different answers can be valid depending on what standards are used; in fact, Babylonians were the first to have an idea about it; Indians provided a complete statement and Chinese first proved it. All mathematicians seem to agree Pythagoras should not have been credited with it.

Regardless of where credit is due, all civilizations came to the knowledge independently, and I find this fascinating. It proves that all mankind seeks and finds truth beyond time and space; it also shows that, regardless of culture and customs, we all tend to come to the same conclusions.

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● Year 9 ● Key Stage 4

Animal Testing: Does the Means Justify the Ends?

Lutterworth High School
A. Rostron, supervised by I. Dag Ii, University of Warwick

In this essay I will be writing about the common ethical question, ‘Do the means justify the ends?’. I will specifically focus on the ethical dilemma of animal testing. Animal testing is a controversial issue that can be explored from many different perspectives and mindsets. Some consequentialists, such as Dr Bella Williams, from Understanding Animal Research charity, would argue that animal testing is moral.¹ Although the means would involve caging, torture and possible death of animals, it would ultimately be for the greater good as consequentialists focus only on the outcome. They also argue “no one uses them unnecessarily or uncaringly”.² Their opinion is that animal testing will result in safer products for human consumption so it is morally acceptable. Others, namely deontologists like the organisation Peta, would argue that animal testing is a breach of an animal’s rights and an act of cruelty.³ Deontologists only focus on morality of the actions rather than the outcomes. In their opinion, torturing animals is morally wrong; the outcome is irrelevant, only the action itself. However, I would argue that animal testing for non medical products, such as cosmetics, is wrong. Alternatively, if an animal is being tested on for products such as medication I would argue that this can be morally justified.

My opinion concurs with Immanuel Kant’s view that values human life over animals in important situations such as medical animal testing.⁴ Hence in this essay, I will be writing about the moral dilemmas we face specific to animal testing. In order to explore these moral dilemmas and to be able to conclude what is morally permissible, I will primarily look at consequentialist and deontologist views and their different interpretations (including utilitarianism). In the first section, I will write about consequentialists and their specific perspectives on animal testing. In the second section, I will write about the utilitarian perspective, which falls under consequentialism, and how it varies from a typical consequentialist and how they propose a method of calculating the outcome to guide their moral judgement. In the third section, I will write about deontology and explore Kant’s view point, who is a famous deontologist, and finally, in the fourth section I will determine the strengths and weaknesses of these theories and conclude with my own personal opinion about animal testing.

Consequentialism is the theory where the ends justify the means; as long as the end maximises happiness and wellbeing then it does not matter how it is achieved. A strong consequentialist would come to the conclusion that animal testing, for both cosmetics and medication, is morally

justifiable. This is because animal testing, although could be seen as a breach of animal rights, makes these products safe for human consumption and use. Though some weaker consequentialists may argue that animal testing for cosmetics is morally wrong because it does not always maximise happiness or wellbeing and there are other ways to test the cosmetics, a strong consequentialist would always say that animal testing is right. Dr Bella Williams could be described as a weak consequentialist because she believes that animal testing for medication is acceptable. Taken from an interview in the Manchester Evening News, she claims “animals are essential in scientific research for developing medication and safety testing”.⁵

This tells us that she views humans’ wellbeing (life) over animals. However, another consequentialist viewpoint would be against animal testing because cosmetics can also make some people unhappy, seeing other people beautiful because of cosmetics can make some feel inferior. In this case, happiness is not maximised, which is how a consequentialist would determine a good end. This could lead to another ethical issue regarding the media’s portrayal of the ‘perfect woman’ due to animal tested cosmetics. This could result in girls/women being unhappy about their own appearance leading sometimes to even depression and suicide which definitely does not maximise happiness. In a survey of 1292 women, 44 % said they “feel negative about themselves when they are barefaced”.⁶

The theory of utilitarianism is a form of consequentialism; however they use a calculation called “The Hedonic Calculus” to calculate how good the outcome of a situation is. The key figure of utilitarianism is Jeremy Bentham. In his opinion, happiness is the most important thing to consider whilst determining whether something is morally right.⁷ It is the same overall theory as consequentialism, it is only the ends that matter, but is a more systematic way of calculating whether the ends are good and it only focuses on happiness. The calculation is done based on seven criteria⁸ which the action is rated on a scale from 1-10, that provides a comparative measurement to help determine whether the action can be justified.

Here is an example on how to use hedonic calculus for the case of using cosmetics tested on animals:

Using cosmetics made by animal testing

Criteria	Rating out of 10	Why
Intensity	5	It would make you feel good about yourself but would not create an intense happiness.
Duration	3	The cosmetics will not last long before having to be repurchased.
Certainty	3	The cosmetics are not right for everyone and will not look nice on all.
Nearness	6	Easy to buy cosmetics and feel good about yourself whilst using them.
Repetition	5	If you look nice it may make others happy (a partner, friend). You can use the same cosmetic product more then once.
Purity	3	The happiness you feel from looking nice could make others jealous/upset.
Extent	5	Other people like friends, family or a partner may feel happy that you look nice.

Total score: 30/70

Using cosmetics free from animal testing

Criteria	Rating out of 10	Why
Intensity	5	Happy that you are not using products made by animal testing but could be worried about any unknown problems that these cosmetics could cause.
Duration	5	You would stay happy that you are not using animally tested cosmetics as long as there are no side effects.
Certainty	5	By not using the cosmetics you are certain that no harm to animals has been caused whilst making the products you are using, this would definitely make you happy. However the cosmetics are not right for everybody and will not look nice on everyone.
Nearness	5	Sometimes hard to find products that are not tested on animals. They may be more expensive.
Repetition	5	Feeling good that you are not using animally tested cosmetics. You can also keep reusing the product.
Purity	9	Not using products tested on animals will not hurt any anybody and it make organizations like PETA happy that people are not using cosmetics which are tested on animals. Purity is greater because no living thing is hurt in the process.
Extent	7	Will make organizations like PETA happy and if people stop using products tested on animals then it would mean that animal testing laboratories would go out of business, which would make animal lovers happy. Could also make partners, friends and family happy. Although it could make people who work in the laboratories unemployed and unhappy.

Total score: 41/70

This would therefore mean that in terms of animal testing for cosmetics the utilitarian perspective would say no to animal testing because it is calculated that happiness would be maximised not using animally tested cosmetics, they also may say that there are other ways to test cosmetics without the use of animals. However, if we apply the same hedonic calculus method for testing on animals for medical purposes, we see that animal testing for medication would be moral because the overall happiness for a person’s health and even life outweigh the unhappiness caused by the animal testing to form the right medication.

Deontology is the theory that the ends never justify the means; no matter how good the ends are, if the means are morally wrong then it is never acceptable. This means that strong deontologists would believe that animal testing is never right. During animal testing, an animal’s rights have been breached and no matter what the outcome is, it is never moral due to the torture and death of the animals involved. For a deontologist, the actions taken during animal testing would mean that it would never be morally right, even in the case of medical research that would save countless human lives. However, Immanuel Kant (a famous strong deontologist) argues that ‘Cruelty to animals is justified in cases where the benefits to humans outweigh the harm to humans.’⁹ Kant states that although the means do not justify the ends, we have no duty to animals as long as the benefits to humans are compelling; then the means are not morally wrong. This illustrates that he values human life over animal life. Kant’s statement implies, however, that he is against animal testing for cosmetics because they have no compelling benefit to humans which would result in it not being morally acceptable. Some may argue that this makes him appear to be a consequentialist; however, Kant’s reasoning is we have no “direct duty” to animals because they do not have consciousness like humans. Kant also focuses on intentions and animal testing for medical reason has good intentions such as saving lives.¹⁰ Weak deontologists would also probably agree with Kant but would add to his theory by stating that if you do not conduct animal testing for medication you are allowing death to humans. Weak deontologists would value human life over animal life so by animal testing they are merely allowing a less important to death to happen.

In my opinion I believe that under specific circumstances the means do justify the ends in animal testing. This is because I agree with Immanuel Kant’s view that human life is more valuable than animal life. However, in terms of animal testing for cosmetics, I believe this is morally wrong; although a consequentialist may argue that it maximises happiness, I think that cosmetics are not necessary for happiness and actually could result in unhappiness. An animal should not have to suffer for a human’s vanity. Alternatively, I think that animal testing for medication can be morally justified as medication is often necessary to save human life which I

believe is more important than animal life. Although a strong deontologist may argue who are we to determine whose life is more important, I believe, like Immanuel Kant, that we hold no duty to the wellbeing of animals and in situations such as saving lives of humans, we can use them as we please.

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● Year 7/8 ● Key Stage 3

Horace’s Literary Theory and how it relates to Roald Dahl’s “The Three Little Pigs”

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This essay will analyse “The Three Little Pigs” by Roald Dahl^[1] to see whether it adheres to or frustrates Horace’s Literary Theory. There will be a short explanation of who Horace was and how his theory has been viewed over the centuries, particularly by writers of the Renaissance period, before giving an in-depth analysis of the poem itself. References will be drawn from classical writers such as William Shakespeare as well as from modern critics and authors. The findings of the analysis will then be drawn together in the conclusion which will state whether or not the thesis statement has been proven.

Horace was a Latin poet who lived from 65BC to 8BC. He famously wrote a work about poetry entitled “Ars Poetica”^[2] in which he stated his opinion that literature should teach and entertain in the line ‘*prodesse et delectare*’. Many artists and writers during the Renaissance (late 14th to early 17th centuries) found this inspiring (*inspiratio*) and applied his theory to their work because at that time the Church controlled what people read. This meant that they could entertain people at the same time as pleasing the Church by writing things which included a message.

At this time there was what is known as a ‘Quarrel’ between the Ancients and the Moderns, the Ancients being people who believed that classical artists and writers should be imitated (*imitatio*) whilst the Moderns believed that they should be original and invent new styles (*inventio*) of writing and drawing.

Horace’s literary theory could be seen as the basis for Roald Dahl’s poetic version of “The Three Little Pigs” written in 1982. He uses the fairy tale genre which is shown by the use of techniques such as repetition of words or phrases. For example:

“Little pig, little pig, let me come in!”
“No, no, by the hairs on my chinny-chin-chin!”
“Then I’ll huff and I’ll puff and I’ll blow your house in!”

This is used twice in the poem and is a reference back to the traditional tale. He also uses fairy tale characters like animals which can talk.

By using a conversational style with colloquial dialogue between characters, Dahl brings the story up to date. Examples of this are:

“The Wolf said, “Okay, here we go!” and,

““My darling Pig,” she said, “My sweet,
That’s something really up my street.”

In support of this, Marina Warner, in her article in The Guardian, maintains that, ‘fairy tales respond to social values and needs over time.’ She goes on to say that ‘the social context keeps making a difference...and the stories have to be updated accordingly.’^[3]

As the story is told in verse, the use of rhyming couplets and an eight syllable rhythm make the poem easy and enjoyable to read by a wide audience, with different levels of meaning appreciated by young and old alike. This enables the meaning of the story to be easily understood, as well being very amusing.

The story is also told in the narrative style of the first and third person. This has the effect of feeling that the writer is speaking to the reader directly. In addition, he uses contractions which give a casual feel to the story, as these are not used in more formal writing.

Roald Dahl uses symbolism in his characters which adds to the overall effect of there being a message to instruct the reader. The wolf, as in the traditional tale, symbolises evil, and the pigs symbolise innocence and foolishness, once again from the original story. However, the character of Little Red Riding Hood is introduced as part of Dahl’s twist, and is characterised as a fiendish, cunning, independent, self-confident female. In this feminist variation he supports the feminist cause by showing a female as the person who rescues the character in need. However, it is ironic that, whilst she is described as brave and strong,

‘Came striding brave Miss Riding Hood.’

She is a cunning character, capable of pre-meditated murder, more evil than the wolf himself. She could even be likened to Shakespeare’s Lady Macbeth in her soliloquy,

““Come, you spirits...Thicken my blood and clog up my veins so I won’t feel remorse, so that no human compassion can stop my evil plan or prevent me from accomplishing it!””^[4]

Furthermore, Marina Warner goes on to back up this idea when she says, ‘heroines have become fast-talking, athletic and indomitable; they take on all-comers, especially would-be lovers, and they show no sign of falling in love, let alone into a tender reverie as in the bad old days of Disney’s Cinders.’

Further techniques used by Dahl are the use of repetition and allusion when he writes:

‘Once more the maiden’s eyelid flickers.
She draws the pistol from her knickers.
Once more she hits the vital spot,
And kills him with a single shot.’

This repetition builds tension and the expectations of the reader, and alludes to the fact that Red Riding Hood has done this before in her own poem of which readers of Roald Dahl’s “Revoltin’ Rhymes” will be aware.

The use of imagery is very powerful throughout the poem, specifically when describing the wolf. Dahl writes,

‘The Wolf stood there, his eyes ablaze,
And yellowish, like mayonnaise.
His teeth were sharp, his gums were raw,
And spit was dripping from his jaw.’

Dahl uses the word ‘ablaze’ to describe the intense yellow of a wolf’s eyes, likening them to a blazing fire. This may also be a tenuous allusion to the traditional story where the wolf climbs on to the roof of the third pig’s house, jumps down the chimney and into the cooking pot on a roaring fire, lit by the Pig. The fact that the Wolf was drooling suggests that he was hungry: this is amplified by the use of the word mayonnaise. Not only does it rhyme with ‘ablaze’, but mayonnaise is a type of sauce which implies that the Wolf is thinking of how he would prepare the pig ready for a tasty meal. The powerful description of the Wolf’s teeth and gums (sharp, raw) is a strong indication that the Pig should be very scared. The Wolf is like a coiled spring ready to pounce on his prey.

In the poem it is stated that the Wolf is shot dead by Miss Riding Hood, and alludes to her own story by saying,

‘For now, Miss Riding Hood, one notes,
Not only has two wolfskin coats,’

Dahl does not, however, directly give the fate of the Pig, but in the final line, it says,

‘She has a PIGSKIN TRAVELING CASE.’

This suggests to the reader that she has killed the Pig, and made him into a case - the final and surprising twist in the tale. His use of childish vocabulary, for example,

‘She draws the pistol from her knickers’

adds a lighthearted entertainment value to the poem, making it accessible and engaging to the younger reader. This is one half of Horace’s theory.

The use of metonymy in the phrase ‘the upper crust’, is central to the notion that no-one can be trusted, no matter who they are or their position in society. This, it could be argued, is the key phrase which shows that Dahl’s version of this traditional tale adheres to Horace’s theory by instructing or teaching the reader.

Applying Horace’s Literary Theory to “The Three Little Pigs” encourages the reader to look for the deeper meaning within the story rather than just being entertained by it. However, it is debateable as to whether anything new is shown as the inference of the last verse is a bold enough statement to make the message clear. Using this, or indeed, any theory, could be regarded as a hindrance to an analysis of a text by limiting the creativity of interpretation of the reader.

In conclusion, Roald Dahl’s poem “The Three Little Pigs” adheres to Horace’s Literary Theory because it contains the message that no-one can be trusted no matter what their class, gender or age. The twist of adding Little Red Riding Hood from another story with its corresponding allusions (the carrying of concealed weapons and wolf-murder) allows him to add this message because she is the instrument of the lesson. Dahl makes his poem frustrate the expectations of the fairy tale genre by having evil triumph over good, and a female protagonist who, in contrast to more traditional fairy tales, is the doer of bad deeds. Furthermore, in accordance with Horace’s theory, the poem provides amusement and entertainment for the reader, giving further credence to the belief that it adheres to the theory.

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● Year 5/6 ● Key Stage 2

What do representations of nature tell us about ourselves and how do writers use literature in nature?

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Nature in this context is defined as ‘the natural world as it exists without human beings or civilization’ (dictionary.com). Nature has two different sides; good and bad. Our engagement with nature can expose our feelings at certain times. The *good* side of nature makes us feel happy and without trouble whereas the bad side makes us feel scared

or angry. For instance, if a man was angry because his team lost a football game and he saw a beautiful plain on his way home, the view can potentially help to calm his feelings. On the other hand, if a relaxed person saw a very frustrating sight like a forest burning, he could get worried, and possibly angry. Both examples of nature can reveal our feelings at different times.

This essay will discuss nature in literature and what representations of nature tell us about ourselves. It will look at three stories with different representations; first, the story of *Little Tom Thumb*, secondly, *Little Red Riding Hood* and finally, *The Swiss Family Robinson*. This essay will summarise key points and conclude the highlights of the writer’s point of view.

Firstly, fear could be triggered by isolation and threatening environmental factors. In the story of *Little Tom Thumb*, the setting of the story was an unsafe and treacherous forest, especially for young children. The place can be described to be fun with friendly company but frightening for those who are alone. It can be fun with other people around because it is full of adventure and there are many resources to make a creative game. On the contrary, it is very frightening alone; especially in the dark of the night. Little Tom Thumb and his brothers were terrified when their parents left them in the depths of the forest to die. It was obvious that they would have felt the way they did because, in the text, it said that ‘they began to cry and call out with all their might’ (p.26). Only terror-stricken people would behave in such a panicky way. The brothers would have lost hope had Tom not helped them.

The reader can relate to the deviation of events because everyone experiences fear of various kinds. Likewise, the reader was given an advance warning by the setting. The author portrayed the **bad** side of nature when the boys were stuck in the forest. This created an atmosphere full of fear. However, it also demonstrated hope when Tom overcame his fear and helped his brothers.

Secondly, a person’s emotional response to danger posed by nature has serious consequences if not handled carefully. The story of *Little Red Riding Hood* portrays a similar relationship between danger and fear. The author describes the setting as a very mysterious and most likely dangerous forest. One has to be cautious. If not, there is a risk of falling into danger. As Charles Perrault has said, ‘children, especially attractive, well bred young ladies, should never talk to strangers, for if they should do so, they may well provide dinner for a wolf’ (Andrew Lang, p.51-53). However, the characters in this story did not seem to understand the fact that they should be careful when alone in such an unsafe environment. If they did what they should have done to ensure the safety of themselves and that of others, *Little Red Riding Hood* would not have ‘stopped and listened to a wolf’ (p.66).

In my opinion, this story enables the reader to understand that carelessness can lead to encountering ‘various wolves’ (Andrew Lang, p51-53). We live in a world similar to the dangerous forest where there are villains looking for unsuspecting victims. Sadly, those seemingly gentle people with cunning and evil motives are the most dangerous. The story encourages the readers to be vigilant.

Finally, a person’s encounter with nature can trigger multiple emotional responses and end results. In the story of *The Swiss Family Robinson*, the whole family got shipwrecked on an uninhabited island. That island itself is a representation of nature, but it can also reveal what we would like to do or feel at certain times. Because the setting is an uninhabited island, the reader will instantly know that the author portrays a sense of adventure and danger. It is an adventure because no one else has yet explored the place and the family will need to find food, clothing and shelter to live. They will have to find those three things all over the island. Also, it would be dangerous because it is unknown; they do not know what type of harmful creatures are there, so be aware.

As a result of this heads up, the reader can relate to the story and experience the feelings of the characters at that time. For example, because the family were shipwrecked, there would be a feeling of panic throughout that event. The reader will then understand why all the commotion is happening and will want to read on to see the effects of the phenomenon on the characters. Johann Wyss said that, ‘every man on board alternately commended his soul to his Creator’ (p.1). This shows how desperate the men were to survive. Consequently, the reader will understand why the men are like this and will not get muddled up.

To sum up all that was mentioned, the use of settings in stories is extremely important. Without it, the reader will be utterly confused. If nature is used as the setting, it helps the reader in relating to the story. Similarly, the reader can easily predict what will happen next because most people all over the world can relate to different forms of nature.

The three texts show that different authors use creative representations of nature in literature to tell us about ourselves. The characters in the three stories present how people respond differently to dangers posed by nature. Fear is a common response to danger and carelessness can lead to serious consequences. Others have multiple responses when they encounter the challenges of nature. A right attitude and positive response can help overcome fear and give hope to those who persevere.

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● Year 7/8 ● Key Stage 3

Analysing 'Bluebeard' using Bettelheim’s psychoanalytic method

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In this essay I will analyse the story ‘Bluebeard’ by Perrault using Bruno Bettelheim’s psychoanalytic references to expose the contradictions in the story. ‘Bluebeard’ was first published in 1697 and subsequently re-written in quite a revealing way by the Brothers Grimm in the 19th century. I will attempt to show how the true meaning of this fairytale is hidden but still connects with children on an unconscious level and how attitudes of the time influenced the telling of the story. Psychoanalytic theory is the process of looking further into the text, seeing the author’s motive and discovering what the story could really mean on a deeper level. We do this by using the theories of psychologists such as Sigmund Freud and Carl Jung who realised that we all show common archetypes and symbols.

Perrault’s ‘Bluebeard’ is about a charming man with a beard who some people believe to have traces of blue in it. He has had many wives in the past, when the story begins, and all these wives have died. When asked he does give some examples of how but it is not very clear so mystery still enchants the story. The main character in the story is a sweet young girl who falls for his charms and becomes his new wife. Soon, there comes a time where ‘Bluebeard’ must leave the young girl for a few weeks. He gives her a bunch of keys but instructs her not to use a very small one which opens a room at the end of a corridor. However, the girl becomes more and more desperate to see what is behind this door, despite the fact that she has had many friends to distract her. Eventually, her curiosity overcomes her and she opens the secret door. She finds the bodies of Bluebeard’s past wives hung on the walls and discovers that he must have strangled them all. She is terror stricken and drops the keys. When she gains back her courage, she picks them up and quickly locks the door. She feels all traces must be covered up until she sees the blood zv stained on the key. She scrubs it and scrubs it but it will not wash away and eventually the exhausted girl gives up. When her husband returns and asks her what is wrong, she quickly brushes the thought away and says she says she has had a great time. The next morning, however, ‘Bluebeard’ asks for his keys back and sees the stain of blood. He is furious and threatens that she must die. She uses her wit and asks for ten more minutes of life. During this time, she

summons her sister who calls on her brothers. She feels there is no hope as 'Bluebeard' calls her to come immediately. Just as the knife nears her throat her brothers enter and kill 'Bluebeard'. The young widow inherits the castle, marries an honest man and soon forgets her strange adventure.

The nickname 'Bluebeard' could symbolise many things. The man has a beard suggesting that he is quite old. In her book *'From the Beasts to the Blonde,'* Marina Warner writes 'Beards were also the mark of the goat, and given the goat's lustful and diabolical character, its kinship with satyrs and other classical embodiments of lust, like the god Pan and the devil himself, beards came to define the male in a priapic mode.' In this, the character 'Bluebeard' is scary, experienced and sexual. By contrast, the heroine is young, innocent and impressionable as shown in her remark: 'He is very nice, and when you're close, his beard doesn't look as blue as folk say!' These words imply that she was fooled by his charm, ignoring the warnings of others. Interestingly, Perrault does not give the heroine a name. Instead he only refers to her as the 'young girl' as if emphasising her innocence. This is not just an oversight as her sister, on the other hand, does have a name: Anna. The young girl represents a character who hasn't yet grown up and become a woman. This is effective as the child who is reading this story will be able to sympathise and relate to her.

Perrault would have us believe that the moral of this story is that 'curiosity killed the cat.' We know this as he included morals at the end of his fairytales. They were rhyming verses that brought out his interpretation and at the end of 'Bluebeard' he wrote:

'Curiosity, in spite of its charm,
Too often causes a great deal of harm.
A thousand new cases arise each day.
With due respect, ladies, the thrill is slight,
For as soon as you're satisfied, it goes away,
And the price one pays is never right.'

This does not ring altogether true because, not only does the heroine survive, but she lives happily ever after in his castle. Perrault may have written this because he was reflecting attitudes to women of his time which was: rather than disobeying their husband, they should trust them and control their curiosity. It also seems ridiculous that Perrault would criticise his heroine for discovering that her husband had killed his previous wives.

To find the true meaning of the story, we have to dig a little deeper by using psychoanalytical theory. We can start by reconsidering to Marina Warner's idea about Bluebeard symbolising a sexual character. In his book, *'The Uses of Enchantment,'* the Freudian psychoanalyst, Bruno Bettelheim, thought the true meaning of the story lay in sexual awakening. He wrote 'The key that opens the door to a secret room suggests associations to the male organ, particularly in first intercourse when the hymen is broken and blood gets on it. If this is one of the hidden meanings, then it makes sense that the blood cannot be washed away: defloration

is an irreversible event.' He believed that fairytales worked on an unconscious level, introducing children to the dark and difficult realities of life. However Perrault may not have been aware of the unconscious meanings of his story. Many artists and writers do not necessarily know what their stories really mean on a psychoanalytic level. This may be why he chose to focus the moral of the story on curiosity.

Since the discoveries of Freud, we can use his tools to discover the true meaning of fairytales. On another level, Bettelheim also suggests that it is a story about unfaithfulness. 'the female is strongly tempted to do what is forbidden to her' ... '[her] behaviour suggests two possibilities: that what she sees in the forbidden closet is the creation of her own anxious fantasies; or that she has betrayed her husband, but hopes he won't find out' This suggests that the girl has anxiety about the possibility of betraying her husband. This also shows that the story could also be warning men against their violent and angry reaction. 'Marital infidelity is something to be forgiven. If the partner does not understand this, it is he who will suffer for it.' In other words, 'Bluebeard' is killed for not being sympathetic and forgiving. In this way the story can be seen as a lesson for both husband and wife.

'Bluebeard' was re-written subsequently by the Brothers Grimm in 1812 as *Blaubart*, the German for 'Bluebeard'. It is a much darker and more honest story because it doesn't criticise the heroine for being curious. They write that 'At last her desire became so great that she took the key and went to the room' In this quotation the sexual undertones are clearer, giving further credence to the application of psychoanalytic theory.

To conclude, Perrault's 'Bluebeard' has much symbolism embedded in the text and although it is a fairytale for children, it also has a dark and more meaningful storyline. I believe that the story is structured like a journey for the young girl. For example she starts off unknowing, polite and obeys her husband. However she has always been desperate to grow up. She encounters obstacles on her way. The main obstacle is coping with her curiosity and desire. Unconsciously, the reader sees the girl as more of a woman at the end of the story, who has experienced difficulty, been mislead and, finally, has used this to achieve her goal, or in other words, to grow up.

I have also discussed the fact that there are two ways in which the story can be interpreted. One way is warning girls towards their first sexual experience, and the other is teaching them not to be curious or unfaithful. But as her curiosity is eventually rewarded, I feel that Perrault's moral does not serve his story well.

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● Year 5 ● Key Stage 2

Between 1834 and 1948, provision for the poor changed but attitudes towards them did not. Discuss

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'Between 1834 and 1948, provision for the poor changed but attitudes towards them did not'. This essay will have both points of view.

Poverty according to Rowntree is defined as someone not having enough money to buy what they need; therefore this group of people are referred to as the poor. Research shows that in the 1800s, 25 % of the population was living in poverty. Prior to the 1834, the poor law was used to look after the poor by encouraging parishes to provide for them. If the poor people do not have work, then the parish must give them money to maintain themselves.

But in 1834, changes were made to the old poor law and now known as the New Poor Law which was produced with the help of Edwin Chadwick, a social reformer who helped in public health matters. The law was produced based on making the process of getting relief for the poor very difficult so that only those who desperately need help will go through the process. For example, families were divided and sent to different parts of the workhouse and the food was bread and watery soup[1]. Moreover, the cost of looking after the poor was getting very expensive. The taxes of the middle and upper classes were paying for the poor's maintenance and they were not very happy about this[1]. It was also believed that the people who are poor are lazy. So the people living in poverty were divided into two groups, namely: 'Deserving poor' and 'Undeserving poor'. The 'Deserving poor' were poor people who were mentally or physically unable to work because they were either sick, old aged or disabled. The 'Undeserving poor' were also poor people but were able to work and get a job but chose not to work.

The fact that poverty was not seen as a problem, led to the main changes in the 1834 Poor Law. The Poor Law forced poor people to work long hours of manual labour in workhouses with no money given but food, shelter, clothing and some education for the children, basically, things that are needed daily to survive^[1]. The new poor law will help to reduce beggars off the street and get people to work. But the conditions in the workhouses were unbearable. For example, the Andover workhouse was reported to starve the workers and they were eating flesh from the rotten bones of animals. This led to riots in the Northern part of England^[6].

On the positive side, some people were not happy with the new poor law and wanted the government to make changes that

will suit the poor people. Richard Oasler called the workhouses "prisons for the poor"^[7]. The social research carried out by Seebohm Rowntree was published in 1899 and it investigated the lives of those living in poverty. This helped to have a better understanding of poverty. Rowntree found that poverty was caused by old age, illness and low wages and not drunkenness and laziness. Rowntree estimated that about 30 % of the population were living in or below poverty.

The Social research findings helped the government to make changes which has impact on those living in poverty. These changes are also known as reforms and include:

- 1870: Every child between the ages of 5 and 10 must attend school.
- 1908: Introduction of Old-age pensions for people over 70 years⁹
- 1911: People with no job can receive unemployment benefits⁹
- 1921: Every child must be in school till age 14years⁹
- 1946: National insurance Act¹⁰
- 1948: The National Health Service [NHS] was introduced.⁹

The National Insurance Act which was introduced in 1946 covers every one for sickness and unemployment and gives allowance for Pensions – old age, widows and orphans and maternity and death grants¹⁰

The attitude towards the poor changed from time to time but the main change happened been from the World War 2. This period was a turning point for both the government and the people. The government realised the importance of a healthy workforce because the government was unable to get a good workforce when needed during the war. The poor people that were sick could not afford treatment and report from Rowntree show that ill health was one of the causes of poverty. Then, the government introduced the NHS. The NHS allows health professionals to provide free health services. Those who are in poverty are most likely to struggle to pay for their bills such as health care bills. This suggests that when they are sick or in bad health, they will probably not go to a doctor or nurse for the medical treatment that they need as they cannot pay for it. The introduction of the NHS shows that there was a change in attitude even from the government.¹⁰ The NHS provided immunisations that helped to prevent or wipeout childhood diseases such as tuberculosis, polio and so on. Moreover, the NHS encouraged people to look after their health by educating them. There were new hospitals with modern facilities built or with plans to build them.¹⁰

The rich people got to understand that the poor are not lazy but also hard working. Moreover, the rationing of food might not be seen as a wonderful thing but it introduced fairness in the society. This also made the poor and rich to socialise together. The government got involved in taking responsibility to reduce poverty and the need to help those living in poverty. Beveridge

wrote the report about introducing welfare, and made other suggestions which the government implemented. In carrying out an assessment, it was reported that by 1950 just 2.8% of the population were living below poverty but could have been 22.2% if not for the welfare benefits¹⁰ Accommodation was also a problem after the WW2 and the government planned new towns and built new houses¹⁰.

In conclusion, the attitude towards the poor did change but gradually. It has changed from working long hours in workforce houses to having NHS with free health services.

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● Year 7 ● Key Stage 3

Ebola: The next global pandemic. Focus question: Why is Ebola so dangerous?

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It is natural for us to feel frightened and concerned that there are diseases beyond our capability to eradicate. Since the recent Ebola outbreak in Guinea, West Africa in 2014¹ it was clear that there are still diseases that hold this type of threat to society. The media speculation and views on the crisis raised awareness of the current problem, which we are facing. Although Ebola started as an outbreak (a sudden occurrence of a disease in a community that has never been experienced before²) it soon became an epidemic. An epidemic is the rapid spread of an infectious disease that affects a greater number of people than is usual for areas not associated with the disease. A pandemic is an epidemic on worldwide proportions. However, since the amount of cases of EVD (Ebola Virus Disease) is slowly decreasing³ it is unlikely that Ebola will ever become a pandemic. Despite this, there was certainly a point where other countries were right to fear it would become a global issue. But how did this come to be? In this essay I will discuss how we have been successful in handling the Ebola outbreak and what impact international aid and awareness has had on the situation. The threats that Ebola held against the world were certainly dangerous, but it should also be known that global efforts and support were a fundamental component in the fight against this deadly disease.

It was evident that Ebola would be a risk to the public if it spread. Then why was there such panic if all that was required was to quarantine patients immediately and effectively for the

epidemic to stop? According to *The Guardian’s* article “Why is Ebola so Dangerous?” this was because many regions, including Africa, where the outbreak happened, just didn’t have the high level of healthcare to take the necessary actions to prevent the spread of the disease. The countries affected just weren’t equipped or at all prepared for such a wide spread outbreak:

*“They often lack the most basic equipment and are chronically understaffed by poorly trained, overworked healthcare personnel.”*⁴

Sadly in many cases this was true. Unlike hospitals in the UK, where you are able to access free healthcare and with modern facilities, Africa’s hospitals are far behind the rest of the worlds’. Reasons for this being so are that it’s estimated that ¾ of the poor people in Western and mid-Africa live in rural areas. These areas lack necessities such as clean running water, accessible sanitation, healthcare facilities and prescription medicines that we in developed nations take for granted.⁵

A video called ‘The Story of Ebola’, shows a young girl tell the story of her village, and how it followed the rules (not touching contaminated patients, washing their hands after contact and reporting symptoms immediately) to control Ebola. Despite its initial aim, to be an example to other villages faced with Ebola, it also gave me insight into what the situation actually was like.⁶ It showed that not all villages had this degree of healthcare and that people weren’t reporting cases because they didn’t trust their healthcare system.⁷ Although this was an interesting point there was a lack of clarity regarding why there was so much distrust between the communities and their health facilities. However, it was clear that it was something to do with cultural beliefs and suspicions that the doctors who came over from other countries to help were in fact the ones bringing the diseases.⁸

Because people were terrified of the outcome of such an infectious disease they acted in a way that, although they didn’t realise, actually didn’t help to prevent Ebola spreading. Moreover, in remote areas, that didn’t receive much news, rumors began, for example, that Guineas president Alpha Conde disseminated the fever because he was from a different ethnic group.⁹ This may seem irrational but at that desperate time with such a horrific disease that was so unlike anything they’d known before it may have been quite plausible.

So partially due to Africa’s inadequate healthcare system, scarcity of fundamental aid and equipment, not to forget the lack of communication between the hospitals and villages, it meant there were barriers stopping assistance from those who knew more about the disease help. Together these factors meant Ebola spread rapidly, over Western African countries. Combined with the lack of immediate support and understanding of the disease it wasn’t a surprise the public feared the worst; that this disease would become the next global pandemic.

Another reason that propelled the immediate outbreak of Ebola, was the fact there was no successful treatments or vaccines provided for patients to prevent them getting the disease, recovering from the disease or spreading the disease.¹⁰ Evidently this meant it was more likely for people to die after being affected, which in turn increased Ebola’s danger and threat to other countries if it spread further.

So far I have given some reasons, which lead to the rapid spread of Ebola over Western Africa during the initial outbreak. However, there are many factors, which have prevented the spread of Ebola to other parts of the world, but who is helping and what are they doing, to stop the spread of this dangerous disease?

At this point it would be understandable to consider that Ebola is not a problem that we are dealing with because it doesn’t directly affect our country and therefore deserves little concern on our part. However, it is by no means eradicated and many national and international charities such as UNICEF¹¹, Oxfam¹², MSF UK¹³ (Medicine Sans Frontiers), Save the Children UK¹⁴ are still providing donations and support to the countries affected. On their website UNICEF states that it is helping airlift supplies to affected countries in West Africa, training health workers and caring for children and their families. As UNICEF is an internationally renowned and well-regarded charity I believe their information to be true.

Additional aid is also being provided, although not as widely publicized, by scientists who are making an ongoing effort to create a vaccine to prevent further infections. This is also working to protect the world against further outbreaks. At the time of writing there is no proven vaccine permitted for legal use¹⁵, however vaccines are being tested and the World Health Organization (WHO) report on Ebola vaccines, therapies and diagnostics reads:

“Clinical trials for several candidate vaccines are in various phases and a safe and effective vaccine is hoped for by the end of 2015.”

The report was published on October 6th 2015 and its content is relevant and provides good reasoning as to how aid is preventing its spread.

Furthermore there are of course the doctors and nurses who are deployed on the front line, fighting an ongoing battle and if they and we keep on working, supporting and identifying cases quickly with help from other countries we can be confident that Ebola will not become the next pandemic.

As the fight against Ebola continues the more our understanding and knowledge of the disease increases and with every case we tackle we become quicker and more efficient at treating infected patients. Along with the help from doctors, charities, hospitals,

scientists and supplies the cases of Ebola are decreasing.¹⁶

Although the threat of global pandemics occurring has certainly not disappeared, I believe diseases such as Ebola are comparatively non-threatening to citizens in the United Kingdom at this time. Given our strong nationally funded health care system, access to water, sanitary supplies and good infrastructure the threat does not compare with the threat of a disease like cancer, which kills thousands every year.¹⁷

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● Year 7/8 ● Key Stage 3

Do the Ends Justify the Means? The case of Euthanasia.

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To debate a controversial subject like this there has to be a firm understanding of the definition. Euthanasia also referred to as Physician Assisted Suicide (PAS), the Oxford dictionary states ‘the painless killing of a patient suffering from an incurable and painful disease or in an irreversible coma’ ^[1]. My research included watching a documentary, Terry Pratchett ‘Choosing to die’ ^[2] and a televised drama about Doctor Anne Turner ‘A Short Stay in Switzerland’ ^[3]. Very emotive and thought provoking, which makes me question, do you own your life? =, can you choose when to die?

Assisted Suicide is illegal in Britain (maximum 14 year jail sentence) however in other countries such as Luxembourg, Netherlands and Switzerland it has been legalised. Dignitas which is based in Forch near Zurich was founded in 1998 by Swiss Lawyer Ludwig Minelli. ‘Dignitas is an association; a help-to-live and right-to-die not-for-profit member’s society in line with Swiss laws ^[4], although many people perceive it as a “Clinic” for terminally ill patients where you pay up to die. Dignatas has ‘helped more than 1700 people to end their lives gently, safely, without risk and usually in the presence of family ‘members’ ^[5], approx. a quarter of patients are British. The cost of using Dignatas for an assisted suicide can be in excess of £8000 depending on after services and legal fees.

“Ends justifying the means” infers doing something wrong to achieve a positive outcome justifying the wrong by highlighting the good conclusion. Is the action of euthanasia wrong or the reaction of it wrong? It would appear that euthanasia for animals is totally acceptable and seen as an act of kindness. If an animal is left in pain or suffering the law says this is cruelty and people can be prosecuted. Why is this not the same for people?

Is age a factor in the argument? My Great Grandmother is 94. She lives in a Care Home and suffers with Dementia. She regularly says “I am fed up of living and am ready to go, I have had enough”. She is in pain and has very little dignity. Is this fair? Would people argue against euthanasia in this scenario, opposed to that of Daniel James? ‘Daniel James was the youngest Briton to die at the Dignitas Clinic, which he attended with his parents’ ^[6]. He suffered spinal dislocation in a game of rugby. He was left unable to walk, had no hand function was in constant pain. He was incontinent and suffered spasms in his legs and upper body needing 24hour care. His condition was not considered terminal. He had attempted suicide several times before, ‘he was not prepared to live what he felt was a second class existence’ ^[7]. Are Daniel’s circumstances less acceptable due to his age?

From a Christian perspective the Bible says ‘God is the giver of life. He gives and he takes away’ ^[8]. This would suggest that only God can decide when a person dies and that the act of Euthanasia is a sin. Though the Christian who has committed suicide has committed a grave sin, he is still forgiven ^[9], does this make it acceptable?

Classical utilitarians John Stuart Mill (1806-1873) and his mentor Jeremy Bentham (1748-1832) famous for their moral philosophy. The Hedonic Calculus, introduced by Bentham and added to by Mill, calculates the greatest happiness to the greatest number. To apply this to the euthanasia argument, if the family and friends are comforted by the choice of the patient to die and end the suffering then it can be justified however if they do not agree with the decision it will cause them suffering and then theory would state that the action could not be justified.

Another opinion is that of the Medical Profession. Doctors have to swear to the Hippocratic Oath, ‘They promise to use treatment to help the sick to the best of their ability and judgment but never with a view to injury or wrong doing’ ^[10]. Doctor Anne Turner not only agreed with assisted suicide but chose to end her life at the Dignitas Clinic on the 24 January 2006 in the company of her family. Dr Anne was diagnosed with a neurological degenerative disease for which there is no treatment or cure. Her family now supports Dignity in Dying and is behind the campaign for legalization of assisted suicide in England and Wales. I do not understand why the law makes assisted suicide illegal. Who owns my life? ... Surely that it is

me, if not then who. How can assisted suicide be legal some countries but not others.

My research is based on other people’s tragic stories and has made me consider all the arguments. I find it very difficult and emotional due to my age to ask myself what I would do if I or my family was faced with such a disturbing dilemma. God willing this is never the case.

If I was in the position of the terminally ill patient I don’t think I could ever consider euthanasia for two reasons. Firstly, I would not wish to cause any more upset to my family knowing that I had chosen to leave them. Secondly, the cost implication. I think it would be selfish to spend such a large amount of money on an inevitable outcome. I would like to spend the money on sharing valuable memories with family, or gift them money after my death. To imagine that the patient was my Mother or Father makes me feel sick and distressed. To see my family in pain and suffering would be unbearable. If they chose assisted suicide I would be devastated but could not be so selfish to keep them alive for my emotional wellbeing. Another difficult section of my research was asking my Mum and Dad their views if I was the patient and also thinking my views as a parent in the future. My parents said that they would do everything and anything possible to keep me alive and pain free. It is a parent’s worst nightmare to consider their child dying before them. My Mum became tearful when we discussed this which makes me appreciate how loved Daniel James was and how strong his parents were to support him in his decision to opt for assisted suicide.

The one certainty in life is death. What is uncertain is when, what, why and how we die. So my answer to the question, “Do the ends justify the means?” is yes, it is an individual’s right.

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● Year 5/6 ● Key Stage 2

Using Literature Devices to Express Human Emotions

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This essay will show how authors use literature devices to express human emotions, values and genre, particularly in nature. A literature device is something that a poet or author uses to make their work more interesting. In these next three paragraphs you will see examples from the books *Harry Potter and the Prisoner of Azkaban* (Rowling J.K, 1999) *Percy Jackson*

and the Lightning Thief (Riordan R., 2005) and *Horrid Henry and the Mega-Mean Time Machine* (Ross T., 2005). These books are personally beloved by yours truly.

This paragraph will show how authors use literature devices to express human emotions. Authors like to use mood to express human emotions just like they use it to express genre in nature. Usually, thunder is used to show when a particular character, mostly the protagonist (the leading character, normally the hero or heroine) is angry or distressed. Authors also like to use similes and metaphors. A simile is the use of like or as to compare two beings, things and/or places. A metaphor is the same except without using like or as. One example; ‘he was as red as a tomato’ describes how someone is so embarrassed that they have gone red. Another device authors use to express human emotions is alliteration. Alliteration is twice as effective because it describes the protagonist, (the leading character, mostly the heroine or hero) or the antagonist (the character who struggles or competes with the protagonist) or the setting (where and when the story takes place) but makes it more interesting because the words start with the same letter. One example from *Horrid Henry and the Mega-Mean Time Machine* is “‘ Hurray! Said perfect Peter.” A very popular literature device when using speech is idiom. Idiom is when a character says something that they don’t really mean in a figure of speech.

One example is; ‘you are driving me up the wall’. This shows how a certain character is distressed. Another example of idiom is; ‘it cost an arm and a leg’ meaning something was very expensive. Personally I like “A Leopard Can’t Change His Spots” because it reminds me that we can’t change who we are and we should accept that. Also effective is hyperbole. Hyperbole is quite effective when authors use it in their writing. This is because it uses exaggeration to express emotions. “I tell him every second of every minute of every hour of every day to tidy his room” Is a great example because it shows how this particular character is angry or annoyed with someone because they are not tidying their room. Zeugma is effective as well because it is a figure of speech that has a word that applies to two words and describes the character’s current range of emotion. One example is; “John lost his coat and his temper.” This shows how John lost his coat, and when he did he lost his temper.

A very popular literature device when using speech is idiom. Idiom is when a character says something that they don’t really mean in a figure of speech. One example is; you are driving me up the wall. This shows how a certain character is distressed. Another example of idiom is; it cost an arm and a leg meaning something was very expensive. Personally I like “A Leopard Can’t Change His Spots” because it reminds me that we can’t change who we are and we should accept that. Also effective is hyperbole. Hyperbole is quite effective when authors use it in their writing. This is because it uses exaggeration to express emotions. “ I tell him every second of every minute of every

hour of every day to tidy his room” Is a great example because it shows how this particular character is angry or annoyed with someone because they are not tidying their room.

This next paragraph is about how authors use literature devices to express human values like friendship, bravery, honesty, cooperation and teamwork. You may find some devices from above repeated down below. This is just because some literature devices express more than one thing. Similes and metaphors are useful when it comes to expressing human values. One example for teamwork is “they were working together like a pack of wolves hunting for food” this shows how their teamwork is just as good as wolves when they go hunting. One example for metaphors is “he was a superhero.” This shows how the character was brave because superheroes are brave. Authors also like to use imagery to express the human value of creativity. In *Percy Jackson and the Lightning Thief* it says “it was a lot bigger than I had realised- four storeys tall, sky blue with white trim like an upmarket seaside resort.” I personally like this piece of imagery because it creates a great picture in your head whilst describing the building. Authors also like to use hubris. Hubris is the extreme pride that fills a character, usually leading to his/her downfall. Hubris is used by authors to express the human value of self-esteem. An example of this is in *Harry Potter and the Prisoner of Azkaban*. The character Aunt Marge is a very selfish, nasty lady who thinks she is better than everyone else and really dislikes Harry Potter. She visits the house where Harry is staying and strongly insults him and later in the book she gets what she deserves, which shows an example of hubris in this story. “So she barked. “still here, are you?” “yes” said Harry. “Don’t you say yes in that ungrateful tone” Aunt Marge growled. “it’s damn good of Vernon and Petunia to keep you. Wouldn’t have done it myself. You’d have gone straight to an orphanage if you’d been dumped on my doorstep”. This resulted in Harry casting a spell on the horrible Aunt Marge, who then inflated into a human air balloon and floated away.

In this next paragraph I will be explaining how authors use literature devices to express genre in nature. For example in *Harry Potter and the Prisoner of Azkaban*, the author uses mood when the dementors a quite mystical scary being, come into the scene, the author uses dark stormy clouds, heavy rain ,frost , deep mist and strong wind to portray a cold dark eerie feeling a give this across to the reader. 'An eerie silence was falling across the stadium. The wind though as strong as ever was forgetting to roar. It was as if someone suddenly turned of the sound.' This is an example of how the author uses the idea of changing weather to express different feelings and experiences to the reader, without this the reader would not be able to have an image in their heads the same way they would they were watching a film however genre in nature allows the author to share their view with the readers and also allow the readers to make up their own image with the same feeling as the author’s image. The author will also use the idea

of natural lighting to increase the feelings passed across to the reader for example a dark sky could give across the feeling of fear, whereas a bright blue sky with not even a single cloud can represent happiness or relaxation. An example of this is again in *Harry Potter and the Prisoner of Azkaban* where 'then without warning all the lamps went out and they were plunged into complete darkness' this gives the audience a feeling of uneasiness, gloom and fear, which is what the author would have intended. Authors also use atmosphere and setting to express genre in nature. A utopia is an imaginary community or society that is desirable and peaceful. A utopia shows a peaceful and harmonic atmosphere that shows genre in nature. A dystopia is an imaginary community or society that is frightening and undesirable. A dystopia shows a scary and dangerous atmosphere.

To conclude, this essay has examined the use of literature devices when expressing human values, human emotions and genre in nature. In the three paragraphs above the use of literature devices like mood, similes, alliteration, idiom, hyperbole, imagery, and hubris have been explained to show that in *Percy Jackson and the Lightning Thief*, *Harry Potter and the Prisoner of Azkaban* and *Horrid Henry and the Mega-Mean Time Machine*, the authors express human values an emotions through the weather, the lighting and the natural objects around the character. This makes the book more interesting and readable for the reader and also creates a clear image in their head of the story. This essay has shown how authors use literature devices to express human emotions, human values and genre in nature.

● Year 8 ● Key Stage 3

What do you think was the most significant turning point in English history?

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The period known as the Industrial Revolution brought great changes to Britain. The Industrial Revolution was the most significant event in English history; this is because it was essential to creating the society we know today. It impacted everyone and everything as well as being a massive advancement in manufacturing which transformed the cultural, political, social, economic and international aspects of Britain. These consequences will be discussed in this essay.

The Industrial Revolution lasted approximately one hundred and fifty years and occurred between 1760 and 1910. It is the time judged to have brought technological innovation and evolution faster than ever before, especially to England. Historians refer to it as two waves of the same process: the first wave of the Revolution is thought to be 1760 until 1850 and brought the introduction of machines, powered by water and steam, which could accomplish traditionally human jobs much

faster; the second wave of the process was between 1850 and 1910 and brought more advanced technologies, such as electricity and the internal combustion engine. The historian Andrew Marr said that the process started in Britain because of the political system recently developed that encouraged new ideas and laws that made achieving the highest possible profit from an idea a priority.

The Industrial Revolution was the greatest period of economic growth Britain has ever seen so there were obviously some major economic consequences. The most significant of these was the main occupation of the people in England had shifted from agriculture to factories. This is significant because it meant more people living in the towns, which led to more people in factories searching for jobs. EP Thompson, an English historian, claims that people felt more under pressure to work harder as England shifted to complete capitalism. Skilled workers like weavers and cloth makers were now often the poorest of the working class because, despite being incredibly skilled in their crafts, they could not hope to outperform the capabilities of the machinery. This shows more people felt under pressure to produce better and more in their workplaces. In 1750, only about 15% of the population lived in towns; by 1900 it was 85%. New groups of investors, businesspeople, and managers took financial risks and reaped great rewards. Britain evolved into a nation of fortune.

The social consequences of the Industrial Revolution influences the civilisation of Britain to this day. The Industrial Revolution impacted the wages of the people: historians agree wages improved, however they are undecided on when and by how much as data on wages in inconclusive and workers' spending and rent was often informal and therefore not documented. Peter Lindert and Jeffrey Williamson say wages doubled between 1780 and 1850 but Charles Feinstein argued that the average wage only increased by 30%. Despite this confusion, historians agree wages did improve for the people of Britain, in fact they doubled between 1840 and 1910. This meant that, although to begin with the living standards were poor, living standards and life expectancies started to improve. This is significant because it meant the welfare and economic individual power of the average person increased dramatically and was important in creating the relatively high living standards Britain maintains today.

Another one of these was these social consequences was the changes in gender roles for women, as to begin with the role of the woman was to cook, clean, reproduce, care for children, and stay quiet. However by the end of the Industrial Revolution, the National Union of women's Suffrage Societies (NUWSS) had been peacefully fighting for equal voting rights as men since 1897. The Women's Social and Political Union (WSPU) was founded in 1903, astounding the government with their relentlessness and Dr Elizabeth Garrett Anderson was the first woman to qualify as a doctor in England. The women's

suffrage movement is now interpreted, in today's society, mainly as a positive change because of the positive effects of the women of Britain. However, at the time, it was mainly interpreted negatively. This is because the most vocal voices were the men in Parliament and as a whole they were against this movement because the women would threaten their political careers with the vote because the women would not vote for those who kept them out of the franchise. Despite this opposition, women over thirty were extended suffrage rights in 1918 and equal voting rights as men were achieved in 1928. This is significant as, without the women who never gave up in their quest to achieve gender equality, women today would not have the opportunities open to them such as university, career opportunities and basic human rights (in Britain at any rate).

The growth of Britain throughout this period did not, however, come without a cost. One of the injustices undergone was child labour. This was when orphans were sent from workhouses to factories to labour or when children of particularly impoverished families were sent to work to earn money, which was frequent. This is because of their working potential and the lack of obligation to provide decent wages. This is significant because of the widespread denial of human rights and because of the large role they played in the growth of Britain. These children had less rights and this was therefore an immoral and horrible practise, especially factoring in the conditions these children had to face. This continued until educational laws were passed decreeing that all children must be provided with a mandatory education. The introduction of education is significant because our culture and society would be much different if children were not provided with compulsory schooling. Our technology would be less developed, our medicine less advanced and our industries less varied, therefore the Industrial Revolution is a crucial turning point in English history.

The Industrial Revolution influenced many aspects of the British culture, specifically art, literature and poetry. Several poets show their views on the society and political system of the period in which Industrial Revolution took place; one such of these is William Blake, who wrote political poems on the state of England and London in particular. Another such example of this was the eternal novel *Frankenstein* by Mary Shelley which questions human nature and the limitations of science; this is important because it shows how the population was becoming more curious and questioning about the world that was changing so rapidly. This is significant because, in their works, the poets and artists portrayed the way they saw the world which was ever changing; many artists in the Industrial Revolution depict the machines and industrialisation of the country. The works can be used by historians to understand the era and also, more importantly, to document the way the people had begun to view their society, system and the injustices they saw around them. An example of this comes from the aforementioned William Blake in his poem "The Little Black Boy" which exposes the racism shown to people of colour in the society of the period; this is significant because it

indicates that the wider society of England was beginning to become more open to cultural diversity.

The Industrial Revolution also had huge impacts on the political status and system of Britain. For example, increases in industrialisation led to more workers in factories, which led to injustices perpetrated at workers from employers. This then led to Trade Unions which led to the formation of the Labour party; this is significant as this was the first time a political party had been formed in Britain that had centred on giving the power to the people and was also the far most left wing party which is important because it meant people with a wider range of views than originally had been catered for now had a representation in government. This meant that the formerly established parties, the Liberals and the Conservatives, now had to recognise the power of the voices of the masses.

The 18th and 19th centuries were the period in which Britain rose to a dominant position among European trading circles; as the first Western country to industrialise their economy, they had the ideal circumstances to grow their empire. Due to the increase of industrialisation, particularly military, the British army grew stronger and colonised much of the world. This in turn boosted the trade until Britain became the largest and most efficient carriers of slaves to the New World. This had a massive effect on the political system of Britain because the slave trade funded the House of Lords during this period and therefore affected how decisions were made, with larger funds to be considered. This is significant because this surplus of wealth greatly influenced the standards of Britain that continue to this day.

There can be no doubt that the Industrial Revolution raised the international status of Britain. For example, the expansion of the railways throughout Britain and the rest of Europe allowed for increased communications and trade between different countries and nations. The dramatic impact of the Napoleonic wars- due to naval warfare, exporting was problematic and therefore expensive- gradually wore off, allowing the easier and cheaper importing of equipment from more countries in Europe. Furthermore, this meant the countries in Europe were more closely linked with each other which some could argue caused World War I to be fought as Britain joined the war due to the possible threat to an ally, the relationship formed in the Industrial Revolution. Research of Business for Britain, a campaign group which seeks renegotiation of the relationship between the United Kingdom and the European Union, shows that 64.7 per cent of the laws introduced in the UK since 1993 either originate from the European Union or are deemed to be EU influenced by the House of Commons Library. This shows how significant the relationships formed in the Industrial Revolution are to the present of Britain.

To conclude, the Industrial Revolution was the most significant turning point in English history because it changed and

influenced every aspect of Britain so entirely. The economy grew as workers shifted from agriculture to factories and invested on new business ventures reaping great prosperity; the society of Britain was completely transformed with the creation of the relatively high living standards Britain maintains today, the suffrage extension to the women and the introduction of full time education to children; the culture of Britain evolved and expanded with works of art and poetry being produced in styles that were previously uncommon; the establishment of a new socialist political party empowered the working class’ previously unheard voices; international relationships, which world wars would be fought over, were formed and still influence our laws and policies today. Therefore the Industrial Revolution was the most significant turning point in English history because it changed and reformed every aspect of Britain and still impacts the Britain we know today.

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● Year 7 ● Key Stage 3

My amazing new Woodruff Ice Cream

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In the following paper, I will be looking at creating a rare ice cream that Britain has not thought about yet. My aim is to make a big profit on the ice cream and therefore, I will think very carefully about every step in the production process and thus overcoming any potential struggles that might occur.

1. The problem – coming up with a good idea

Trying to come up with a good idea for an ice cream I have thoroughly searched the internet for any interesting and unusual ice creams, stumbling across some really weird ones like bacon ice cream. However, I do not believe there is a big market for those ice creams and I would like to create an unusual yet appealing ice cream flavour. So I have decided to do a local survey amongst children and adults in my community. Many have named famous flavours, for example chocolate orange or common combinations like strawberry and banana but I disagree with them since this flavour already exists and wouldn’t be a proper challenge for my essay. Whilst eating some woodruff flavoured sherbet from Germany, I came up with the idea to make woodruff flavoured ice cream. This is a really amazing flavour that would please the crowds and appeal to children alike. Since woodruff is a common plant,

the ingredient shouldn’t be too expensive.

2. Ideas

Having decided on a flavour, I now need to come up with an idea on how to get the flavour of a plant into a scrumptious creamy ice cream.

I know that there are many different ways of making ice cream but I am looking for the cheapest and easiest method to make ice cream. I am not looking for a complex method as I would like to keep it simple, keep the costs low and therefore earn a high profit. In our tutorials we explored some different methods, like the dry ice method and liquid nitrogen method, but those are expensive methods and therefore not useful for making a high profit ice cream. For this reason I prefer to use the original, simple but cheap method of freezing ice cream for a longer period of time in the freezing chamber. It might take longer, but it is cheaper and large quantities can be produced.

I now need to decide on the ingredients. I think that apart from woodruff, it ought to be a creamy ice cream. My ice cream shall be reasonably priced so I can cover the costs quickly which means they should not be too cheap when sold. If I were making the ice cream expensive, less people will buy my product and that would mean I would not recover my costs quick enough.

3. Plan – from wood to cone

My plan consists of three tasks and a deliverable. It will take one month.

Task 1: Sourcing the ingredients

The first problem that I need to solve is getting woodruff, or woodruff flavouring. Though it is a common plant it is not available to buy in bulk in the UK. Plants and seeds can be bought but it would take some time to grow them. This might be a solution once the woodruff ice cream is on the market but for the beginning it might be easier to buy and ship woodruff from Germany where it is more popular.

Woodruff will release its proper flavour once it is wilted; another method is to freeze the woodruff so that the plant cells break down, thus simulating the same process as wilting. A bio engineer should be able to help me on this one and figure out exactly how long the woodruff needs to be frozen to develop the maximum taste and flavour.

Ingredients

For the ingredients that I need to make my delicious ice cream I will need a variety of factors. I will need to collect these elements from stores for as cheap as possible which means that I will not buy an item straight away, instead I must look at many companies as possible to pin point the least cost and the most capacity as possible. This means that I can produce many prototypes without having to spend more money to buy more resources. I can use an industrial engineer to gather these parts for my delicious ice cream. The ingredients needed are

basic and simple:

- 1. Milk (full fat)
- 2. Fats
- 3. Non-fat solids
- 4. Sugar
- 5. Emulsifier and stabiliser
- 6. Flavour woodruff (Waldmeister)

Task 2: How to make the ice cream

Even though my preferred method is freezing the ice cream in a large chamber; I will also try other ways of making my ice cream in case the first one does not work or other ways are more efficient. Hence my second task is split into three sub-tasks.

Task 2.1: Freezing method

Once my engineers have completed the raw mixture to the point where it needs to be frozen my engineers will put the mixture into a large freezing chamber. The engineers will change the period of freezing, therefore, changing the heat of the freezing chamber. They also will change the stirring speed of the mixture inside the chamber.

Task 2.2: Liquid Nitrogen method

My engineers will experiment with different amounts of liquid nitrogen to see how much you need for best results.

Task 2.3: Dry ice method

Using the dry ice method the engineers will work out how much dry ice you need and how fast and how slow we have to stir to get the optimum ice cream which is not too smooth, but also not too hard.

Task 3: Customer Survey

I will invite a group of master chefs to taste and advice on the new ice cream. For example, Mary Berry. These people will check the flavour, creaminess and other relevant attributes . I will also take a few surveys with the general public to see how they respond to this new flavour. We are not inviting more than 20 people for the survey as it would make the test portions too small.

Deliverable

Since I am making a prototype I will make approximately 5kg only. This is because I am only working out the best process of making the ice cream. The benefit of making this little is that I do not need to spend large amounts of money on larger equipment. For example I will not use a lot of dry ice.

Time

This project will take about a month. The sourcing engineer will have to travel to Germany for a week. Each freezing method shall take approximately a week, so the engineers can thoroughly investigate the production process. The survey should not take too long since we are only inviting people to try the ice cream prototype. This will take two to three days.

3. Do - which engineers are needed

Task 1 (sourcing) I will need a sourcing engineer who will look for supply chain opportunities. This means that he is looking for cheap and reliable suppliers in particular for woodruff.

Task 2.1, 2.2 and 2.3 require chemical engineers to work out what happens during the processes. They are in charge of producing the mixture that they will use to test with the three different freezing methods.

I would need advice from the following engineers for upscaling into mass production:

- Mechanical engineers, to help with the process and design machines to mass produce the ice cream
- Safety engineers to ensure that the factory is safe once we are starting to mass produce
- Civil engineers to build the factory, once it is past the proto type stage
- Business advisor, although not an engineer, it would be useful to have some guidance on producing a business plan to ensure that we make a profit.

4. Improvements

Advice from the survey (task 3) will be taken into consideration; however the majority view should be the focus. In this way more people would buy the product. If more people buy the product I will make more money.

If the majority would not like the taste of my ice cream, my engineers will help me to improve this. The sourcing engineer could find a different mixture of ingredients, for example, woodruff with a touch of vanilla.

Chemical engineers could help with process improvements. For example making the ice cream creamier by adding more emulsifier, stabiliser and fats. This prevents the ice cream from producing grainy ice crystals.

Improving for mass production

If the prototype is perfect, I will need permission from the government to build a factory for mass production of the Woodruff ice cream. I need to buy resources to build the factory. The factory will be built by civil engineers. Mechanical and chemical engineers will help building the large ice cream making machines.

Also, packing will be needed. This requires a packing engineer so that the ice cream can be sold in shops. My preferred package would be a tub container.

● Year 7/8/9 ● Key Stage 3/4

A literary analysis of Much Ado About Nothing using feminist theory, evaluating its usefulness for studying literature

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The feminist theory is an ideology promoting women’s rights so that they are equal to men, but not greater than. Within the feminist theory, there are several strands used in literature to review and critique. First wave feminism criticises and analyses men’s depictions of women in early English literature. French feminism is the theory of penis envy, which is the supposed envy of the male’s possession of a penis, and it relies heavily on Freudian psychology or psychoanalysis. Mad woman thesis is an ideology that the society of that period, which thought women shouldn’t have the same treatment and freedom as men, was the cause for many women becoming psychologically self-destructive. ‘*Much Ado about Nothing*’ is a comedic play written by William Shakespeare which is about women and how society interpreted them (which isn’t the same now). In the play a woman called Beatrice is stronger and more independent than what we would expect from a woman in that specific time period. She doesn’t want to be forced into marriage to a man she does not love, and in Act II SC I she specifically explains to her uncle why she is not ready to marry. Beatrice’s opinionated and outspoken character conflicts with the social norms of the time as most men expected women to be polite, kind and obedient, like her cousin Hero.

Act II SC I in Shakespeare’s *Much Ado about Nothing*, can be analysed through the feminist theory as it depicts a woman who desires for her voice to be heard and have the same treatment as men. The play was written during the Elizabethan era, and Elizabeth I believed that she could fulfil her duty just as well as any man even though she had “the body but of a weak and feeble woman; but [she had] the heart and stomach of a king”. Similarly, Beatrice believes she is the best person to decide what or who is best for her. Through the feminist theory the inequality of men and women in Act II SC I is emphasised, as Beatrice’s desires and opinions are not valid because she is a woman. She would rather be independent than marry someone she doesn’t love, which would not have been considered proper for a woman of her time. In Beatrice, Shakespeare has created a character that is radical and non-conforming to the social norms of the era. In Act II SC I her uncles tell her how to act, behave and what to say but she doesn’t want them to and therefore she still doesn’t listen to their advice. Beatrice claims “he that is more than a youth is not for [her], and he that is less than a man, [she] is not for him”. She is inferring that she wants someone who is on the verge of manhood, which was very desirable in renaissance literature, especially in Shakespeare, however, as a woman she

will not necessarily get what she wants. Beatrice on the other hand, believes that by being shrewder she will achieve what she wants, just as any man would.

On the surface, the extract from the play seems quite funny and comical because Shakespeare uses hyperbole to emphasise how strong Beatrice’s opinions are, which entertains the audience and exaggerates how determined she is to get what she wants. The contemporary audience would have thought that Beatrice was ‘a hysterical woman’ because the way she behaving was not deemed proper behaviour for a woman at the time. They would see Beatrice as being funny and desperate because she states “I will even take sixpence in earnest of the bearherd and lead his apes into hell.” This line shows us that she is more than determined to get what she wants and that she will even pay to go to hell just so she doesn’t have to marry someone that she does not and never will love. She is over exaggerating that she doesn’t like arranged marriages. This idea reflects Queen Elizabeth I beliefs that she was not a powerful Queen, but a King in a woman’s body, as she was just as strong as a King could be. As Beatrice would rather go to the gates of hell than be married, she is psychologically self-destructing, as women do according to the “Mad Woman Thesis”, by condemning her soul because of the society’s pressure to conform to the social standards. When we apply the feminist theory she becomes a strong woman who is fierce, does not give up and who would go to extremes to make sure things were the way she wanted them to be, rather than a silly woman. As she would take the money “in earnest”, it shows that Beatrice will not back down, and will do all that she can to get her way.

When the feminist theory is applied to the extract, it is easier to understand how patriarchal the era was. Beatrice asks “what should [she] do with him? Dress him in her apparel and make him [her] waiting gentlewoman?” At first this would just seem like a humorous statement, however, Shakespeare has used a double entendre that would have entertained the audience at the time as the question has a double meaning. One of those meanings is that because her husband would be so young, you could dress him up and he would look like a woman. The other is that all the female characters were played by men in that period anyway so Beatrice technically would have been a ‘man’. Through French feminism, Beatrice has penis envy, because not even her character is played by a woman, but by a young man. Beatrice has many reasons why she doesn’t want to marry, and does not believe that she should have to marry someone who is not right for her. Earlier in the play Beatrice’s uncle, Leonato, and her father, Antonio, describe her and what they say shows that they don’t think she acts the way she’s meant to act. Leonato says; “By my troth, niece, thou wilt never get thee a husband, if thou be so shrewd of thy tongue.” Although Leonato is very subtle about his opinion, he is still saying that Beatrice should behave properly and not be so opinionated. Her father, Antonio, is much harsher on Beatrice, because he says “In faith, she too curst.” This means he thinks that she is too ill-tempered, and because of this she will never get a

husband because no man will desire a woman who is too strongly opinionated, and does what she wants.

Although, analysing the extract through the feminist theory can cause narrow mindedness because it takes away the comical elements, it helps us to understand how patriarchal the society was at the time, and how much women were oppressed. Even though there was a female monarch, women were still under the control of men, and Beatrice reflects Elizabeth I’s pressures to be married. The play is actually supposed to be a comedy, and Shakespeare uses double entendre and hyperbole to entertain the audience, however, feminist views show that comedy comes from Beatrice because she is a woman that would have been considered “ill-behaved”, and unequal to men. Through a feminist view point, we can see how much society has changed from the Elizabethan period, and how much more equally they are portrayed in literature and in society.

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● Year 7/8 ● Key Stage 3

Taming the Bristle-bot

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Introduction

In the mid-2000s the construction of bristle-bots became popular as mobile phone vibrate motors became widely available (Wikipedia, 2015). Bristle-bots have proved popular in various settings including scientific educational projects. A bristle-bot is a small robot which is designed out of toothbrush heads, a chassis of some sort, a motor and a battery and which is able to move on its bristles due to vibrations in its body (figure 1). The problems occurring in relation to simple bristle-bots are that they are not normally able to travel in a straight line or stay upright and that they are relatively slow, as is recognised by Giomi, Hawley-Weld and Mahadevan (2013).

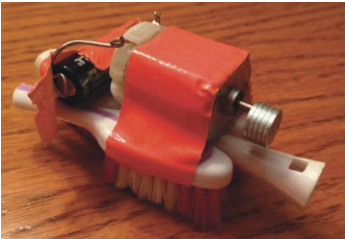


Figure 1: An example of a bristle-bot design.
(Taken from Giomo, Hawley-Weld and Mahadevan, 2013, pp. 3)

The engineering design process allows for adaptations to be made to this simple bristle-bot in order to improve its performance. It sets out different phases of the design process based upon the knowledge that ideas can be developed as answers to occurring problems and actual changes made to the design are aimed to increase the abilities of the product. Giomi, Hawley-Weld and Mahadevan (2013) used bristle-bots with two rows of bristles cut to 5mm length as they found this kept the bristle-bots from tipping. They mention that the motor speed, bristle position, length and angle of the bristles and the total weight of the construction influence its speed significantly. Cicconofri and DeSimone (2015) also aimed to improve bristle-bots and studied their ability to switch direction through changes in the frequency of the motor.

The aim of this particular experiment is to develop and design a bristle-bot in such a way that it can effectively be navigated through a maze. The importance of doing this needs to be seen in a wider area. The possibility of making designs that can avoid objects can be of great importance in day to day live. Technologies used on the bristle-bot may be adapted and used in larger designs such as the Google self-driving car or car back-up camera technology in which the avoidance of objects is also key. In the case of the bristle-bot, additional electronic components allow it to ‘feel’ around in its environment and make it possible to programme the motion of the motor. Through adding these components it becomes possible for the bristle-bot to follow simple commands. Via coding and the use of a computer application the light dependent resistor (LDR) and the motor of the bristle-bot can be controlled. The light intensity on a light dependent resistor can influence the motor. Both the LDR and the motor of the bristle-bot can be programmed through the Energia application and this makes it possible to, for example, programme it in such a way that it can travel in a straight line.

Objectives of this investigation were to study the different effects of the adaptations made and the various programme codes used. This is of importance because a good understanding of the bristle-bot and the possibilities of programming make it possible to develop an effective way of moving the bristle-bot around in its environment. As a result of trials the effects of coding and programming on the bristle-bot have become clear and based upon this additional changes can be developed in order to allow the bristle-bot to move more effectively through the maze.

Based on this the hypothesis set is that by programming the bristle-bot, using the coding application called Energia, so that when a light source creating more than 1000 Ohms is shown on either the left or right LDR, the left or right motor will speed up (depending on the way it was coded) causing the bristle-bot to turn and thus avoid objects meaning it will be able to more effectively navigate through a maze than a control bristle-bot with the motors always activated.

Methods

The hypothesis is based on scientific concepts of voltage, current and resistance. Taylor (n.d.) explains that voltage can be defined as the amount of potential energy between two points on a circuit. The difference in charge between the two points is called voltage. Current can be seen as the flow from the two points, which can either be the same or different, it is measured in Amperes. Resistance refers to the fact that a circuit with a higher resistance will allow less current flowing through it.

The light sensors on the bristle-bot are capable of detecting different amounts of light. They are connected to an electrical circuit that controls the bristle-bot’s vibrating motors. These motors vibrate and make the bristle-bot move and steer it left or right. By altering the light intensity on the light dependent resistors the resistance between the left and right motor is influenced.

The bristle-bot as used in this experiment was constructed using a mini breadboard, a battery holder, batteries, mini vibration motors, a switch, potentiometers, photo resistors, jumper wires and two OralB tooth brush heads.



Fig 2 Potentiometers are a vital BristleBot component

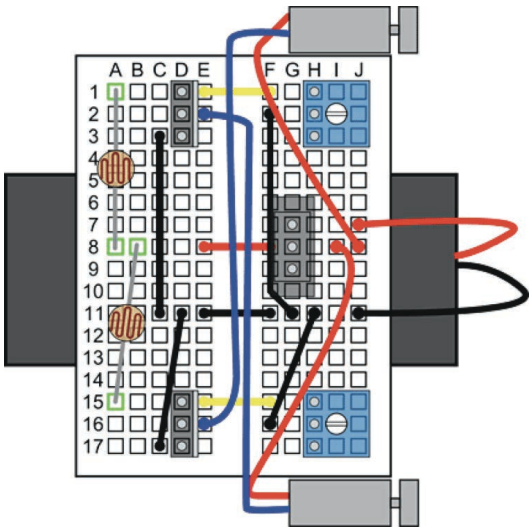


Figure 3: Diagram of the assembled bristle-bot
Taken from: Science Buddies (2015)

The simple bristle-bot consisted of the above mentioned electronic components but did not contain photo resistors or the option of using coding in order to influence its movements. Therefore it was unable to effectively move through a maze. By adapting the bristle-bot to contain light dependent resistors and the possibility of coding it, it became possible to control and influence its movements and to steer it in certain directions.

If the LDR was above 950, one motor would stay at the speed 50 m/s, whereas the other motor would do nothing at all due to the *if* code used. Both motors would be going at the speed of 50 m/s when the *else* code was used.

The experiment involved the simple bristle-bot, also called the control bristle-bot and the adapted bristle-bot to move around in a maze. The maze was set up in exactly the same way for both bristle-bots to allow for comparison. Both bristle-bots were be placed in the maze, one at a time, and they were timed to see which one of them navigated through the maze the fastest. Both ran through the maze several times in order to get average timings and get more representable results..

Results

As can be seen in the table below, the adapted bristle-bot completed the maze in a quicker time than the control bristle-bot. The control bristle-bot did not finish within the set 1-minute time frame in any of the runs. The adapted bristle-bot did not finish in one of the runs but did navigate through the maze successfully on the other two occasion, getting through in 56.37 and 47.48 seconds.

Bristle-bots	BTry 1	Try 2	Try 3
Control bristle-bots	DNF	DNF	DNF
Adapted bristle-bot	56.37 seconds	47.48 seconds	DNF

Table 1: Results of the experiment

● Year 5/6 ● Key Stage 2

An investigation into differences in returning heart rate in people of different ages after aerobic exercise

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Abstract

This research is a continued version of an experiment carried out by Esler et al. in 1995. The aim of this experiment was to investigate differences in heart rate in participants of different ages after aerobic exercise. The participants were selected to represent two age groups: 60-75 year olds and 9-13 year olds (one male and one female in each group; four in total). The required number of participants was successfully acquired and all volunteered of their own free will.

Participants were asked to undertake aerobic exercise for 12 minutes then rest for 12 minutes. Heart rate was recorded at 3 minute intervals throughout the 24 minute duration of experiment. There were some limitations to this research due to lack of resources, participants and time. This experiment has demonstrated there is a difference in the time that it takes for the heart rate to return to resting after aerobic exercise in different age groups, and that the younger age group recovered more quickly. This may suggest that hearts of children aged 9 – 13 years are better suited to aerobic exercise.

Introduction

The heart beats faster during exercise because the body needs more oxygen to get to the muscles and oxygen carries nutrients. In 1995, Esler et al. carried out an experiment to investigate the differences in participants of different ages’ heart rate while doing aerobic exercise (Esler et al. 1995). The medically sound way to tell how physically fit someone is, is by finding out how fast a person’s heart rate returns to a resting pulse after some amount of exercise (Froelicher and Myers, 2006). The aim of our experiment was to continue the work of Esler et al. by investigating differences in returning heart rate. The following null hypothesis was used to inform the design of the experiment: there is no difference in a 9 – 13 year old’s heart beat and a 60 – 75 year old’s heart beat after 12 minutes of aerobic exercise.

Method

We aimed to enrol four participants in total, one from each sex in each of two age groups: 9-13 years and 60-75 years. Consent was sought prior to enrolment. The participants were asked to rest for ten minutes prior to the start of the experiment. Each participant was asked to clench and release a soft ball in their hands for twelve minutes. Every three minutes, during the period of exercise, the participants’ heart rate was taken for ten seconds. After twelve minutes the exercise was stopped and the participants were asked to rest for twelve minutes. Every three minutes during rest the participants’ heart rates were taken for ten seconds. Their heart rate per ten seconds was then multiplied by six in order to obtain the heart rate per minute. This methodology is similar to the research conducted in 1995 by Esler et al. The data were tabulated and then plotted using a line graph to visually identify differences in data.

Results

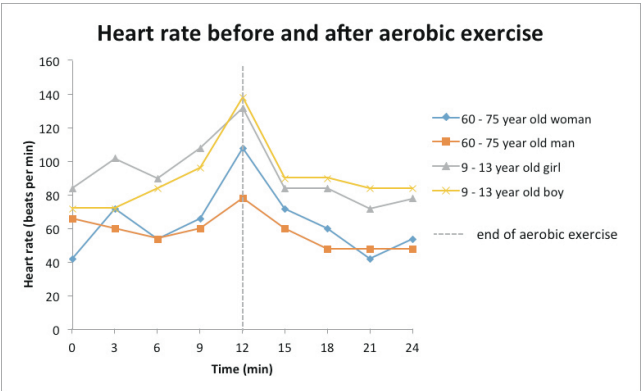
A total of four participants were enrolled after giving consent. All participants were Caucasian and of UK origin. All participants and their heart rates from all time points are shown in Table 1.

Table 1. Heart rate over time in different age groups

Participants	Resting (0 min)	3 min	6 min	9 min	12 min	15 min	18 min	21 min	24 min
60 - 75 year old woman	42	72	54	66	108	72	60	42	54
60 - 75 year old man	66	60	54	60	78	60	48	48	48
9 - 13 year old girl	84	102	90	108	132	84	84	72	78
9 - 13 year old boy	72	72	84	96	138	90	90	84	84

The data show that all participants had different resting heart rates at the beginning of the experiment (Figure 1). The resting heart rate of the younger group was higher than the older group’s. While exercising, all participants’ heart rates increased, regardless of age or sex. However, the older group’s heart rate did not increase as much as the younger group’s heart rate. After exercise, all participants’ heart rates decreased, regardless of their age or sex. However, the younger group’s heart rate decreased faster than the older group’s. All participants’ heart rates returned to near that of their resting heart rate by the end of the experimental period. Both male participants reached a consistent resting heart rate before the end of the resting period.

Figure 1. Heart rate before and after exercise



Discussion

These data disprove our null hypothesis by demonstrating that there was indeed a difference in the returning heart rates of the two groups after aerobic exercise. Given the current medical opinion on the significance of returning heart rates, we can assume from our data that the younger group could be considered healthier than the older group because their heart rates returned to the resting rate more quickly than the older group’s heart rates. The male 60 – 75 year old’s heart rate returned to resting after six minutes but he had the lowest heart rate after twelve minutes of exercise. This could mean one of two things: 1) he is used to doing aerobic exercise and

is therefore very fit, or 2) he did not challenge himself enough while exercising. Having been present, we conclude the latter. This experiment was not without its limitations:

1. The experiment could have been more accurate by making sure the participants’ heart rates were completely at rest at the beginning of the experiment; at least one participant was not fully at rest at the beginning of the experiment.

2. The participants occasionally, but not consistently, stopped exercising while their heart rate was being taken. This could be seen as a brief resting period.

3. There was a slight difference in the type of exercise undertaken between age groups e.g. the older age group were sat down while squeezing the ball whereas the younger age group were standing. Moreover, there was a slight difference in the type of exercise undertaken between the boy and girl in the younger age group e.g. the boy walked and the girl jogged while squeezing the ball.

4. The accuracy of the heart rate measurements may have been more precise if they had been taken over the full minute rather than ten seconds. Nevertheless, the advantage of measuring the heart rate over a short period of time was that the unexpected gap between exercise periods was minimised.

The younger group had the highest heart rates after twelve minutes of exercise. We can speculate that this is probably due to the fact that a younger person’s heart is more efficient at carrying nutrients and oxygen and that it has the capacity to pump greater volumes of blood. This, in turn, suggests a younger person’s heart can better tolerate a greater demand for oxygen.

We recommend that our conclusions are further supported by more experimentation with a greater number of participants, and recording data in a more consistent and unified manner.

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● Year 5/6 ● Key Stage 2

How Many Engineers does it take to make Ice Cream?

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1. Problem

I need to work out the problem which is ‘How many engineers does it take to make an ice cream?’ I am the Manager of The Brilliant Club Ice Cream factory. First of all I am going to design a new flavour of ice cream which is going to be very exciting for the customers. I am going to design it using the engineers who work for me. I have to give each of my engineers a different job using their skills and they have to follow the Engineering Design Process. I will then add up how many engineers I actually need.

2. Ideas

The name of my mind blowing ice cream is going to be ‘Messy Mango Mash up’. I think this name would make people want to eat it because it has an awesome name and will taste great. This ice cream type is called ‘Freeze’ because there are bits of ice cubes in it and you put it in the freezer for only half an hour!!! This ice cream type is strange ice cream because as soon as you mix the ingredients it freezes instantly.

The main flavour of my ice cream is mango. Passion fruit will be the only other flavour I am going to add. This will make up 0.5% of the ingredients, milk will make up 60%, non fat solids will make up 11%, fats will make up 11% to make the ice cream nice and smooth, sugar will make up 16% to make it sweet and stabilizers will make up 0.5%.

My special ingredient is catnip (1%) so cats go crazy for it and it is safe to feed it to your cat. When cats go into a room you only need to wave the ice cream in front of them and they will follow it. This ice cream tastes delicious for both humans and cats. The Industrial Engineer helped me design this crazy new flavour.

3. Plan

The method I am going to use to make my ice cream will involve lots of different engineers.

- First of all we mix all of the ingredients together using a big machine.
- Then we pasteurise our mixture. This will get rid of all of the bacteria and germs from the ice cream so it is safe for the customers to enjoy (including the cats/kittens).
- Next we have to homogenise our mixture. This makes sure that the ice crystals don’t go too large and make the ice cream crunchy and not smooth.
- Then this is where we add the Mango and Passion fruit flavouring.
- In my factory there is a robot which beats and whips the mixture to add air because without air it would be rock hard and nearly break your teeth.
- The catnip is then added to the mixture with real fresh mango pieces.
- My team have designed a packet for my new flavoured ice cream with a very colourful label and the mixture is pumped into the small containers.
- Then we need to freeze the ice cream to make sure it is cold enough which remember only takes half an hour!

- Finally there are some people in the factory who will taste test the ice cream. They will bring in their cats/kittens to make sure the catnip flavour is good enough.

4. Do

To create my new ice cream I need a lot of different engineers to help me. These are listed below:-

Mechanical Engineer – this person will help to build and create the new ice cream machine and make sure it is working properly.

Electrical Engineer – this person will make sure that the machines work at the right time, in the right place and in the right way.

Industrial Engineer – this person will help to design the ice cream and the box it will come in. They sometimes even taste test the ice cream too, to make sure the customers will like it.

Chemical Engineer – this person will design the ingredients and make sure it is safe to eat. They will make the food look nice and tasty and give it a fancy style.

Robotic Engineer – this person will design a clever robot which will whip and also beat the ice cream mixture so a human being doesn’t have to.

Software Engineer – this person will design how the robot will work. They will type up very complicated instructions for example: x = move upwards and b = move clockwise.

5. Improve

I would like to get some feedback from my customers to see if they will like my new ice cream flavour. I think I will send out a questionnaire in South Korea, Portugal and London because this is where I have the most customers. I will then use their feedback to improve my ice cream and make it even better. To improve my design I could use another special ingredient ‘burning ice cream powder’.

This powder is extremely dangerous for people who don’t know what they are doing. You have to be over 18 to use this ingredient and it is designed to burn all of the germs off of the ice cream. So, if a cat, kitten or human being licks it, they will never get poorly and be healthy for the next 6 months. Conclusion – it takes approximately 6 engineers to follow the Engineering Design Process to make a ‘Messy Mango Mash Up’ ice cream.



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