

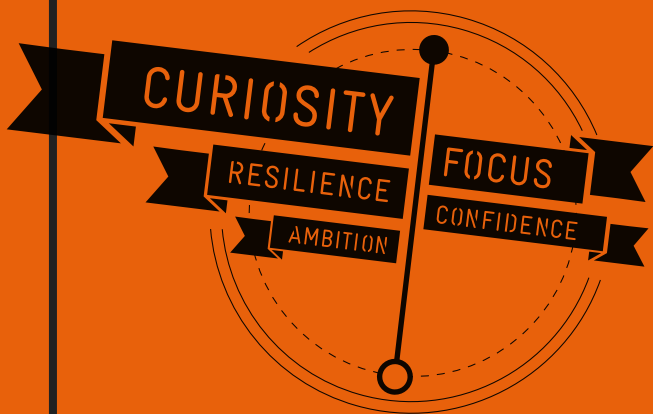
TEACHING CHARACTER

THROUGH THE PRIMARY CURRICULUM

A CROSS-CURRICULA APPROACH
TO TEACHING CHARACTER

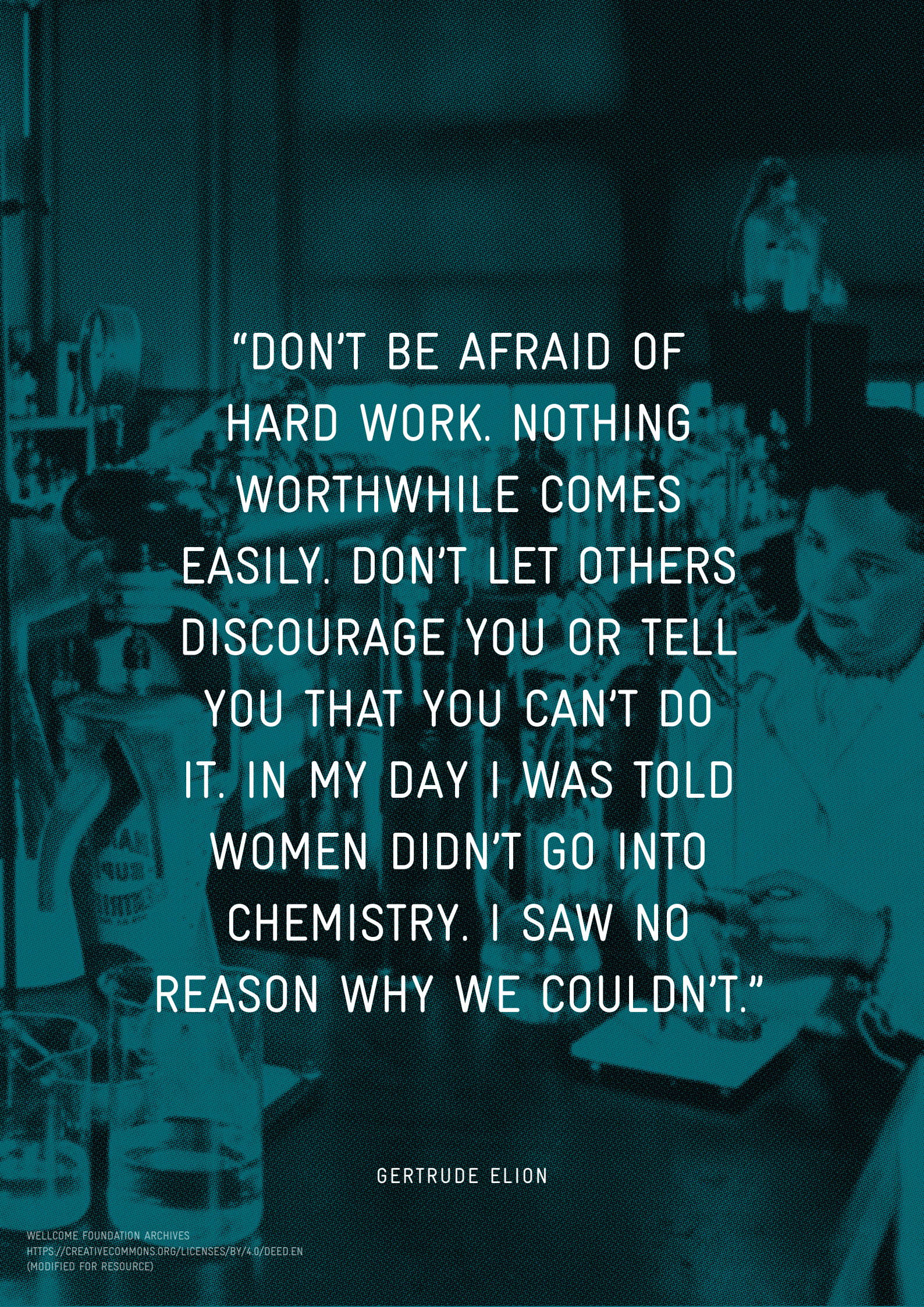
AN AMBITION TO CURE

VIRTUE: CURIOSITY - SUBJECT: SCIENCE



THE
JUBILEE CENTRE
FOR CHARACTER & VIRTUES





“DON'T BE AFRAID OF
HARD WORK. NOTHING
WORTHWHILE COMES
EASILY. DON'T LET OTHERS
DISCOURAGE YOU OR TELL
YOU THAT YOU CAN'T DO
IT. IN MY DAY I WAS TOLD
WOMEN DIDN'T GO INTO
CHEMISTRY. I SAW NO
REASON WHY WE COULDN'T.”

GERTRUDE ELION

TEACHING CHARACTER

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AN AMBITION TO CURE

TEACHER'S NOTES

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TEACHING CHARACTER



AN AMBITION TO CURE – GERTRUDE ELION

TEACHER'S NOTES

The purpose of this pack is to reaffirm and develop pupils' knowledge and understanding of character virtues, with particular reference to the primary virtue of **curiosity** and the secondary virtues of resilience, ambition, confidence and focus. These virtues should be highlighted as important to a successful transition from Year 6 (Key Stage 2 Primary) to Year 7 (Key Stage 3 Secondary). To accompany these Teacher's Notes, An Ambition to Cure – Pupil Activity, An Ambition to Cure Narrative and a PowerPoint are downloadable via the Jubilee Centre for Character and Virtues website.

THE FOLLOWING SUPPORTING DOCUMENTS ARE ALSO PROVIDED ONLINE:

- Teaching Character Through the Primary Curriculum Introduction Materials
- Pre-Lesson Virtue Toolkit including activities on the following virtues: Resilience, Courage, Focus, Curiosity, Integrity, Drive, Charity and Service.
- Curiosity PowerPoint
- Other narratives in the programme including: John Simpson, Alan Turing, Emmy Noether, Luz Long, Wangari Maathai, Winston Churchill and a Local Hero.

BACKGROUND INFORMATION FOR TEACHERS:

This information is to supplement the Curiosity PowerPoint, which provides an investigatory approach to curiosity in science. The 'An Ambition to Cure' Narrative is available online and can be printed off for pupil use. The edited version of the 'An Ambition to Cure' Narrative in this pack gives a simplified account of Elion's life and her curiosity to discover a cure for diseases. The main focus of the narrative is to provide sufficient evidence of Elion's curiosity in the scientific context of finding a cure through the development of drugs. The extract provides opportunities to discuss Elion's virtues and disposition. The aim is for this lesson to open a discussion about curiosity and the secondary virtues in focus (resilience, ambition, confidence, focus). Children should be given the opportunity to reflect on their learning and how these virtues are present in their own life.

Teachers may well wish to expand and develop work here, using direct links to the Science curriculum and cross-curricula links to English. These resources and lesson plans provide a guide and teachers are encouraged to adapt them to best suit the needs of their classroom.

OTHER RESOURCES

- <http://www.biography.com/people/gertrude-b-elion-9285981> – Biography of Gertrude Elion
- http://www.nobelprize.org/nobel_prizes/medicine/laureates/1988/elion-bio.html – Autobiography
- <http://www.biography.com/people/groups/discovery-scientific> – Biographies of famous scientists

LESSON PLAN

AN AMBITION TO CURE

This lesson plan, with accompanying PowerPoint, is a guide for teachers in how to best use the pupil resources provided. This plan should provide inspiration and is a suggested way to conduct a lesson to meet the objectives stated. Teachers are encouraged to adapt and develop this plan to best suit their class. The corresponding Virtue Toolkit lesson should be taught pre-lesson and the Virtue Glossary could be provided throughout the lesson to aid pupils' understanding. Teachers should use a selection of different methods and processes to facilitate discussion and reflection on the primary and secondary virtues in focus. It is important pupils become aware of the virtues and their meaning, but discussion and reflection will also aid pupils' understanding of them. Teachers may need to differentiate this lesson to best suit their pupils' needs; paired, shared, group or guided work is encouraged where needed.

TITLE: AN AMBITION TO CURE – GERTRUDE ELION
PRIMARY VIRTUE: CURIOSITY

POSSIBLE CROSS-CURRICULA LINKS:
ENGLISH – BIOGRAPHIES AND AUTOBIOGRAPHIES
ENGLISH – REPORTS AND JOURNALISTIC WRITING

CURRICULUM LINK: SCIENCE - ANIMALS INCLUDING HUMANS (MEDICINE AND DRUGS)

LEARNING OBJECTIVES

1. To understand what the virtue of curiosity means in the life of Gertrude Elion.
2. To accurately identify vocabulary that illustrates the virtue of curiosity in the 'An Ambition to Cure' Narrative.
3. To begin to be able to retrieve information from the narrative that illustrates a wider selection of virtues.

LEARNING OUTCOMES

1. To be able to identify and describe the virtue of curiosity and begin to relate it to their own lives.
2. To begin to discuss how different virtues occur together in positive or negative ways.
3. To begin to be able to relate the virtue of curiosity to the period of transition from Year 6 to Year 7.

RESOURCES

Provided: An Ambition to Cure Narrative, An Ambition to Cure Teacher's Notes, An Ambition to Cure Pupil Activity, Curiosity PowerPoint, I Will cards.
Not Provided: Interactive White Board, Flipchart, Pens, Paper

INTRODUCTION

5 MINUTES

Introduce/affirm the meaning of character and virtue. Introduce the definition of curiosity (see Curiosity PowerPoint). Go over children's examples of this virtue in their own lives.

TEACHER LED ACTIVITY

20 MINUTES

Introduce PowerPoint and ask children; how can being curious help us become better scientists? Get children to discuss with partners or in groups. Draw together as a class. Discuss and reflect on children's responses. Go to next slide and show children famous scientists and their discoveries. Read through so children have background knowledge of a selection of famous scientists. Move to the next slide and allow children to work with a partner or small group to discuss the question: Do we need any other virtues to become successful scientists? (Glossary provided). Draw together as a class. Discuss and reflect on children's responses. Would any of these ever clash with each other or have possible negative consequences. Make sure the children explain their answers in relation to the virtues used. Show last slide and introduce Gertrude Elion.

CHILD LED ACTIVITY

25 MINUTES

Allow pupils time to read/or read to the pupils the 'An Ambition to Cure' Narrative, instructing them to look closely for when the virtue in focus is displayed (provide highlighters if appropriate). Children must also reflect on secondary virtues present in the narrative (resilience, ambition, confidence, focus) and how these may have helped Elion discover a cure. Discuss if these virtues are always positive? Did they have any negative consequences? Children then answer questions from the activity sheet. Model if necessary.

PLENARY

10 MINUTES

Bring the group together to discuss the examples of curiosity found within the narrative and how these may have developed or clashed with other virtues. Invite them to share their examples. Explain how this virtue will be important for when the children transition to Year 7. Provide 'I will' cards and get the children to write a statement of intent – one thing they will now do in regards to this virtue. Make sure they are achievable.

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AN AMBITION TO CURE

MAIN NARRATIVE

VIRTUE: CURIOSITY - SUBJECT: SCIENCE

CURIOSITY

RESILIENCE

AMBITION

FOCUS

CONFIDENCE



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CURIOSITY

FOCUS



GERTRUDE ELION

American **pharmacologist** and **biochemist** Gertrude Elion is famous for her scientific discovery of drugs that treat many diseases and infections. She was born in New York in 1918 and developed an ambitious thirst for knowledge from an early age.

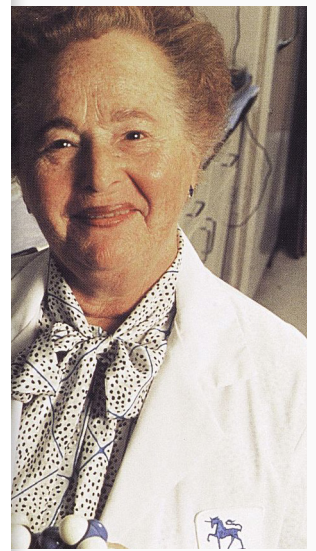
Growing up, Elion loved school, and **excelled** in many subjects. When she attended college, she found it difficult to choose a subject to **specialise** in, as there was so much she wanted to learn and so much she wanted to explore. Her mind was filled with all the ideas and new things she could learn. Her grandfather had died of cancer when she was only 15, and Gertrude was driven to find a cure for this terrible disease. This was where her 'ambition to cure' began and she chose to study science at college.

Elion was eager to continue her education further. Even though she was very well **qualified**, she could not find a job in a **research laboratory**. At that time, it was unusual to employ women in such roles. Elion did not let this stop her from continuing to learn, and she worked part time as a teacher whilst studying for her master's degree. She eventually found a job as a laboratory assistant. To begin with, she worked for free, and by the end she was only getting paid \$20 a week (about £14). Money was not important to Elion, she just wanted to learn. Elion continued to work in the day and do work on her degree in the evening. In 1941, she was the only female in her class to graduate with a master's degree in **chemistry**.

The beginning of World War II created a shortage of **chemists** in laboratories. Job opportunities arose and Elion took a job with George Hitchings. Hitchings encouraged Elion to continue to build her knowledge in the area, and challenged her by giving her new tasks and responsibilities. This didn't faze Elion and she was given freedom to investigate and research other areas of science. She began studying **microbiology, biochemistry** and **pharmacology**.

The work fascinated Elion. She was exploring new concepts where little was known. She was at the cutting edge of modern science. She needed to know more. She could sense they were close to producing a way to make new drugs. New drugs which could possibly cure old diseases. Over their careers, Elion and Hitchings developed a collection of new drugs that were effective against leukaemia, gout, malaria and other infections. Their success was aided by their innovative research methods, which marked a huge change from other scientific techniques of the time.

Elion did not stop there; she continued her research into other drugs. She enjoyed her work so much she didn't feel the need for much else. She never married, but her curiosity did spread to include a love of travel. Elion gained many **promotions** and many awards throughout her career, including the 1988 Nobel Prize in Medicine. Even after her retirement, she refused to stop studying. She worked as a consultant and gave advice to several different organisations who were trying to produce new drugs. She also worked as a Research Professor at Duke University trying to spread her knowledge and love of science to students. Gertrude Elion had spent her life in the pursuit of knowledge so she could help cure some of the worst diseases and infections known to man.



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GLOSSARY

BIOCHEMIST

someone who studies biochemistry

BIOCHEMISTRY

the chemistry of living things

CHEMIST

someone who studies chemistry

CHEMISTRY

is the study of matter and the chemical changes that matter undergoes

EXCELLED

to be extremely good at something

INNOVATIVE

introducing new ideas and creative thinking

LABORATORY

a room or building equipped for scientific experiments, research or teaching

MICROBIOLOGY

science that deals with microorganisms

PHARMACOLOGIST

someone who studies pharmacology

PHARMACOLOGY

medicine concerned with the uses and effects of drugs

PROMOTION

somebody going to higher rank or position

QUALIFIED

being trained to perform a job

RESEARCH

to investigate something

SPECIALISE

concentrate on and become expert in a particular subject

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RESOURCES FOR PUPILS

VIRTUE: CURIOSITY - SUBJECT: SCIENCE

CURIOSITY

RESILIENCE

AMBITION

FOCUS

CONFIDENCE



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Read the 'An Ambition to Cure' narrative and answer these questions.

1 Write down an example where Gertrude Elion showed curiosity.

2 During Elion's life, what other virtues did she display?

3 What do you think was the most important virtue and why?

4 Another great scientist called Albert Einstein once said, "I have no special talents. I am only passionately curious." What do you think he meant by this?

5 We all have the ability to be curious and discover something new. What would you like to discover and why?
