

TEACHING CHARACTER

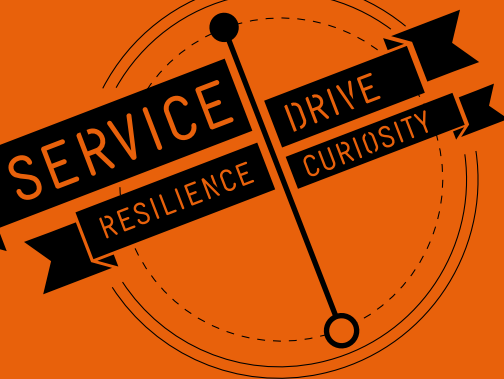
THROUGH THE PRIMARY CURRICULUM

A CROSS-CURRICULA APPROACH
TO TEACHING CHARACTER

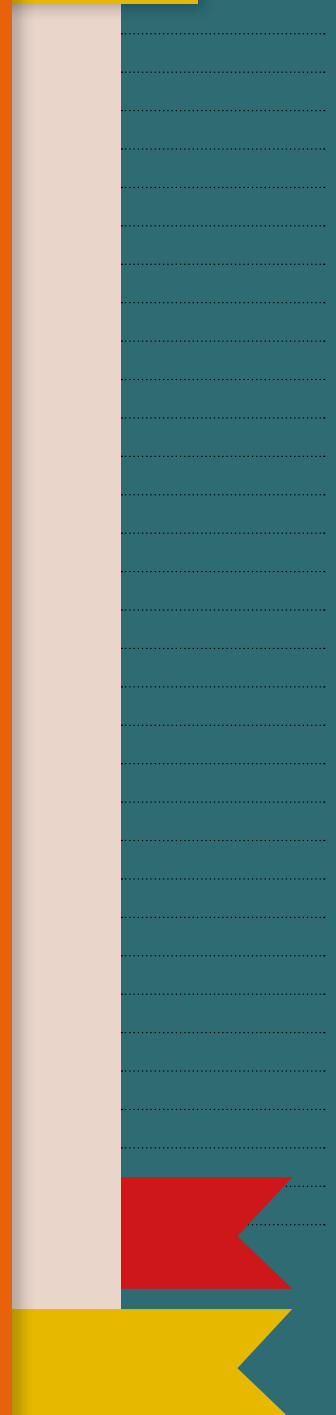
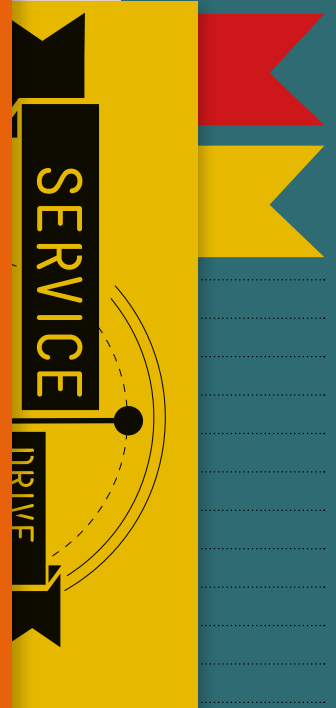
CODEBREAKER

MAIN NARRATIVE

VIRTUE: SERVICE – SUBJECT: COMPUTING



THE
JUBILEE CENTRE
FOR CHARACTER & VIRTUES



ALAN TURING

It was clear to many who knew him from an early age that Alan Turing was meant to achieve special things. Turing was born in 1912 and while still at school, he was able to solve complex problems without needing to be taught how to tackle them. Many of his teachers did not know what to do with Turing.

How could they teach a boy who did not need to be taught to find the right answers? Turing showed a great curiosity to learn new things. However, even though Turing showed a great skill for solving problems, he struggled in other subjects and failed several of his exams.

Turing went on to study at Cambridge University and Princeton in the USA. He had a strong interest in mathematics and computing. In the 1930s, computing was a brand new subject and Turing's ideas were **ground-breaking**. Many believe the concept of modern computing was based on Turing's ideas. Turing had a great future ahead of him. With his **innovative** ideas and **intellect**, he could pick any job he wanted to, and companies would pay large amounts of money for his skills and ideas.

In 1938, with lots of options available to him, Turing chose to work for the government at the Government Code and **Cypher** School – the UK's codebreakers. The world was on the brink of a second global war, and it was evident to Turing that his abilities could be used to help his country.

For many years, even before the war, the German government and military had been using a cypher machine to **encrypt** secret messages. This machine was known as Enigma. It looked like a typewriter but when a message was written it had a second line of letters, which then encrypted the message. Only other people with an Enigma machine could read it. Originally, scientists and mathematicians from Poland broke the Enigma code as the cypher was only changed once every few months. When World War II broke out, Germany began changing the cypher more than once a day. The Polish code no longer worked so they asked Britain for help.

A day after the war began, Turing reported to Bletchley Park to begin work on breaking the German Enigma machine. Secrecy surrounded the work being done at Bletchley Park. Turing worked tirelessly, day after day, to try and break the code. He knew that being able to read secret German messages would play a vital role in helping Britain to win the war. Turing's contribution at Bletchley Park was crucial. He made the first breakthroughs, allowing Britain's food and supplies to be shipped across the Atlantic. While working with a colleague called Gordon Welchman, Turing designed a machine to break Enigma. The new machine, called Bombe, could find the new Enigma cypher in 15 minutes.

The news that Britain had found a way to break the Enigma codes was kept top secret. The British government did not want to alert the Germans. Turing and his fellow codebreakers worked day and night to **decode** messages and



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"SOMETIMES IT IS
THE PEOPLE NO
ONE IMAGINES
ANYTHING OF WHO
DO THE THINGS
THAT NO ONE CAN
IMAGINE."

– ALAN TURING

send them to London, who then sent them on to the Armed Forces fighting abroad. At the beginning, many Commanders in the Armed Forces did not believe the decoded messages they were being sent. However, they soon began to take them seriously when a series of enormous successes, based on the codebreakers' information, occurred. British Prime Minister Winston Churchill knew the importance of the work being done at Bletchley Park, and of Alan Turing in particular. He said, 'Make sure they have all they want on extreme **priority** and report to me that this has happened.'

Turing continued to work at Bletchley Park throughout the war, writing several mathematical papers explaining codebreaking and helping mould the new generation of computer **programmers**. By 1942, Turing's machine had contributed to the great success of the North Africa Campaign and when a new German cypher machine was introduced, he and his fellow codebreakers managed to master and decode that as well. Shortly after the war Turing was awarded an Order of the British Empire (OBE) medal for services to his country during the war. Most of the detail of the work Turing did during the war was kept secret, until the official release of National Archive documents in 2012.

Turing's legacy is still evident even today. The computers we all use are based on the **pioneering** work Turing did. In 1999, Time Magazine named him one of the '100 most important people of the 20th century'. Turing dedicated his life to helping further his country's war effort, and the development of useful technology. There were many other jobs he could have chosen, but he understood the importance of working hard for his country and breaking the Enigma code.

GLOSSARY

CYPHER

A secret or disguised way of writing

DECODE

To make a coded message readable

ENCRYPT

To hide something by turning it into code

GROUND-BREAKING

a new creative idea

INTELLECT

An ability to think cleverly

INNOVATIVE

Introducing new ideas and creative thinking

PIONEERING

New ideas or methods

PRIORITY

Something that is more important than others

PROGRAMMERS

A person who writes computer programs or code



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