

# ALAN MATHISON TURING

## Gay British Mathematician and Computer Scientist (1912-1954)



During the Second World War, Alan Turing worked at Britain's code-breaking center where he was responsible for German naval cryptanalysis. Using the computational "Turing Machine" methodology he invented in 1936, Turing is credited with breaking the Nazi "Enigma Code" which had been used to coordinate the U-boat juggernaut that sank hundreds of ships in the North Atlantic ferrying vital supplies to the European theater of the war. With supply lines finally opened, the stage was set for the successful D-Day landing at Normandy, turning the war to the Allies favor, leading to the defeat of Adolf Hitler. In 1947 Turing began to muse publicly about the concept of "machine intelligence" and, in 1950, published *Computing Machinery and Intelligence* where he first set out to devise what would come to be known as the "Turing Test" for Artificial Intelligence. Brilliantly realized and elegantly simple, the Turing Test remains the benchmark in the quest to determine when a computer becomes "self-aware." In 1999, *Time Magazine* named Turing one of the 100 most influential scientists of the 20th century, stating "everyone who taps at a keyboard, opening a spreadsheet or a word-processing program, is working on an incarnation of a 'Turing Machine'." Turing lived in an era when homosexuality was still both illegal and officially considered a mental illness. In 1952, after being arrested for admitting to a sexual liaison with another man, he was convicted and sentenced to chemical castration. Two weeks before his 42nd birthday he bit into an apple laced with cyanide and ended his life. The tragedy of Turing's suicide is trumped only by the loss to humanity that his death dealt to the field of Computer Science. Given all that he accomplished in his brief life, it is impossible to overstate the potential magnitude of his unrealized contributions, had he lived another forty years. Acknowledging Turing's legacy, on September 10, 2009, British Prime Minister Gordon Brown issued an official apology for the government's treatment of Alan Turing after the war.

### Lesson Plan

#### Level 1: Contributions Approach

1. Activate prior experience: Before today, what do you know about Alan Turing?
2. Read the biographical information.
3. Group Discussion: In what ways did Alan Turing contribute to our knowledge and advocacy for justice by breaking the Nazi "Enigma Code" in World War II?
4. Extend knowledge: What were the obstacles facing Turing, who had an expertise in emerging machine-assisted computation during 1930-50s?

#### Level 2: Additive Approach

1. Website Investigation: Which of the following GLBT inductees contributed to the study of mathematics and how does this connect to your study in your schools?
2. View the following websites to build your knowledge of Turing (<http://www.turing.org.uk/turing/>)
3. Develop a location where the accomplishments of Alan Turing would be incorporated in your curriculum study and your understanding of computers and social justice.

#### Level 3: Transformational Approach

1. Describe how the world would have been affected if Turing had been arrested for being homosexual before he broke the Nazi Enigma Code or before he advanced the emerging theory of computer science.
2. In viewing the A.M. Turing Awards at <http://amturing.acm.org/> describe how the accomplishments of these recipients transformed the world.
3. Demonstrate your findings as to which has changed society and the world.

#### Level 4: Social Action Approach

1. Based upon Turing's life contributions, how can you advocate for a political issue regarding social justice?
2. Develop your approach to crack of the code of ignorance and provide an action plan for change.
3. Incorporate your findings into a positive model for GLBT students today.