

# [Changes to formal education methods over time](https://assignbuster.com/changes-to-formal-education-methods-over-time/)

Examine how subjects and methods in formal education in Europe have changed in at least two or three periods, from ancient times (Greece and Rome) to our own time. Address how one or more of these themes in our course affected education: the Scientific Revolution; the Enlightenment; the Industrial Revolution of the 18th-19thcenturies and / or the computer revolution.

The subjects and methods of education have changed drastically over the past 3000 years. We see this as the Ancient Greek knowledge of science, mathematics and philosophy was lost during the Middle Ages, where it was replaced with a heavy Christian influence in the answering of questions. The Scientific Revolution, beginning in the 16th century, challenged the ideas of Christendom and the innate belief of the word of the Church. This led to many geographic, scientific and technological discoveries and changed the subjects of traditional education. It eventually changed the dynamic of the educated population from wealthy nobles and royalty to a much more educated lower and middle class.

The Ancient Greeks believed that the world could be explained without turning to the supernatural for explanation. This idea began c. 600 BCE with Thales of Miletus (Violatti, sec. 2). There were also biological ideas of evolution and survival of the fittest, as well as advanced physics and mathematics such as the Pythagorean Theorem. There was no clear distinction between scientific and non-scientific ideas so all disciplines were taught (Violatti, sec. 2, sec. 3) (Shuttleworth, sec. 1) and education was well-rounded for the knowledge at the time, however this was an elitist enterprise and only males were educated (Kitson, sec 3).

In comparison, the Middle Ages had a very different approach to education and the way in which people were educated. Whereas the Ancient Greek scholars were taught by older, established scholars, the Europeans of the Middle Ages were taught by priests and monks. There was a reversal in the world view regarding the role of religion and the emperors of the Holy Roman Empire were trying to achieve Christendom (Diggelmann, sec. 2). This unity of Europe by the Christian faith resulted in the loss of much of the ancient Greek knowledge, and the Church had an increasing influence over the lives of medieval Europeans (Diggelmann, sec. 6).

Often, only those involved in the church were literate, and they spent much of their time replicating Latin biblical manuscripts. Those in the highest positions of power – the priests – were thought to have a direct link to God as they were able to read the stories of the Bible. As time progressed, monasteries were established and increasing numbers of religious scholars would inhabit these residences to become literate. These scholars soon began to replicate additional secular works and wealthy nobles could afford a basic education. This culminated in the Holy Roman Emperor Charlemagne wanting to be educated himself, and wanting a more literate society (Diggelmann, sec. 2, sec. 2). However, education was still limited to nobles and the majority of the population was illiterate.

The Scientific Revolution, of the late 16th-17th centuries largely changed the way the world, and Europe in particular, behaved towards knowledge and power. What is typically seen as the beginning of the Scientific Revolution is Nicholas Copernicus presenting his heliocentric view of the universe in his book “ On the Revolutions of the Celestial Spheres” (1543). (Kitson, sec. 7). This was a view of the universe where the planets revolved around the sun, rather than the previous geocentric view of the universe revolving around the earth. This was seen as a challenge to religion as it belittled the importance of man in God’s scheme of things. ‘ If man was just another speck in the universe, how could he have been the centre of God’s creation? Was man important to God at all?’ were questions that arose with this new proposition. Because it so fundamentally challenged the beliefs of the time, it was considered “ a slap in the face” and the church refused to accept it, and in fact banned the book in 1616. The idea of heliocentrism seemed too radical (Kitson, sec. 11) for many and it was not widely accepted at all.

However, Galileo Galilei was able to observe the movement of the moon, as well as the phases of Venus and four moons of Jupiter through the telescope he built. His consistent, documented observations were an early example of following a scientific method and allowed him to confirm Copernicus’s heliocentric theory (Kitson, sec. 16). Galileo was a vocal supporter of heliocentrism and despite some early leniency, the Church felt compelled to silence him as his arguments went against the teachings of the Bible. He was forced to renounce his support for the Copernican theory in 1633 and was trialled before the Roman Inquisition (Kitson, sec. 17). He tried to explain that science and religion were not polar opposites, even if the church saw them in this way. This idea remains topical today.

The scientific revolution led to approaching things with rational logic and reason, and testing ideas through repeated experimentation rather than unquestionably believing the knowledge that had been passed down through the Church. Many well known scientists were working during the Scientific Revolution, including Isaac Newton, Johannes Kepler and Rene Descartes. Descartes is famous for the saying ‘ Cognito ergo sum’, “ I think therefore I am” (Kitson, sec. 27). This further contributes towards the feeling of the time when thinking for oneself became progressively normalised and questioning the ideas of authority became increasingly common.

This period is also correlated with an increase in general literacy and knowledge of the population, due to Johannes Gutenberg’s c. 1450 invention of the printing press (Kitson, sec. 5). This allowed for rapid, widespread distribution of knowledge and ideas in vernacular languages rather than Latin, thus increasing the number of people with access to these ideas and becoming literate. Education was no longer something attained by the wealthiest nobles and one did not have to isolate themselves in a monastery or early university in order to have somewhat of an education.

While science is seen as vital to keeping society working today, it was not always so. In fact, as recently as the 20th century people have been arguing it’s significance and role in society. This is attributed to science being seen as incomprehensible and having unpredictable consequences in both the moral and practical sense, especially following the Second World War and utilisation of nuclear power and atomic bombs (Rietbergen, p506).

There was tension between the areas of humanities and science, and these were seen as two distinct cultures following the Snow-Leavis debate. This contention was not actually a debate, rather a lecture given by F. R. Leavis (The Richmond Lecture) in rebuttal to the ideas C. P. Snow presented in the Rede Lecture two years prior. C. P. Snow was a science administrator and nuclear physicist while F. R. Leavis an influential literary critic (Rietbergen, p506). Snow voiced his concern about the ever-growing gap between the two cultures. His core argument was that the best hope for meeting mankind’s fundamental needs was the application of science and technology, and the consequent prosperity (Collini, p4).  For this he was criticised for “ implying that only a technologically educated and powerful, and, hence, economically strong society would be able to compete with other ideologies” such as the communist threat to Western Europe at the time (Rietbergen, p506). Snow was accused of playing on public fears and using science for economic development. Leavis defended the humanities and arts as elements of education and said they deserved the same amount of economic support (Rietbergen, p506).

Snow also credited the difference in scientific and literary cultures being partly due to different responses to the industrial revolution. It was his opinion that while Luddites rally and complain, “ scientists get on with improving the business of the material conditions of life.” (Collini, p17). Snow viewed the Industrial Revolution in a positive light, saying “ For, with a single unamity, in any country where they have had the chance, the poor have walked off the land and into the factories as fast as the factories could take them.” (Collini, p20). He saw this as a progressive step, yet seemed to ignore all the hardship that followed the factories opening – the squalid conditions in the urban slums, the pitiful wages, and the child labour to name a few. Leavis emphasises this when he talks about the ‘ lived quality’ (Collini, p20).

Some of Snow’s ideas are still relevant today, in that there are few people of scientific knowledge in the places of power where they have the potential to make a real difference. Much of the public is not well informed about science; partly due to their lack of scientific education but also due to their self-imposed lack of knowledge that comes about when science is seen as incomprehensible or too difficult to learn (Rietbergen p507).

The idea of a culture split between science and humanities is also still present, although weaker than during the heat of the Snow-Leavis debate. It is largely evident in schools and universities as there is a distinction between students of the arts and humanities and of science. Science students are often seen as feeling superior to humanities students because they will have a job after their degree and will be actively able to change the world. There is an attitude that ‘ humanities/arts degrees aren’t real degrees’; that they are ‘ useless degrees’. While science is fundamental to how we understand the world and how we will continue to live in the environment we have created, it is important not to forget about the humanities. This is what Leavis was trying to get across from his point of view, and is something that needs to be addressed in education today.

C. P. Snow wrote a reply to Leavis’s lecture, called The Two Cultures: A Second Look. In this, he discusses the false impressions scientists and humanists have about how the other group contributes to society (Stinner, sec. 3). The impact of this is increasing polarisation of the two groups, both from within professions and from the public eye, culminating in the culture discrepancy that has become ingrained in our society. To combat this, Snow called for a reconfiguration of education to increase knowledge of fundamental elements of both cultures, though more specifically of science. It has been said that this is his call for universal scientific literacy (Stinner, sec. 3).

Today’s education system is almost the opposite of education in the middle ages, where there was no science and humanitarian subjects were the only ones taught. It is also different to the Ancient Greek educational philosophy as they taught all subjects with no distinction between scientific and non-scientific ideas (Violatti, sec. 3). Furthermore, as time progressed, more and more people were able to access education and today the world the most educated it has ever been (Roser and Ortiz-Ospina, sec. 3). Education has been a priority since the mid-19th century when the English Parliament introduced the1870 Elementary Education Act(Gillard, sec. 1). This movement relied heavily on public funding and continues to do so today (Roser and Ortiz-Ospina, sec. 2). It is the government that determines how much money is spent on education, as well as the curriculum that is taught. This has a wide range of subjects, although there is, to an extent, a level of universal scientific literacy. An example of this is science being a compulsory subject in New Zealand schools until year 10, with most secondary schools enforcing this until at least year 11. The freedom of the NCEA system still requires a universal level of numeracy and literacy, and this can be seen to support Stinner’s acknowledgement (sec. 6).

There has been a drastic change in the methods of and subjects within education over the past 3000 years, with a significant difference occurring in the Middle Ages c. 500 – 1500 CE. The Ancient Greek education system and corresponding knowledge was lost and replaced by a highly religious one. The Scientific Revolution of the 16th-17th centuries encouraged the population to challenge the ideas of the authority of the Church and to think for themselves. This led to widespread literacy and knowledge for the first time and many significant inventions and discoveries followed. The ideas of the Scientific Revolution paved the way for the modern education system and the importance of science in education. Despite debate over the role and importance of science, it remains a major focus for Western education, although we must acknowledge that the humanities are just as important for cultural advancement.

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