



# CENTRAL ASIAN JOURNAL OF LITERATURE, PHILOSOPHY AND CULTURE

eISSN: 2660-6828 | Volume: 04 Issue: 04 Apr-2023  
<https://cajlp.centralasianstudies.org>

## The Trio Great Ancient Athenians and Instructional Design

*Ibiye Omieibi-Davids*

*Department of Curriculum Studies and Instructional Design,  
Faculty of Education, Ignatius Ajuru University of Education,  
Port Harcourt, Rivers State, Nigeria.*

*Email: [ibimieye@yahoo.co.uk](mailto:ibimieye@yahoo.co.uk)*

---

*Received 4<sup>th</sup> Feb 2023, Accepted 5<sup>th</sup> March 2023, Online 29<sup>th</sup> Apr 2023*

---

### ANNOTATION

The contributions of the trio of Socrates, Plato and Aristotle to modern civilisation and education have been discussed and studied for centuries. This is quite prominently so in the history, philosophy and psychology of education. Their impact on instructional design has been vastly silent. This is the area this work has focused on. Instructional design is the practice of arranging content and media to facilitate learning. It involves determining the current state of the learners' understanding, defining goals of instruction and creating a media-based intervention to assist instruction based on some pedagogically tested theories of learning. This work looked at the lives of these three great men, their philosophy and contribution to education generally before focusing on their contributions to instructional design. Their works form the psychological base for instructional design, initiated the process of instructional design, use of instructional models and ergonomics.

**KEYWORDS:** Socrates, Plato, Aristotle, Instructional Design.

### Introduction

The roots of modern education are Latin. This is supported by the fact that the two words from which the word is coined are Latin. In spite of this Latin root, most of the names most commonly associated with the early history of education are not Latin but Greek. Three of the Greek names most associated with this concept are Socrates, Plato and Aristotle (Osokoya, 1989; Robert-Okah, 2003; Manilla, 2006). The contributions of these three Greeks in education and western culture have endeared them with the title 'The Trio Great Ancient Athenians'. This is so even though one of them is not really Athenian. They were given the title because they carried out most of their work as residents of Athens. This paper looks at the contributions of these Greeks to Instructional Design. In doing this it looks at their lives, philosophy and contribution to education generally and instructional design in particular.

### Socrates 470-399 BC

Socrates was an Athenian philosopher who was born in 470 BC and died in 399 BC, at the age of 71 years. His father was a sculptor who was the friend of the family of Aristides the Just, the founder of Delian League, from which the empire arose. He had his education under the Sophists, who were foreign professional teachers that charged fees for preparing young Athenians for public life by teaching them Grammar, Rhetorics and Logic (Osokoya, 1989). Socrates was stimulated by the education of the Sophist but was dissatisfied and

frowned at the unquestioning way people accepted everything they taught (Robert-Okah, 2003). To make people question information they were given, Socrates set out to prove that the Sophists were not as wise as they were thought to be, by asking them questions about the doctrines they taught.

The use of questions became Socrates trademark. He used it as a technique for teaching. He used it to draw out ideas from his respondents, leading to general ideas and concepts that were useful in solving problems. He believed that everyone had innate knowledge which could be properly and simply pulled out with well-directed questions. He believed that general concepts could be taught to children who could use them to solve new problems, through well-designed, leading and simple questions (Robert-Okah, 2003).

Socrates' questioning method is known as the Razorsharp Dialectical Method. In using this method to solve a problem the problem is broken down into a series of questions. The respondent is led through a series of questions in order to promote critical thinking. It is made up of the following three stages (Osokoya, 1989):

- a. Definition – This stage involves asking people to define their purpose. If someone was a teacher, he would ask the person the meaning of teaching.
- b. Refutation – This stage involves giving a counter to the definition that has been given. The respondent is required to provide a definition to counter what he has already given.
- c. Synthesis – This stage involves gathering the loose ends of the argument to form a new and acceptable definition.

Socrates was considered as the founding father of western philosophy and one of the most enigmatic figures of ancient history. He was revered by many in his time in Athens – the youth, the powerful and the wealthy but he had many detractors. The man who was once declared as the wisest man in Athens by the Oracle of Delphi, was sentenced to death by magistrates for irreverence towards the gods, impiety and corrupting the city's youth with his concept of individualism which seemed too revolutionary in the politically fraught times of 399 BC (Rattini, 2019).

### **Contributions to Modern Education**

- i. The Socratic Razorsharp Dialectical method, commonly known as the Socratic method, which is still used in modern times to promote critical thinking. His method breaking down the problem into a series of questions in order to find answers is strongly used in the scientific method in which stating research questions and hypothesis is the first stage.
- ii. The questioning approach is still hailed in education as an effective teaching technique.
- iii. Socrates emphasised teaching concepts to children in a way that they could use them to solve new problems. He could be said to be the architect of the problem-solving technique. This is because he never gave his students solutions of problems but led them by a series of questions to discover answers to problems themselves.
- iv. The idea that the teacher did not have all knowledge came from Socrates. Unlike the Sophists who saw themselves as wise men who knew it all and collected money for their services, Socrates never admitted to having any knowledge. In this way he refuted the pronouncement of the oracle of Delphi that he was the wisest man in Athens.
- v. Socrates advocated education for everyone. Thus, the concept of universal education could be attributed to him.

### **Plato 428-347**

Plato was born in 428 BC and died in 347BC. He was born three years after the Peloponnesian war to parents who were both of Greek Aristocratic lineage and very wealthy homes. His parents, on both sides, were

said to be among the most distinguished in Athens as his father, Ariston, is said to have descended from the god, Poseidon, through the last king of Athens. His mother, Perictone, is said to be related to the early Greek lawmaker (Encyclopaedia Britannica Deluxe, 2002). Plato was, however, brought up after the death of his father by his step father, Prilampes, a prominent supporter of Pericles, the popular statesman and military commander who later became the leader of the democratic party of Athens (Osokoya, 1989).

Plato received the normal education of a Greek boy in spite of his aristocratic background. He was a student of Socrates who he knew from boyhood and saw as a friend rather than a teacher because his maternal uncles, Critias and Charmides, who were leaders among the extremists of the oligarchic terror of 404-403 BC were friends of Socrates. Socrates had such a profound influence of Plato that it is sometimes difficult to say if Plato's writings reflected his own opinions or those of Socrates. This is particularly so as Socrates never wrote an article or book on his philosophy but the much that is known of him is through the works of Plato and others who were either his students or contemporaries (Encyclopaedia Britannica Deluxe, 2002; Osokoya, 1989).

Born into a distinguished family and surrounded by equally formidable and popular Greek politicians, Plato probably had a political ambition, like most young men his class. He was brought in contact, early in life, with the democratic ideas of Pericles, the popular statesman. He was also brought in contact with the extremists' ideas of the oligarchs through his uncles, Critias and Charmides, who were among the leaders. He was urged to enter public life under its auspice by a conservative faction of the oligarchs but he wisely held back. This was probably one of the best decisions Plato made as a young man because his uncle Critias soon became one of the most unscrupulous of the Thirty Tyrants who briefly ruled Athens after the collapse of democracy (Osokoya, 1989; Encyclopaedia Britannica Deluxe, 2002).

Whatever political ambitions Plato might have had were dispelled after the execution of Socrates in 399 BC. This and other political activities in Athens before this time convinced him that there was no place for men of conscience in active politics. He had seen the oligarchic terror of 404-403 BC which had two of his uncles as leaders. He saw the tyranny they unleashed on Athens. He experienced the fierce civil strife between the oligarchs and democrats in 404-403 BC. He also experienced the shattering of the Athenian empire and finally the execution of Socrates at the hand of the democrats in 399 BC. This succeeded in finally repelling him from active politics.

### **Plato and Education**

Plato was neither in support of the democrats or oligarchs, probably as a result of his experiences with both parties. He favoured mixed constitution which had elements of democratic freedom and autocratic authoritarianism. He wanted a system for securing both genuine popular representation and a proper attention to personal qualification. For Plato, only the best people were qualified to rule the state. To get the best people to run the state effectively, Plato postulated the division of the state into three classes of people – the Head, the Heart and Bellies (Encyclopaedia Britannica Deluxe, 2002; Osokoya, 1989; Robert-Okah, 2003; Okujagu, 2003).

The Head, comprising the most intelligent people in society, were to be educated to become the ruling aristocracy or the philosopher kings. These people were to be educated in the liberal Arts, which he believed sharpened the reasoning ability. The Heart, which was the second class of people comprise people who were courageous, disciplined, had self-restraint, loyalty and a strong spirit. The people in this class were to be trained in the army as soldiers and warriors to protect and defend the state against aggression or disturbance. The education for this class of people was to be on character and body development. The Bellies are the Appetitive or Economic class. This group is made up of appetitive workers and artisans. This includes farmers, labourers and businessmen. This group was made up of majority of the people in the society. They were people dominated

by the desire to satisfy their physical needs and pleasure. The education of this class of people was to emphasise physical and manual training so as to produce workers that would provide various services to the state (Osokoya, 1989).

Education had an important place in Plato's scheme of things. He wanted education for all citizens of the Athenian society. He emphasised that education was the most important of all the functions of government. He said having the government in charge of education was to ensure that it was made available to everyone, not just the rich (Encyclopaedia Britannica Deluxe, 2002).

Although Plato placed emphasis on education, he did not expect every member of the society to have the same education. Education was geared towards a selective process which would determine the role of each of the members of the society. All children were required to start at the same level. As they progressed, they were required to continue their studies only as long as they received real benefit for the instruction. The system was required to gradually sieve the pupils academically until only the most able remained. Education, he said, must fit in with the most practical duties of citizenship (Osokoya).

Plato was the first person in recorded history to have stipulated a formal educational system with its curriculum. He is said to be the first educationist that gave reasons for including various subjects for various levels of education. He advocated dividing education onto three levels. These levels, which are approximate to the three levels of education operated in most countries of the world as primary, post-primary and tertiary. The various levels of Plato's education are as follows:

**Level 1:** This level of education has been reported by various authors to start between 3 and 6 years was expected to start at a time when the child forms his or her first impressions. The essence of this early start is to ensure that the child can be manipulated in the direction that is required of him (Osokoya, 1989; Robert-Okah, 2003; Okujagu, 2005; Manilla, 2006). Education at this level is geared towards developing the character of the child; expose him to basic areas of writing, arithmetic and reading; and developing good health and fitness. The character of the children was to be developed by the teaching of Narratives and enabling the children learn by imitation. Narratives taught the children were to be of two kinds – True and Fictitious. True narratives are stories of things that actually happen while fictitious narratives are stories and fables that are made up by the teacher and society, such as the popular Greek legends and myths. Plato advocates that fictitious narratives be taught to children first because they are better enjoyed and suited to their minds and dispositions than true stories. He, however, advises on careful choice in the kind of stories and fables taught as children of this age regard everything they hear as gospel truth and whatever goes into their mind becomes almost unchangeable in later life (Okujagu, 2005).

Plato goes further, according to Okujagu (2005) to state that stories told to children should place high premium on truth, virtue, goodness and fair dealings. Plato places a particular emphasis on stories told about God to children. He says they should show God as a living, merciful and peaceful phenomenon that created all things that are good, not portray him as a fearful phenomenon who is a destroyer and wicked judge. Also, stories told children should help them to honour God, their parents, as well as value and respect themselves and others around them. The other technique of developing character advocated by Plato is imitation. He is of the view that whatever a child imitates may become a part of his habit and thereby affect his mind and nature. He advised that only actions, behaviour and speeches of good people should be encouraged in the learner.

Good health and body fitness was emphasised in Plato's education. This is to be acquired through physical exercise and gymnastics. The techniques of doing this are dancing, hunting, field exercises and games. Generally, Plato advocated that the play way method was the most suitable method of teaching children as it ensures active participation and avoids compulsion and learning under threat. He says what children learn under

compulsion and threat is temporary but what is learnt through play is permanent. In carrying out the play way method he advocates an environment in which learners can behave naturally through play and active participation. Providing this setting enables the teacher to be able to observe the true nature of the children and their level of intelligence to determine those that are fit for the various classes of the society (Okujagu, 2005).

**Level 2:** This is the second level of education advocated by Plato and starts at the age of 12 and ends at 16 years. At this level the children are required to be exposed to Advanced Mathematics, Geometry, Science, Literary works and Music. Plato advocates that literary works should be of works of poets whose poems are not immoral or irreligious. He placed emphasis on the teaching of music but insists that only songs that could make children brave and courageous should be taught while avoiding all forms of music that suggest merriment. At the age of 16, which ends the second level of Plato's educational system, children were required to participate in compulsory military training for two years (Robert-Okah, 2003; Okujagu, 2005).

**Level 3:** This level of education starts at the age of 18. The students were required to various things according to what class of society they fall into. The academically able ones who were potential philosopher kings were to do more Mathematics, Arithmetic processes, Plane and solid geometry, Astronomy, Philosophy and Dialectics. Practical military training begins at this stage for those that were less academically able and were potential warriors. The least academically able students were required to acquire various skills that would be needed by the society (Robert-Okah, 2003).

Plato's education system had 3 levels but proposed three stages of education. They are primary, military training and higher education. Primary education, which every child had to undergo, took place until the age of 16. Military training took place from 16 to 18 years, while higher education, where students learnt according to the class they fell into, took place from the age of 18 (Robert-Okah, 2003; Okujagu, 2005). It was a comprehensive educational programme that was meant to cater for the needs of the society and the disposition of every individual in the society.

Plato was of the strong belief that growth is a result of heredity (nature) and the environment (nurture), and so education should be adapted to growth (Robert-Okah, 2003). This means that the education provided for children should be adapted to their nature which involves characteristics, dispositions, abilities and needs, and also provide a stimulating environment which would help in the building of morals and giving them the opportunity to develop to the utmost in whatever area of life that they eventually find themselves. In doing this, he proposed a comprehensive education.

Plato advocated education for every member of the society. This included men and women. For him women were to have the same educational opportunities as their male counterparts and should be able to perform the same services to the state (Osokoya, 1989). To ensure that every member of the society is educated according to his ability, Plato advocated that the state took complete control of the education of the citizens. This is to ensure that not only wealthy members of the state were able to get education for their children as was the case at the time of the Sophists who were privately paid foreign professional teachers. This is to ensure that the individual had loyalty and obedience to the state. He saw the state as the highest ethical community which alone made the good life of the individual possible.

Plato is credited with establishing the first university in the world. After the death of Socrates in 399 BC, Plato and some other close associates of Socrates, who feared that they could be targeted, left the anarchy that Athens had become and travelled to different cities in Greece, Egypt and Italy. He returned in 387 BC and established his school, the Academy. This school was established as an institute for the pursuit of philosophical and scientific research. Plato spent the rest of his life teaching, organising and presiding over its affairs. He



developed the Academy to be the leading centre of intellectualism of its time (Osokoya, 1989; Robert-Okah, 2003; Manilla, 2006; Encyclopaedia Britannica Deluxe, 2002).

### Aristotle 384-322 BC

Aristotle is tagged along with Socrates and Plato as the Three Great Trio Ancient Athenians not because he was Athenian but because he carried out most of the things that made him famous in the city-state of Athens. Aristotle was born in Stagira, a small Macedonian township in northern Greece, east of modern Thessaloniki ([www.britannica.com](http://www.britannica.com)). He was the heir of a scientific tradition that had lasted for over 200. His father, Nicomachus, was the court physician of Amyntas the Third, the King of Macedonia, who was the grandfather of Alexander the Great (Manilla, 2006). They came from a family in which medicine was their traditional occupation. Medicine was a traditional occupation of certain families in Greece, including that of Aristotle. It is assumed that he had been home taught in the fundamentals of medicine, which formed the background of his interest in the biological sciences that brought about one of his most important contributions to knowledge – the use of observation in learning (Encyclopaedia Britannica Deluxe, 2002).

Aristotle is known to have lived in Stagira, and at Pella, the capital of Macedonia, after the death of his father when he was 10 years, until 367 BC when he travelled to Athens at the age of 18 to complete his education at Plato's Academy. At the Academy Aristotle is said to have involved himself in its many activities, and is particularly attributed with writing and speaking widely for the Academy in its many battles against rival schools (Osokoya, 1989; Manilla, 2006). Aristotle remained at the Academy for 20 long years, only leaving after the death of Plato in 347 BC. This according to Encyclopaedia Britannica Deluxe (2002) was probably because Plato's nephew, Speusippus, was named the head of the Academy when he had expected to be named; and also because there was a lot of anti-Macedonian feelings after the defeat of Athens in the war against Macedonia a year earlier (O'Connor and Robertson, 1995; Lords, 1984).

Leaving the Academy favoured Aristotle, because in 343 BC he attained fame when he was invited to be the tutor of the future King, the thirteen-year-old Alexander. He did this job until Alexander became King of Macedonia twelve years later, after the death of his father Philip. However, Aristotle returned to Athens and founded his school, The Lyceum, which he named after a temple in the vicinity that was said to be haunted by Socrates (Shields, 2016; Encyclopaedia Britannica Deluxe, 2002). Aristotle established the Lyceum in 335 BC and organised it as a centre for speculation and research in every field of inquiry. He stayed in Athens teaching and coordinating the works of a number of scholars for the next twelve years; he gave lectures on a wide range of scientific and philosophical questions. The curriculum of the Lyceum was wider and covered a broader spectrum than Plato's Academy. It covered mathematics, physics, biology, history, ethics, logic, meteorology, geology, psychology, economics, politics and rhetorics. The chief difference between the two schools was that while scientific interest of Plato's Academy was mathematics, the main interest of Aristotle's Lyceum was biology and history (O'Connor and Robertson, 1995; Shields, 2016).

Aristotle's stay at his Lyceum came to an abrupt end in 323 BC. He was forced to leave Athens for fear of danger to his life because of the vigorous anti-Macedonian agitations that broke out in Athens. To worsen this danger, he was a long-standing friend of Antipar, a Macedonian who became the regent of Athens. He left Athens and retired to his mother's estate in Chalcis on the Island of Euboea. His reason for withdrawing from Athens is said to have been to save the Athenians from sinning twice against philosophy. He did not want to be a victim of Athenian politics that is targeted against philosophers as Socrates was believed to have been.

Unfortunately, however, he died in Chalcis a year after his arrival in 322 BC from stomach illness at the age of 63 (Filonik, 2013; O'Connor and Robertson, 1995; Encyclopaedia Britannica Deluxe, 2002).

Aristotle was a great man, a pupil of Plato, a vast and well-read Greek (Robert-Okah, 2003). His love for books and reading is said to have made Plato give him the name 'The Reader'. He is said to have had a vast collection of books (Encyclopaedia Britannica Deluxe, 2002). He is seen as a realist, a practical man, a hard intellectual, a master of many sciences and the father of Biology (Osokoya, 1989). He was revered by people of a vast array of backgrounds. Medieval muslim scholars were known to have referred to him as 'The First Teacher' while Christians like Thomas Aquinas called him 'The Philosopher'. To others like the poet, Dante, he was 'the master of those who know' (Shields, 2012). Outside his work Aristotle is known to have great love for his wife, Pythias, and their daughter who he named after his mother. He was said to have loved his wife so much that he wrote in his will that he wanted her to be buried wherever he was buried. He also made ample and considerable provision for her in his will (Russell, 1971; Encyclopaedia Britannica Deluxe, 2002).

### Philosophy of Aristotle

Aristotle did not hold the view of his teacher, Plato, that the state should be ruled by philosophers. For him there should be a clear distinction between the functions of a philosopher and those of a king. He believes that if a King is a philosopher he would fill his reign with words, but if he has other people doing the thinking and talking for him as would be the case if he has philosophers as advisers, then he would be able to take their advice and fill his reign with good deed. He, however, believed in the rule of an enlightened oligarchy (Encyclopaedia Britannica Deluxe, 2002).

Aristotle did not want a philosopher to be a King but was in support of having philosophers around. He believes the highest purpose of the city-state is to secure conditions in which those who are capable of it can live the philosophical life. This, he says was only possible with those Greeks whose superiority qualified them to employ non-Greeks as serfs or slaves to do all menial labour. In stating this he was saying that anyone who wanted to be a philosopher and so did not want to do any menial jobs should have people who would do those jobs for him, and the people to do the job should not be Greeks as not to burden their fellow Greeks.

Aristotle had strong views of marriage and what married life should entail. He prescribed the ideal age to get married as 37 and 18 respectively for men and women. He also had strong opinions about fidelity in marriage. He wrote in his 'Politics' that it was disgraceful for any man or woman to be found in any way unfaithful once they were married and call each other husband and wife. These opinions are probably as a result of the great love he was known to have had for his life. Because of his strong belief about marriage he provided handsomely for his wife in his will (Encyclopaedia Britannica Deluxe, 2002).

Aristotle was a very proud Greek. He had strong conviction that Greeks were superior to other people. Because of this conviction he did not want any interracial marriage with those he referred to as barbarians and was not happy that Alexander the Great, whom he advised against such physical intermixture, had taken a wife among the Persian nobility and forced his high-ranking officials to do the same. For Aristotle, all non-Greeks, or Barbarians as he called them, were to be dominated and held in servility (Encyclopaedia Britannica Deluxe, 2002). He is famously said to be ethnocentric and have so much hate for non-Greeks that he counselled Alexander to be a leader to the Greeks and a despot to the barbarians; to look after the former as after friends and relatives and to deal with the latter as with beast and plants (Green, 1991).

Aristotle described man as a rational animal who possess a language or speech or word. He said the purpose of language is to express the feelings and experiences of the soul. He sees words as signs or symbols of thought and other mental phenomenon (Encyclopaedia Britannica Deluxe, 2002). Thus, for Aristotle, having a good knowledge of one's language was very important because it showed him to be someone of a high

intellectual capacity. He said the difference between man and animals is the quality of reason and language, and he believed the essence of the reasoning ability which separates man from other animals is for him to discover knowledge that would help him solve general problems (Encyclopaedia Britannica Deluxe, 2002).

Aristotle did not agree with Plato's view that some people should be rulers, others soldiers and others workers. He believed just as it was the duty of the state to provide everyone to attain whatever he desired to attain without censorship from the state, the citizens owed the state citizenship and service in the armed forces. These he said were the exclusive rights and duties of all Greeks, and no one was exempted (Manilla, 2005; Encyclopaedia Britannica Deluxe, 2002).

### **Aristotle and Education**

Aristotle had a lot of beliefs about education and a lot of them are still being applied to modern day society. Some of these are the following:

1. **Education was the responsibility of the State.** Aristotle believed education was the responsibility of the state (Manilla, 2006; Robert-Okah, 2003; Osokoya, 1989). He said the purpose of the city-state is to secure conditions in which those that are capable of it can live the philosophical life. He said every citizen of the state should be provided with education to whatever level he desires, and to attain the height of intellectual development. Aristotle also says he wants the state to control education because he wants education to be a means of maintaining the state's corporate existence and building a community life that is united and has high moral standard (Osokoya, 1989; Manilla, 2006).

2. **Freedom in Education** (Manilla, 2006). Freedom of education means individuals should be allowed to follow whatever course of education is desired and whatever direction of life they desire without indoctrination, brainwash or censorship from the government. He wants a situation where an individual can develop his talent to the fullest capacity without impediment or control as to what course he follows, what book he reads or what opinion he holds. He wants the government to give citizens opportunity and provide conditions that enable them excel in whatever field he desires (Osokoya, 1989). This is contrary to the belief of his teacher, Plato, who said people should be provided with different types of education according to the class they fall into (Robert-Okah, 2003).

3. **Stipulate Aims of Education.** Aristotle was one of the first people to stipulate aims for education. He advocated that education should be aimed at the pursuance of happiness, promote goodness, and promote reasoning ability and inculcate the wisdom of practical living, good morals and intellectual development (Osokoya, 1989). He insists on giving a proper definition of whatever issue or subject is at hand in order to solve problems.

4. **Emphasis on Liberal Arts and Sciences.** While Aristotle agreed with Plato on various stages and classes of education, he does not agree with making anyone study vocational subjects. This he says is because it changes the shape of the body, destroys its harmonious development and does not give people involved in it time to contribute to citizenship and intellectual development, which he says is the source of goodness and happiness (Manilla, 2006). In this light he wants the emphasis of the school system to be the study of liberal arts and the sciences (Robert-Okah, 2003).

5. **Emphasised Trained Teachers** (Osokoya, 1989). He is the only one among the great three that made a statement about the qualification of teachers in the school system. He emphasised that teachers be trained. He believes that this is necessary in order to develop the kind of teachers needed to bring about intellectual development in the citizenry (Robert-Okah, 2003).



6. **Moulding the Child.** Aristotle believed that the mind of the child is like raw clay that was ready to be moulded. Thus, whatever the child's behaviour and attitude is as he grows up is determined by the education he is given. To ensure he grows into a full-grown happy adult, Aristotle insists that the child be trained to acquire good habits even before he has reason. In doing this, he advocates starting education at an early age. This is to control the desires of the child and direct them towards a good course (Osokoya, 1989).

7. **Inductive Reasoning.** The insistence on the use of Inductive reasoning, which is the base of scientific reasoning, is one of Aristotle's greatest contributions to education (Manilla, 2006; Osokoya, 1989; Encyclopaedia Britannica Deluxe, 2002). In using this method he followed the following steps:

- a. Define the problem.
- b. Assess the views of his predecessors.
- c. Formulate his preliminary opinion.
- d. Consider whether there is a need to modify it in the light of difficulties and objections.
- e. Rehearses the argument from different points of view.
- f. Search for the most adequate solution or resolution of the problem.

8. **Observation and Experimentation.** The idea of learning through observation and experimentation is a contribution of Aristotle. This according to the Encyclopaedia Britannica Deluxe (2002) is probably as a result of his interest in Biology, which made him study plants and animals for many years, noting their features and characteristics. This emphasis on observation made him propose the use of deductive reasoning as a source of knowledge. Thus, for him learning should proceed from self-evident principles that have been observed first hand to discover general truths. The idea of learning from the specific to general, which is a general insistence of educators in modern society can be traced to Aristotle (Manilla, 2006; Osokoya, 1989).

### Instructional Design

Instruction is communication deliberately planned to broaden the knowledge of the learner. It is a human undertaking whose purpose is to help people learn. It consists of a set of events that affect learners in a way that there is a change in their behaviour as a result of the activities they are exposed to (Gagne and Briggs, 1989). Some of these activities that constitute instruction are teaching, reading a book, watching a television programme and so on. While learning can take place without instruction, the effect of instruction on learning is often beneficial and easy to observe. This is because instruction is deliberately planned to achieve various objectives. This creates a shortcut to facilitate learning (Omieibi-Davids, 2021).

When instruction is deliberately planned to achieve a particular purpose, what is involved is instructional design. Instructional design, also known as Instructional system design or Instructional systems development (ISD) is the practice of creating learning experiences to support learning. It is the practice of systematically designing, developing and delivering instructional materials and experiences in a consistent and reliable fashion towards an efficient, effective, appealing, engaging and inspiring acquisition of knowledge and the evaluation of any instructional experience based on what learners can do after training (Wagner, 2011; Talent Development Glossary Terms, 2022). It is the analysis of learning needs and systematic development of instruction to facilitate the acquisition of knowledge, skills and attitude using learning and instructional theories to ensure the quality of instruction (Instructional Design Central, 2022, Wagner, 2011).

Instructional design is the process of analysing the learning needs and goals, and the development of a delivery system to meet those needs. It includes the development of instructional materials and activities, and the try-out and evaluation of all instruction and learner activities (Instructional Design Central, 2022). It is the

practice of arranging content and media to facilitate learning. It involves determining the current state of the learners' understanding, defining goals of instruction and creating a media-based intervention to assist instruction based on some pedagogically tested theories of learning. Instructional design is rooted in behavioural, cognitive and constructivists' psychology. It is also rooted in system engineering which is concerned with identifying the real problems that need to be resolved and identifying the most probable solutions to these problems (Tennyson et al, 1997). To solve these problems instructional designers, use models that typically specify a method which facilitates learning when it is followed (Instructional Design Central, 2022).

### **Contributions of Socrates, Plato and Aristotle to Instructional Design**

The contributions of Socrates, Plato and Aristotle to modern instructional design are the following:

**1. Psychological Base of Instructional Design:** The psychological base of instructional design is the learning theories. Learning theories are an attempt to describe how people learn (Luthan, 2001; Slavin, 2000). There are three philosophical frameworks or categories of how people learn. They are Behaviourism, Cognitivism and Constructivism. The behavioural theory of learning is traced back to Aristotle whose essay on memory focused on an association between events such as lightning and thunder. In his search for the key to memory, he realised that the recollection of one item could be helped by trying to remember something that is closely related to it (Manilla, 2006). This view of remembering something by associating it with something else is the basis of the behavioural theory.

The cognitive theory of learning is related to the teachings of Socrates. The questioning technique of Socrates has three stages – definition, refutation and synthesis. They are related to the three stages of mental development proposed by Jean Piaget. Socrates' definition stage requires that the person being questioned clearly defines the purpose of what the individual believes or claims. This is related to Piaget's Schemata, which is a mental structure by which an individual organises their perceived environment to identify, store or classify specific information and experiences. In order to classify information, one needs to be able to clearly define it. The second stage of Socrates' method which is Refutation requires that the individual concerned gives a counter to the definition of whatever word or belief he had. In doing this he adds to new information to his schemata. This relates to Piaget's assimilation stage which requires that learners integrate new information and experience into already existing knowledge. The person being questioned with Socrates' method is required to integrate the new definition given to counter the original definition and compare them to see if he really has the correct concept. Finally, Socrates requires that based on the old definition and counter definition given, the student would gather all the loose ends of the arguments to form an acceptable definition. This stage also relates to Piaget's third stage of mental development. This requires that there will be a modification of existing schemata or creating a new one. In both stages of Socrates and Piaget's methods, the learner is required or expected to have new knowledge as a result of the first two stages.

Constructivism theory is rooted in the beliefs and teachings of all three philosophers. Constructivists view cognitive development as a process in which learners actively build systems of meaning and understanding of reality through experience and interaction. Socrates is relevant to this theory because he did not believe in giving the learners any knowledge (Osokoya, 1989). He believed that the learner already knew the answer and could find himself. To help the learner develop his knowledge he used leading questions that were required to make the individual think. In doing this, learners were required to think about things and relate them to their experiences. This experience, which the learner relates to in order to find answers to the questions, is a result of his interaction with his environment (Robert-Okah, 2003). Thus, Socrates' philosophy of education relates to the assumptions of constructivism, as shown below (Merrill, 1991; Sinorgansbord, 1997):

- a. Knowledge is constructed from experience
- b. Learning is a personal interpretation of the world
- c. Learning is an active process in which meaning is developed on the basis of experience
- d. Conceptual growth comes from the negotiation of meaning, sharing of multiple perspectives and the changing of our internal representations through collaborative learning
- e. Learning should be situated in realistic settings; testing should be integrated with the task and not a separate activity.

Plato's relevance to the constructivist theory is based on his suggestion of creating a rich learning environment for the learner to interact with (Heinich et al, 2002; Osokoya, 1989). Plato emphasised planning a stimulating environment so that the learner can interact with it and acquire the experiences necessary to become a worthy citizen. It is from this experience acquired as a result of interacting with the environment that the individual can make his own definition of concepts and his interpretation of the world as is stated in the assumptions of constructivism mentioned earlier (Sinorgansbord, 1997).

Aristotle's role in constructivism comes up as a result of his emphasis that knowledge should be constructed from experience. Experience, according to the Chambers 21<sup>st</sup> Century Dictionary, is knowledge gained through long and varied observation of life and knowledge or skills gained through practice. Thus, by emphasising experience as the source of learning the constructivists can be said to have based their work on the philosophy of Aristotle.

**2. Process of Instructional Design:** Instructional design is the practice of arranging content and media to facilitate learning. The process of arranging these content and media involves determining the current state of the learner, defining the goals of instruction and creating media intervention based on the necessary theories of learning (Wagner, 2011). This definition of instructional design summarises the activities of Socrates, Plato and Aristotle in designing their own instruction. Some of these activities and processes are as follows:

**a. Analysis of Learners' Characteristics:** All three philosophers saw the need to determine the characteristics of the learner before planning instruction to fit them. Socrates analysed the characteristics of the learners before he used his questions on them. This can be seen in his belief that general ideas and concepts that are useful in solving problems could be taught to everyone, including children. He said all that was required was well-designed leading and simple questions (Osokoya, 1989). This shows that he designed his questions to fit the level of his students, and to be able to do this means he had analysed their characteristics. Plato also believed in analysing the characteristics of the learners and designing instruction that is appropriate for every type of learner. This is because he was aware of the fact that every member of the society cannot learn the same thing. He advocated that people be given education based on their characteristics, and this is the essence of classifying people into head, heart and hand, and planning a different content for each group of people. We can only determine the innate desires that Plato calls characteristics in order to give them the type of education they need when we analyse the learners (Robert-Okah, 2003). Aristotle also believed in analysing the characteristics of the learner and designing instruction that is appropriate for him. This can be deduced from his statement that freemen should be educated according to their fitness and unfitness (Manilla, 2003). It is only when we analyse the characteristics of our learners that we can determine if they are fit or not fit to undergo a particular type of instruction.

**b. Statement of Aims and Objectives:** Stating aims is one of the activities involved in the process of designing instruction. This was also one of the activities of Socrates, Plato and Aristotle in the process of planning their instruction. They all had aims that the education they proposed and carried out was intended to achieve. For

Socrates education was intended to give life to the individual because for him an individual without knowledge was as good as dead. Plato's education was geared towards selecting the different roles people had to play in the society and train them in these various roles. For Aristotle the purpose of education is to promote happiness, truth and goodness in people. They all had aims for the education they advocated and they went on to plan and implement based on these.

**c. Design of Instruction:** The three philosophers designed education to meet their various aims and objectives. Because for Socrates education was meant to develop knowledge that would enable the individual live a virtuous life, the education he planned was not structured towards any particular area. His education was meant to develop general knowledge through reasoning. Plato's educational aim was to identify people who would fit into the three classes into which he had grouped people. To achieve this goal his educational content was geared towards gradually sieving its participants and fitting them into the various areas they were good at. Aristotle believed that education was to promote happiness, truth and goodness. Because he had this belief, he did not propose an educational system that would compel people to do certain subjects that were required of the state or what his desires were geared to, as suggested by Plato. Aristotle's educational philosophy was that people should be allowed to pursue whatever course of life they wanted without indoctrination and censorship, in order to get satisfaction from what he is doing.

**d. Use of Practical Experiences:** One of the activities of the instructional design process is creating a media-based instruction to assist learning (Wagner, 2011). All three philosophers can be said to have made contributions in this area. Socrates' method of finding out questions and this has to do with the audio media. This does not mean, however, that he did not make use of interactive processes. For Socrates, in order to answer question, the learner has to draw from his experiences. To get these experiences the learner is expected to have been involved in various activities.

**3. Use of Instructional Design Models:** Instructional design uses models to solve problems. These models typically specify a method that, if followed will facilitate the acquisition of knowledge, skills and attitude (Instructional Design Central, 2022). The idea of using models to solve problems can be traced to the teachings of these three Greek philosophers. Socrates had his 'Razor-sharp dialectical method', as his questioning method was called. It consisted of three stages. This questioning model was used to determine if people were really as wise as they thought they were. He also used this method to help students acquire knowledge. This questioning method was not a haphazard thing. It had a procedure which he followed. It was a model which had the following three stages:

- a. Definition
- b. Refutation
- c. Synthesis

In using this method, which can be described as the Questioning or Socratic Model of Instruction, Socrates did not give his students any instruction but required them to find out the answers themselves with a series of leading questions. Plato did not design a model of instruction of his own but subscribed to the use of the Socratic model. Aristotle developed a method of acquiring knowledge which can be said to be an instructional design model. His model is known as the Inductive model of learning.

**4. Use of Ergonomics in Instructional Design:** Ergonomics is planning the environment to meet the characteristics of the individual that is required to use it. This has to do with an environment that meets the psychological and physical needs of the individuals in the environment (Ergonomics4schools, 2020).

Ergonomic planning can be physical, cognitive or organisational (International Ergonomics Association, 2018). Whatever the domain of ergonomics involved there is a necessity that they fit with the characteristics of the learners. The study of the teachings and writings of the three philosophers indicate that they took this into consideration. All three philosophers were insistent on planning instruction that took into consideration the characteristics of the learners. Aristotle was of the view that the individual should be educated according to his fitness or unfitness as a learner (Robert-Okah, 2003). Plato's ergonomic consideration can be seen in his suggestion that people be classified and educated according to the intellectual class of the society they fall under. Socrates' suggestion and practice of using simple and leading questions for children to solve problems with also takes the use of ergonomics into consideration. Although he used questions to teach everyone, the type of question varied from person to person. In doing this they all used approaches that are now known as Cognitive ergonomics. Physical ergonomics also came into play when Plato talked about planning to fit the needs of children.

## Conclusion

The Trio of Socrates, Plat and Aristotle contributed much to the development of education in various ways, whether it relates to the entire educational system or to the design of instruction in the classroom.

## References

1. Aristotle (Greek philosopher). Britannica Online Encyclopedia. <https://www.britannica.com>.
2. Encyclopaedia Britannica Deluxe (2002). Aristotlelianism. Encyclopaedia Britannica.
3. Encyclopaedia Britannica Deluxe (2002). Aristotle. Encyclopaedia Britannica.
4. Filonik, J. (2013). Athenian impiety trials: a reappraisal. *Dike* 16(16), 72-73. Doi:10.13130/1128.8221/4290.
5. ErgoPlus (2020). Ergonomics 101: The definition, domains and application of ergonomics. <http://ergo-plus.com>.
6. Ergonomics4schools (2020). Ergonomics 4 schools. <http://www.ergonomics4schools.com>.
7. Gagne, R.M. & Briggs, L.J (1989). *Principles of Designing Instruction*. Rinehart and Winston.
8. Green, P. (1991). *Alexander of Macedon*. University of California Press.
9. Instructional Design Central (2022). Instructional design definition. <https://www.instructionaldesigncentral.com>.
10. International Ergonomic Association (2018). Definition and Domains of Ergonomics. <http://www.iea.cc/whats/index.html>.
11. Lords, C. (1984) (ed). *Aristotle – The Politics*. University of Chicago Press.
12. Maniilla, B.B. (2006). *History of World Education*. Nissi.
13. Merrill, M.D. (1991). Constructivism and Instructional Design. *Educational Technology*. May, p.45-53
14. O'Connor, J.J. & Robertson, E.F. (1995). Aristotle. <https://mathshistory.st.andrews.ac.uk>. Okujagu, A.A. (2005). Philosophical base of Primary Education. In C.O. Iwundu (Ed), *Perspectives in basic education*. Okoga.
15. Osokoya, I.O. (1987). *6-3-3-4 Education in Nigeria*. Bisinaike.



16. Osokoya, I.O. (1989). *History of Nigerian Education in World Perspective*. AMD.
17. Rattini, K.B. (2019). Who was Socrates? <https://nationalgeographic.com>.
18. Robert-Okah, I. (2003). *History of Nigeria and Western Education*. Harey.
19. Russell. B. (1972). *A history of western philosophy*. Simon and Schuster.
20. Schlager, J. (1956). System engineering: key to modern development. IRE Transaction EM-3(3) 64-66). <http://doi.10.1109/IRET-EM.1956.5007383>.
21. Shields, C. (2012). *The Oxford Handbook of Aristotle*. Oxford University Press.
22. Shields, C. (2016). Aristotle's Psychology, In E.N. Zalta (ed). *Stanford Encyclopedia of Philosophy*. Winter 2016 ed.
23. Smorgansbords, A. (1997). Constructivism and Instructional Design. <https://www.hagar.up.ac.za>.
24. Talent Development Glossary Terms (2022). What is instructional design? <https://www.td.org>
25. Tennyson, R.; Dijkstra, S.; & Seel, N. (1997). *Instructional design: International perspectives. Theory, research and models. Vol. 1*. Larence Eribaum Associates.
26. [Wagner, E. \(2011\). Essay: in search of the secret handshake of ID. The Journal of Applied Instructional Design 1\(1\), 33-37.](#)