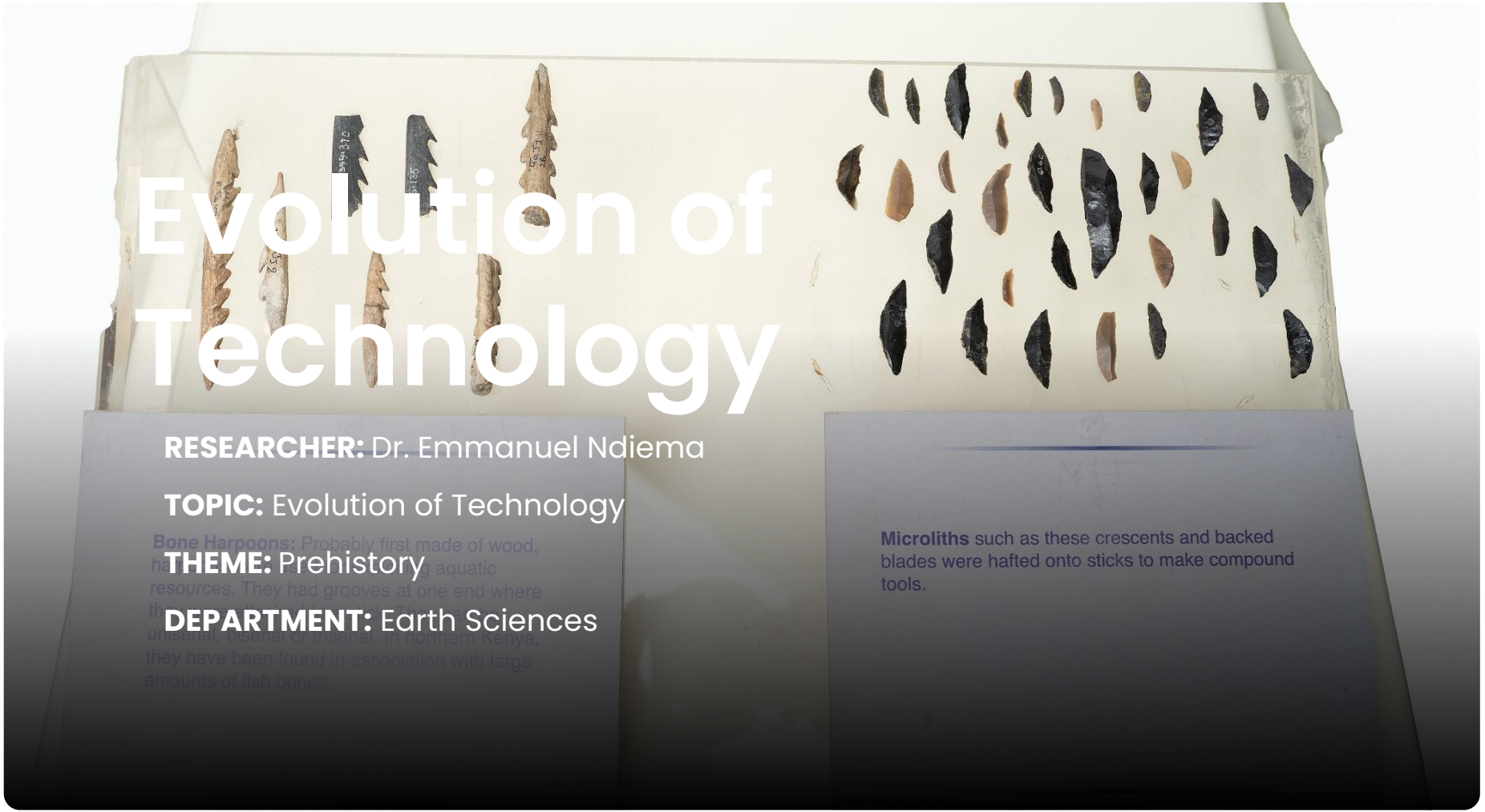


# Evolution of Technology

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**TOPIC:** Evolution of Technology

**THEME:** Prehistory

**DEPARTMENT:** Earth Sciences


*Bone harpoons displayed at Cradle of Mankind Gallery*
*Source: Nairobi National Museum*

## Lesson Objectives

1. To identify the different technological ages.
2. To discuss the stages of our technological developments through time.
3. To highlight ancient technology as the foundation for modern technology.

## Learning resources

1. Text
2. Video
3. Photo

## The Origin and Evolution of Technology

Parallel to biological evolution, early humans developed technologies that allowed hominins to become increasingly successful at acquiring food and inhabiting different environments.

Kenya's prehistoric record documents over 3 million years of stone tool technology. Evidence of Kenya's technological evolution can be seen especially in three levels of innovations:

- The creation and use of tools,
- New subsistence patterns, and
- Occupation of new environmental zones.

These tools marked the beginning of a long technological journey that has culminated into the sophisticated world of technology that dominates our lifestyle. The production of these invaluable artefacts and the contexts within which they were used, showcases Kenya as the 'cradle of innovation'.

## Lomekwian Tools

The earliest stone tool technology world-over belongs to the Lomekwian industry dated to over 3.3 million years old. The tools were recovered from an archaeological site near Lomekwi village in Turkana County. These stone tools are attributed to early humans known as *Australopithecus afarensis* and *Kenyanthropus platyops.* This is the first time these hominin species have been associated with stone tool making.

To a lay person, these artefacts may appear crude and unlikely to have been intentionally made. A closer look at the tools reveals that the edge is formed by a deliberate sequence of skillfully placed blows of more or less uniform force. By contrast, natural forces strike randomly and with variable force; no pattern, purpose or uniformity can be seen in the modifications caused by natural processes.

## The Early Stone Age

This technological period is dated to between 2.6 million years and 400,000 years and is attributed to the hominin genera, *Homo habilis* and *Homo erectus*. Prehistoric sites associated with this technology are widespread in Kenya and are recorded in regions around Victoria, Turkana, Baringo, Olorgesailie and Nakuru lake basins. Archaeological materials from these sites are characterised by cores and flakes. This is a stone tool technology where a large rock is intentionally fractured to produce leaf-shaped sharp edged flake.

The cores may have been used for chopping, breaking bones, or pounding food resources. 1.7 million years ago, the stone tool technology had sufficiently advanced to a new tool making tradition referred to as the Acheulean technology. The best example of this technology is the hand axe which is one of the oldest tools used by humankind. It was a spear-shaped and roughly chipped stone tool brought to an even point, with a broad handle probably used for different tasks, from butchering animals to digging up tubers. The design was gradually refined to include scrapers and sharp pointed tools.

The sites where these stone tools have been found include Koobi Fora, in Marsabit county, Kariandusi in Nakuru County and Olorgesailie in Kajiado County.

FUN FACT: Did you know that the 1.7-million-year-old Acheulian hand axe was used as a multipurpose tool like the modern-day Swiss army knife?

*An Acheulean industry tool on display at Cradle of Mankind Gallery*
*Source: Nairobi National Museum*

## The Middle Stone Age

The Middle Stone Age tool kits included pointed stones, scrappers and awls. The pointed tools could be hafted onto shafts to make spears and stone awls.

Stone awls were used to pierce hides, while scrapers were ideal for preparing hides, wood and other materials. Changes in stone tool production and utilisation such as making elongated blades and stone-tipped arrows, have all been identified as important thresholds in human cognitive and social evolution.

The main innovations were the application of 'prepared core technique,' in which a core was carefully flaked on one side so that a flake of predetermined size and shape could be produced in a single blow. Other developments in this period include diversity of food resources and appearance of symbolic material culture such as abstract art.

In Kenya, the Middle Stone Age tools have been found in sites around the Nakuru, Naivasha, Baringo, Turkana, Victoria and Olorgesailie lake basins.

FUN FACT: Did you know the present day Olorgesailie prehistoric site was a large fresh-water lake until 400,000 years ago?

*Olorgesailie prehistoric site*
*Source: National Museums of Kenya*

## The Later Stone Age

During the Later Stone Age (50,000 to 10,000 years ago), the pace of innovations increased and sites were spread across Kenya. People experimented with diverse raw materials such as bone, ivory, antlers, as well as stone. The level of craftsmanship increased, and different groups sought their own distinct cultural identity and adopted their own ways of making things. Tools from this time frame reflect stronger cultural diversity. This is possibly due to more cultural and economic diversity of its makers than in earlier times.

Later Stone Age artefacts include potsherds, ostrich eggshell beads, bone implements, and very small stone tool microliths. Although these artefacts have been found in open air sites, they have mostly been found in rock shelters and caves where rock art has also been recorded. Rock art is widespread in different parts of Kenya such as Busia County, Kavea in Kitui County, and the Turkana and Victoria Basins.


*Microliths displayed at Cradle of Mankind Gallery*
*Source: Nairobi National Museum*

## The Iron Age

The Iron Age in Kenya marked a transformative period, roughly spanning from 2,000 to 700 years before the present era. It is closely linked to the migration and settlement of the Bantu people from West-Central Africa. Here's an elaborative and concise account of the Iron Age in Kenya:

**Origin & Migration:** The advent of iron technology in Kenya is credited to the Bantu communities migrating from West-Central Africa. They not only brought iron-making skills but also new agricultural practices.

**Impact on Agriculture:** The Bantu introduced crop cultivation techniques that needed iron tools. With iron implements, they could clear vast areas of land, enhancing agricultural productivity and food security.

**Settlement Patterns:** Archaeological evidence suggests that many Iron Age sites were likely permanent settlements. It's believed that iron producers and blacksmiths usually settled in one place due to the stationary nature of their work. Many such sites have been discovered across various parts of Kenya, indicating a widespread shift to sedentary lifestyles.

**Artefacts and Pottery:** The Early Iron Age in East Africa boasts distinctive pottery types which help archaeologists understand the culture and practices of the period. Two prominent pottery styles from this era are the Urewe ware (previously known as Dimple-based ware) and Kwale ware.

**Geographical Spread:** Iron Age sites are scattered throughout Kenya, including in Central, Coast, and Western regions. The evidence from these sites paints a picture of extensive iron-smelting practices.

**Economic and Societal Evolution:** Iron tools facilitated more advanced farming, which, in turn, influenced the way societies were organised and developed. These advancements played a role in shaping the settlement patterns of Kenya's communities into what they are today.

In essence, the Iron Age in Kenya represents a pivotal epoch, showcasing the evolution of societies from nomadic to settled, the growth of agriculture, and the establishment of distinct cultural identities. The era underscores the importance of technological advancement in societal transformation.

## Information Age and Digital Revolution

From the early stone tools in Kenya's Lomekwian era, over 3.3 million years ago, to the sophisticated digital networks of the 21st century, human progress has been a continuum of innovation. The early Stone Age saw the birth of tool use, marking the first steps in humanity's technological journey. These rudimentary tools evolved during the Middle Stone Age, growing more refined and specialised, catering to the needs of an evolving human species.

The Iron Age in Kenya, beginning around 2,000 years ago, ushered in a revolutionary era of change. The Bantu migrations brought iron technology, transforming agriculture with iron implements, fostering settled communities, and laying the groundwork for societal structures. This period symbolises humanity's first major leap into organised society and advanced technology.

Fast forward to the late 20th century, and we entered the Information Age. This era, characterised by the rise of computers, telecommunications, and the internet, represents a shift from traditional industries formed during the industrial revolution to an economy based on information computerization.

Just as the Iron Age transformed societies with metal tools and agrarian innovations, the Information Age is reshaping our world with digital tools and networks. Today's global connectivity, real-time communication, and vast digital repositories can be seen as the modern equivalents of the Iron Age's smelting furnaces and cultivated fields.

In essence, the journey from the first stone tool to today's smartphone is a testament to humanity's relentless pursuit of progress and innovation, with each age setting the foundation for the next wave of advancements.