CamTech Correspondence
Issue: CC 002/24
28 June 2024

CamTech
University Press

Distinguishing between Science and Technology in the Digital Era

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Introduction

The Cambodian public is constantly being bombarded by information more than ever before, rendering them confused with misconceptions and misunderstandings about policies related to science and technology. This article clarifies the boundary between science and technology by looking at the nature, application, discovery, and trend of science and technology.

Science

Science, by definition, is the "intellectual and practical activity encompassing the systematic study of the structure and behaviours of the physical and natural world through observation and experiment" (OED, n.d.). In contrast, technology is a branch of scientific knowledge dealing with engineering or application for the practical purposes of developing machinery and equipment to serve people. Digital technology is a passage between science and the interpretation of human needs. Thus, the correct understanding of the scope of the terms is essential for educational purposes, policy formation, and responsibility in conflict resolution among government institutions.

However, our efforts to understand nature through scientific disciplines are always insufficient. For this reason, scientific research or discovery remains on the top agenda of most developed nations. At the same time, technology, such as ICT or digital technologies, comes alongside to transform the scientific findings into socio-economic benefits or support the scientific study. It would be almost impossible to define the boundary between science and technology. Therefore, it is essential to conceptualise the distinct nature of the two.

Technology

Technology could be seen, in principle, as a tool or system to address any specific need of human being that develop from the application of scientific knowledge. Meanwhile, scientific knowledge development is created from the regular occurrence of natural events. For example, the phenomenon of an apple falling straight down from a tree to the ground is what led Isaac Newton to the discovery of the universal gravitational theory in 1665 (York University, n.d.). His scientific interpretation of this natural event contributes to many applications, including spaceships, airplanes, submarines, satellites, and drones. Likewise, the discovery of penicillin as an antibiotic by Alexander Fleming in 1928 was the result of his studies in biological science (ACS, n.d.). These discoveries have led to advanced developments in our civilisation and lifestyle.

Our quality of life, including education, agriculture, the industrial revolution, health, digital transformation, and other social welfare development, owes substantially to the organised knowledge from science. Emerging technologies such as medical devices, smartphones, sophisticated research instruments, supercomputers, spacecraft, and others are made available through scientific discovery. Science has been known to be the source of technologies used to improve human lives, which counts for engineering design, analytical methods, skill development, technology assessment, and development strategy.

Technologies play essential roles in the development of humankind. For instance, the current pandemic of COVID-19 absolutely requires effective technological applications in medical science for treatment and vaccine development. Other technologies are being actively developed in manufacturing sectors for industrial demands. The Organization for Economic

Co-operation and Development (OECD) projects that, at least over the next ten years, four technologies, including digital, biotechnologies, energy and environment, and advanced materials, will become increasingly more significant for today's society (OECD, 2016). These technologies are essential for human development. On one hand, imaginary interpretation in computer games could be a good example of digital technology. On the other hand, information and communication technology (ICT) has been a good tool for interpreting science and serving human needs.

Conclusion

In conclusion, science is the foundation for creating technologies and scientific research and nature requires technologies as tools and vice-versa. Technology, simply put, is the application of science. Sometimes, technology is an application of scientific knowledge for the practical needs of human life. On the other hand, technology also provides scientific questions and tools, such as analytical and communication network instruments, to address scientific challenges. Science and technology are distinct, but they are highly interdependent. However, scholars may find it hard to understand the complexity of the interaction between science and technology. The two must be paired to enhance knowledge development, which is crucial for the socioeconomic prosperity.

References

American Chemical Society. (n.d.). Alexander Fleming Discovery and Development of Penicillin—Landmark. American Chemical Society Website. Retrieved May 27, 2024, from https://www.acs.org/education/whatischemistry/landmarks/flemingpenicillin.html

OECD iLibrary. (2016). *OECD Science, Technology and Innovation Outlook 2016*. Retrieved from https://doi.org/10.1787/sti_in_outlook-2016-en

Oxford English Dictionary. (n.d.). SCIENCE. Oxford University Website. Retrieved May 27, 2024, from https://www.oed.com/search/dictionary/?scope=Entries&q=SCIENCE&tl=true

York University. (n.d.). Isaac Newton's Apple Tree. York University Website. Retrieved May 27, 2024, from University of York website: https://www.york.ac.uk/physics-engineering-technology/about/newtons-apple-tree/