The Interplay between Sciences and Humanities: An Enduring Value of Humanities in a STEM-dominated World

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Abstract

The relevance of the humanities has been gradually overlooked since the late 20th century and has been significantly stifled in the 21st century. Research funding tends to favor the sciences over the arts and humanities. The emphasis of both teaching and learning at all levels of education prioritizes the sciences. This endangers the survival of various aspects of human civilization, such as values, ethics, aesthetics, politics, literature, art, and morality. Moreover, evaluating certain scientific methods and procedures is crucial, as the advancement of science and technology without scrutiny may pose a significant threat to human civilization and existence. In addition, undermining the humanities may also threaten the survival of spirituality and cultural heritage. During the golden age of Islam, both empirical and revealed knowledge were given equal attention and complemented each other, advancing human civilization. Funding should be based on the magnitude of novelty and groundbreaking ideas, as well as creativity and innovation, regardless of whether they originate from the sciences or the humanities. Both knowledge creation and dissemination should follow an eclectic philosophical paradigm to enable flexibility in methodology and integration of ideas, thereby facilitating innovation and creativity. The focus should be on an interdisciplinary approach that appreciates the blending of science with aspects of the humanities, providing rich and holistic perspectives and insights in research and innovation. This is a position paper entirely based on library research, in which the researcher advocates for an interdisciplinary approach to knowledge creation and dissemination.

Introduction

A persistent campaign over the past decades has promoted sciences under the STEM banner while downplaying the importance of the humanities. This has mainly been achieved by funding science-related research and increasing scholarships in STEM fields. This emphasis on the sciences has limited the growth of research and education in the humanities.

STEM involves teaching and learning of subjects such as biology, chemistry, physics, computer science, medicine, mathematics, astrophysics, technology, and engineering (Siekmann, 2016). On the other hand, the humanities involve teaching and learning history, anthropology, sociology, theology, art, music, philosophy, law, governance, and leadership (Savelieva, 2015).

According to the National Academy of Science (2008), science can be defined as the application of evidence in constructing testable explanations and predictions of natural phenomena, as well as knowledge obtained through such a process. This implies that scientific knowledge is acquired through empirical, demonstrable, observable, and testable procedures. Science can also be defined as a form of knowledge.

On the other hand, according to the Encyclopedia Britannica (2025), the humanities encompass academic disciplines that focus on culture, society, philosophy, literature, the liberal arts, theology, history, and more. They entail a wide range of disciplines and academic programs such as Law, human resource management, international relations, development studies, religious studies, peace studies, gender studies, and public administration, among others.

With a robust arts and humanities curriculum, universities have, over the years, produced brilliant minds that have transformed communities by solving seemingly complex societal problems through innovation, research, and the establishment of think tanks (Mulji, 2025). With the rise of the internet and social media platforms, there has been a surge in cultural influences, some of which have culminated in moral degeneration, cultural erosion, and erosion of spiritual and ethical values (Hossain et al., 2025). This implies that the world needs the humanities more than ever in this contemporary generation.

However, for over two decades, there has been an overemphasis on Science, Technology, Engineering, and Mathematics (STEM) at the expense of the humanities and arts (Collins, 2025). This has manifested in channeling most research funding and grants towards STEM-related studies, while reducing grants for the humanities, promoting increased awareness of STEM through expanded scholarships, and other initiatives.

The government of the Republic of Uganda increased salaries for scientists, including those in the education sector. This has created significant disparities, leading humanities teachers to strike frequently and disrupt the operations of academic institutions (Atukunda, 2025). Meanwhile, Vaishnav (2025) noted that the humanities make significant contributions to civic awareness, patriotism, and cultural preservation. Therefore, undermining the relevance of the humanities may threaten the spirit of national cultural heritage, patriotism, values, and rich history.

Over the past two decades, more countries including the United States, United Kingdom, South Africa, Brazil, and others have witnessed a significant decline in enrollment and graduation of students in humanities, as well as continued budget cuts from the governments towards humanities due to the perception that humanities do not have a significant impact on career and vocational practices (Goldstein, 2024).

Abandoning the humanities may pose significant threats to cultural preservation, erode critical thinking and communication skills, and cause declines in ethical frameworks, social policies, principles, and guidelines. In a culturally diverse world, the education system must be designed to recognize variations in cultural values and practices. Therefore, disciplines such as anthropology, social work, history, and theology remain relevant for examining human civilization in terms of culture, religiosity, and spirituality, which are essential parts of human development that science alone cannot fully explore.

Additionally, a recent study outlined by Hanum and Megananda (2025) suggests developing an integrated Islamic STEM curriculum that weaves Islamic ethical standards

and values into scientific research and knowledge dissemination, resulting in a comprehensive graduate program. Incorporating Islamic principles into the sciences encourages spirituality and promotes a dual approach to generating and sharing knowledge. This method fosters both spiritual/emotional and intellectual growth by emphasizing the education of the body, mind, heart, and soul.

Problem Statement

Overemphasizing the sciences while neglecting the relevance of the humanities diminishes the complexity inherent in human nature and civilization. Cultural heritage, religious affiliations, and social customs are integral parts of human societies. Therefore, they shape human perception of the universe. Without the humanities and their scholarly contributions, human beings are reduced to the level of basic animals. Music, movies, historical facts, literary and artistic works, and other forms of popular culture that scholars in the humanities focus on bringing a human face to what might otherwise seem like concrete or practical courses (Bamgbose, 2025). On the other hand, scientific disciplines are equally important in advancing human civilization because they provide objective and insightful solutions to global challenges.

Objective

The goal of this paper is to explore the importance of the humanities in the 21st century, a period during which science has received significant focus.

Methodology

This is a position paper arguing that an interdisciplinary approach and fair consideration between the humanities and sciences are essential, as both serve the same purpose. Therefore, a review of relevant literature has been conducted to inform the composition of this paper. This involves synthesizing numerous scholarly perspectives on a transdisciplinary approach. Several sections of the paper address relevant perspectives, such as philosophical perspectives, career opportunities, and Research and innovation—providing a nuanced and synthesized argument about the topic in question.

Philosophical Perspective

Philosophy is often referred to as the love of wisdom. In ancient times, science was referred to as 'natural philosophy' (Johnson, 2025). It is inevitable to discuss philosophy when considering the relevance of science, the humanities, and knowledge in general. Philosophy helps to clarify the goals and methods used to create and share knowledge (Turyahikayo, 2021).

Undoubtedly, both Plato and Aristotle played significant roles in laying the foundation for our current understanding of epistemology, metaphysics, logic, and other branches of philosophy (Fiveable, 2025; Wolf, 2002). Their differences may provide meaningful insights into the contemporary dichotomy between the sciences and the humanities in various ways.

My choice of the School of Athens, particularly Plato and Aristotle, stems from their profound influence on numerous philosophical thoughts, both in the West and beyond, and their ongoing inspiration for various ideologies in our contemporary world. The school of Athens entails works of Plato and Aristotle, denoting the pursuit of knowledge and truth through debate, experimentation, and introspection (Pulimood,

2025). Thus, understanding their differences is essential, as these distinctions shape the focus on either the humanities or the sciences when exploring the universe's operations. Consequently, the differences between Platonic and Aristotelian thought would later influence the enduring intellectual conflict between the humanities and sciences, which has thrived for centuries, debating the relevance of each over the other for the advancement of human civilization (Fiveable, 2025; Wolf, 2002).

Plato was pro-metaphysics. He expounded on the existence of a more meaningful life beyond the physical realm, positing a transcendent reality. In the famous allegory of the cave, Plato illustrates that our sensory perceptions of the universe are an illusion, representing a deeper spiritual reality. In contrast, Aristotle focused more on the physical world and this life, emphasizing what we can see, smell, touch, and know through our sensory perceptions. Aristotle was more inclined towards science, logical reasoning, and experimentation to understand the world around us through rational means. While Plato spent most of his time contemplating the immortal soul, heavens, angels, and the transcendent reality beyond the physical world, Aristotle would collect natural specimens, dissect animals, and conduct experiments to better understand the natural environment (Wolf, 2002).

Nevertheless, Plato still cared about the physical world and the management of social affairs. He composed the Republic, in which he describes the characteristics of a utopian society. Similarly, Aristotle expounded on metaphysics even though he was more inclined towards the physical world. Plato composed 'The Republic', addressing issues of the physical world (Plato, 2000) — Aristotle tackled metaphysics in his monumental work 'Metaphysica' in 350 B.C, despite his dedication to the physical world. Implying that Plato was not 100% Plato, neither was Aristotle 100% Aristotle. This indicates that there was a Plato in Aristotle and an Aristotle in Plato — they were both polymaths.

In addition, the 17th-century philosopher René Descartes subjected all his beliefs to radical doubt so that he could establish a foundational belief and rebuild his cognitive life on solid principles. He inspired methodological skepticism by questioning his senses and knowledge in his quest for absolute certainty in his Meditations on First Philosophy. Additionally, Imam Al-Ghazali argued that observation and experimentation alone cannot lead us to the truth in knowledge and advocated for a combination of revelatory and intuitive knowledge (Gyagenda, 2021). These philosophical assumptions seem to suggest the simultaneous relevance of both scientific and spiritual epistemological methods. — paving way for knowledge synthesis.

Meanwhile, the Islamic Golden Age gave rise to brilliant minds such as Al-Kindi, Al-Ghazali, Al-Farabi, Ibn Sina, and many others who championed Islamic civilization by shaping the Muslim intellectual landscape. These polymaths studied and explored various disciplines, including Islamic theology, philosophy, mathematics, optics, and medicine, enabling them to create multidisciplinary, encyclopedic treatises (Gyagenda, 2024). Such a polymathic spirit remains relevant, and it is what is lacking at the heart of contemporary educational systems. This will consequently awaken curiosity among scholars and students, while promoting critical thinking and problem-solving abilities. In addition, such an approach towards the interconnectedness of knowledge enables scholars to appreciate the symmetry of nature — ignite an insatiable thirst for learning — the desire to connect dots from quantum realms to celestial spheres. A polymathic

mind appreciates a transdisciplinary approach to knowledge, fostering a lifelong learning mindset.

Whether in research, policy formulation, or curriculum development, I have always been a strong advocate for eclectic philosophy. This is because eclectic philosophy promotes flexibility, enabling one to draw relevant insights from various schools of thought. Additionally, eclecticism fosters creativity and enhances critical thinking by offering unique perspectives through the integration of diverse disciplines.

Secondly, considering Ivan Pavlov's classical conditioning as an example, it was originally a biological experiment rather than a psychological one, and the psychological discoveries were rather accidental, not intentional (McLeod, 2024). Moreover, Pavlov was not a psychologist; he was a physiologist (Cherry, 2023). The experiment aligned with a study of the digestive system of dogs, aiming to collect as much saliva as possible. However, during saliva collection, Pavlov noticed something interesting. Initially, he injected meat powder into the dogs' mouths to stimulate saliva. Later, he observed that dogs started salivating simply by seeing him arrive. He then introduced other external stimuli, such as ringing a bell. The point here is that if Pavlov had limited himself to his role as a physiologist, the world would have missed out on the iconic theory of classical conditioning.

Furthermore, at the point of epistemological intersection between STEM and Humanities in terms of values, ideas, and methods, where the humanities meet the sciences, new ideas, innovation, critical thinking, creativity, and problem-solving are born. Novel and groundbreaking ideas can be found in the interdisciplinary, transdisciplinary, and multidisciplinary approaches to knowledge. With interdisciplinary approaches, various methods, ideas, and concepts from different fields are combined to generate coherent, integrated insights. For multidisciplinary work, each field contributes its independent perspective to solve a specific problem while keeping its boundaries intact. Transdisciplinary approaches, on the other hand, form a comprehensive system of knowledge that goes beyond traditional boundaries to develop unified solutions for real-world challenges.
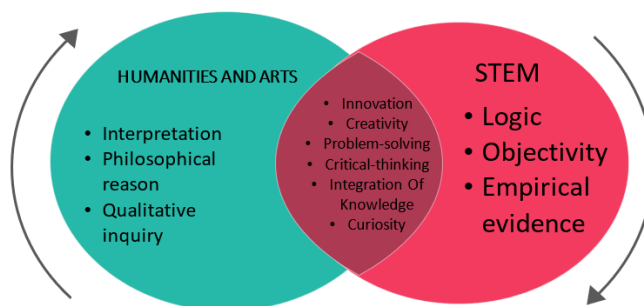
Figure 1: The epistemological intersection between the humanities and STEM

From Figure 1, the epistemological components in the humanities are different from those in STEM. With humanities knowledge creation is mainly characterized by the interpretation of human experiences, qualitative inquiry, historical methods such as historiography, textual discourse, and analysis. While with STEM, scientific methods for

knowledge creation are invoked with established, demonstrable, testable, and empirical protocols of science.

Whereas the values with humanities focus on spirituality, ethics, integrity, values, purpose, civilization, and more, STEM emphasizes objective truth and experimentation. At the point of intersection where the sciences meet the humanities, we find innovation, creativity, problem-solving abilities, critical thinking, integration of knowledge, and curiosity, all of which are necessary for the advancement of human civilization.

There are numerous ways through which STEM and humanities can be blended. For instance, since science deals with experiments and empirical data, the advancement of technology and science raises ethical concerns (Mintz, 2024). Ethical considerations are important in scientific frontiers, yet they remain an aspect of the humanities. This blend would create something such as 'Bioethics.' In addition, the humanities provide science with perspectives, contexts, and backgrounds. Through philosophical rigor, the humanities provide nuance to scientific inquiry by invoking cultural sensitivities, critiquing epistemological and ontological assumptions underpinning scientific research, and questioning the objectives of science in relation to human welfare (Ssentongo, 2021; Mintz, 2024).

Career Opportunities

The extensive campaigns promoting science while undermining the arts and humanities have impeded numerous career opportunities (Ssentongo, 2021). This has led to innumerable humanities courses being discarded because they are deemed obsolete due to the prevailing trend of prioritizing the sciences over the humanities.

As a result, numerous academic programs in the humanities have been scrapped or become obsolete, and many professionals associated with the humanities, such as social workers, community development experts, gender specialists, and many others, are being affected (Ssentongo, 2021). While there is a need to restructure some educational programs to meet contemporary demands, this process shouldn't be limited only to the humanities. In addition, learners shouldn't be discouraged from pursuing any discipline, but rather be guided in finding appropriate career opportunities. The system should provide a leveled platform that enables learners to explore all educational and career possibilities.

Research and innovation

Significant funding and grants have been directed toward science-based projects and studies, diminishing the relevance of the humanities and arts. These disparities create a void, resulting in social scientists and other researchers in the humanities and arts feeling demoralized, becoming less effective, and stifling creativity.

In addition, research funding is increasingly restricted even within the sciences. Funding often comes with strings attached, terms, and conditions that limit its scope, which may be unfavorable to interdisciplinary research. To attract significant funding, universities must adopt and advocate for an interdisciplinary research culture that facilitates the interaction and integration of multiple disciplines (Schmidt, 2025). This will stimulate innovation in research, paving the way for timely inventions and groundbreaking ideas, and solutions to contemporary challenges.

The research agenda should be enhancing transdisciplinary, multidisciplinary, and interdisciplinary research, creativity, flexibility, and critical thinking. Contrary to popular belief, Ivan Pavlov was not a psychologist; he was a physiologist. The iconic theory of classical conditioning was discovered by accident. His research originally aimed to study the digestive system of dogs; however, he realized that the dogs salivated in response to sounds associated with food, which later culminated in his groundbreaking discovery (Stangor and Walinga, 2014). This implies that the intersection of disciplines leads to significant breakthroughs and groundbreaking discoveries in knowledge. There must be deliberate policy formulation and implementation that facilitates multidisciplinary research and knowledge creation.

The Islamic University in Uganda (IUIU), (2024) Research Policy promotes the integration of knowledge and research that addresses community issues through a multidisciplinary and transdisciplinary approach. This is intended to create holistic knowledge that addresses issues of the mind, body, heart, and spirit. Additionally, the International Institute of Islamic Thought encourages knowledge integration in research through various activities such as workshops, seminars, international conferences, research collaborations, winter and summer schools, where scholars exchange ideas and receive training in multidisciplinary research, critical thinking, creativity, and problem-solving skills. However, while these activities have improved certain aspects of research productivity, such as publishing books and journals, there is still a need to implement the ideas of knowledge integration from research into policy within educational institutions.

Conclusion

Science has been weaponized in wars and used in many other destructive ways. Without the humanities, science can be used in ways that threaten the very existence of human beings, for example, manufacturing biological weapons, engineering malware, and conducting human experiments without adhering to established human moral and ethical standards.

Great minds are not those that can provide better solutions and answers, but those that can ask the right questions. Humanities are equally important as sciences; therefore, they should be treated as such. In addition, both the humanities and the sciences complement each other.

The complexity inherent in the nature of human beings invites appreciation of both the sciences and the humanities. Creativity and innovation can thrive more in an interdisciplinary approach. The intersection between the humanities and sciences facilitates innovation, creativity, and solution-based ideas.

Overreliance on external government funding and tuition has stifled research in universities. Many universities and institutions of higher learning lack sufficient internal funding due to limited endowment arms and inefficient holding business arms.

There is an aspect of art in every science, and that of science in every art. They both serve the same end.

The big questions, such as: What is the purpose of life? — What is reality? — What is the origin of the Universe? — can be explored through both scientific and humanistic perspectives. Some of these 'big questions' cannot be answered solely by science. Values, ethics, and morality cannot be determined scientifically, yet they remain

important despite criticism from the emerging trends of modernity. This indicates a gap in the humanities, a need that is just as pressing as the one in science.

Recommendations

The philosophy of knowledge needs to shift from emphasizing specialization to appreciating the interconnectedness of disciplines, and through a multidisciplinary approach, human challenges can be addressed. This would promote a polymathic approach towards knowledge propagation and dissemination.

Our education systems should create policies that enable cross-pollination of disciplines, encourage synthesis of ideas, and collaboration. Integration of knowledge will therefore become a harbinger of the future where solutions are as diverse as the challenges faced by our communities.

Emphasizing Science, Technology, Engineering, Humanities, Arts, and Mathematics (STEHAM). There is already a move to change STEM to STEAM, adding the Arts. However, Arts in STEAM may not directly bring out the aspect of the humanities. Further arguments include removing mathematics, as it's already covered in the sciences. However, the most important thing is to understand that all these disciplines are relevant for the advancement of human civilization, regardless of the acronyms and nomenclatures. And although there are calls to add arts to STEM, the adjustments from over-emphasis on sciences and adaptation of humanities may face significant setbacks related to attitude and resource allocation.

Eclectic philosophy should be considered. The entire education spectrum should advocate for a hybrid system that integrates the sciences with the humanities. A program may be primarily science-based, but with a touch of the humanities, or vice versa. The same applies to academic research and publications

Honorariums, wages, remuneration, and salaries should be increased based on the levels of creativity, innovation, authenticity, novelty, and groundbreaking ideas. This will encourage creativity, critical thinking, and problem-solving abilities.

Promotion of interdisciplinary research. This can be achieved through policy formulation, sensitization seminars, and workshops to encourage educators and scholars to appreciate the relevance of all knowledge, including sciences and humanities.

Universities should establish more endowment funds to provide sustainable support for research activities and projects. This will promote multidisciplinary research because a university will have sufficient financial resources to support research within an interdisciplinary framework, without being constrained by restrictions from external funders. In addition, Universities may consider venturing into other income-generating activities by establishing robust business holdings companies to fuel academic activities such as research and innovation.

There is a need to explore interdisciplinary research by conducting more empirical studies and mapping out strategies for its effective implementation.

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