YOUTH AND INNOVATION IN THE CONTEXT OF GLOBAL SCIENTIFIC CHALLENGES

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Abstract. In the face of global scientific challenges, youth have emerged as key drivers of innovation and technological advancement. Their fresh perspectives, adaptability, and digital proficiency enable them to contribute significantly to solving pressing issues such as climate change, healthcare crises, food security, and energy sustainability. This article explores the critical role of young innovators in scientific progress, highlighting their contributions to emerging technologies, artificial intelligence, biotechnology, and environmental sustainability. Despite facing challenges such as limited funding, lack of mentorship, and institutional barriers, young scientists and entrepreneurs continue to make groundbreaking discoveries and technological advancements. The article also discusses strategies for empowering youth, including increased investment in STEM education, mentorship programs, and supportive policies that foster an ecosystem conducive to innovation. By harnessing the creativity and passion of young minds, society can accelerate progress toward a more sustainable and technologically advanced future.

Keywords:
Youth Innovation Scientific Challenges STEM Education Emerging Technologies Climate Change Solutions Artificial Intelligence Biotechnology Renewable Energy Sustainable Development Entrepreneurship Research and Development Scientific Breakthroughs Future Scientists Digital Transformation Global Collaboration Youth Empowerment Science and Technology Innovation Ecosystem Social Impact

Introduction

The world today is grappling with major global challenges, such as food security, water pollution, and climate change. With a growing awareness of the need for sustainable development, it is evident that addressing these issues and achieving the United Nations' Sustainable Development Goals (SDGs) outlined in the 2030 Agenda requires cooperation among nations. Countries must work together in global governance and actively contribute to the common good.

Science and technology are key areas that demand greater international collaboration. Innovation in these fields plays a vital role in driving social and economic progress, particularly in promoting sustainable and eco-friendly growth. Chinese President Xi Jinping has repeatedly stressed the importance of innovation-driven development, environmental protection, global scientific cooperation, and the cultivation of skilled talent. Understanding the deep connection between science, technology, and sustainability, we have curated a special issue that explores how public scientific literacy, science education, and research contribute to achieving sustainable development.One of the day's thematic sessions focused on "Global, National, and Local Innovation Ecosystems," where speakers outlined national strategies for promoting innovation across various sectors and stakeholders. They discussed how these approaches could drive structural changes in policy and development while aligning with each country's specific needs. Another key topic at the Forum was "Global Digital Public Goods, Digitalization, Artificial Intelligence, and Connecting the World by 2030." Presenters emphasized the need for a fair digital framework to support the governance, funding, and infrastructure of digital public goods. Such an approach would allow governments and stakeholders to adopt cutting-edge digital solutions more freely, ultimately narrowing the digital divide between the global North and South.Modern technologies have replaced traditional working methods, leading to the rise of remote work and virtual teams. This transformation has made work processes more efficient and convenient. Companies can utilize information technology to improve operations, reduce

expenses, and enhance customer service. However, the advancement of information technology has also brought certain challenges. Issues such as data security, privacy concerns, and cyber threats require serious attention. Additionally, the reliability of online information is crucial, as misinformation can lead to poor decision-making. Furthermore, the rapid growth of digital technologies has created societal inequalities. Some individuals struggle to adapt to modern technology, limiting their access to education, job opportunities, and overall success in daily life. Therefore, it is important to expand opportunities for learning and using information technology to bridge this digital divide. In summary, information technology has become an essential part of modern life, influencing not only professional environments but also personal experiences.In developing countries, the absence of a supportive business and political environment, inadequate education, a focus on daily survival, and limited investment in research and development make it difficult to implement Western-style innovation models (Aubert, 2004). As a result, innovation occurs through both formal development programs and the efforts of local entrepreneurs and communities seeking to improve their living conditions. People in these societies often draw on their traditional knowledge to find solutions to local challenges. For instance, Kpelle artisans in Liberia have developed techniques to produce high-strength, rust-resistant iron (Thomasson, 1991). These innovations, known as "traditiovations" (Cannarella and Piccioni, 2011), originate from cultural and traditional practices. However, they are frequently dismissed by conventional scientific perspectives, and modern development programs often fail to incorporate these indigenous innovation systems. This is largely because such programs are designed and funded by individuals from Western countries, whose approaches are based on positivist epistemologies.

Conclusion

Innovation is a key driver of development, but in many developing countries, Western-style innovation models face significant challenges due to political, economic, and social constraints. However, innovation is not solely dependent on formal research and development; it also emerges from the resourcefulness of local entrepreneurs and communities who use indigenous knowledge to address their unique challenges. Traditional innovations, or "traditiovations," play a crucial role in these societies, yet they are often overlooked by mainstream development programs, which tend to follow Western scientific frameworks. To create more inclusive and effective innovation strategies, it is essential to recognize and integrate indigenous knowledge into modern development efforts. By fostering an environment that values both formal and traditional innovation, developing countries can drive sustainable progress while preserving their cultural heritage. Policymakers, researchers, and development organizations must work together to bridge the gap between indigenous and conventional innovation systems, ensuring that local knowledge contributes meaningfully to global development efforts.

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