



## TECHNOLOGICAL DIMENSIONS OF GLOBALIZATION ACROSS ORGANIZATIONS: INFERENCES FOR INSTRUCTION AND RESEARCH

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### ABSTRACT:

Globalizations across organizations are impacted by economic, political, legal, security, social, cultural, ecological and technological dimensions among others. This paper presents the readings from relevant articles and studies pertaining to the relationship between technology and its dimensions with globalization. Globalization and technological advancement are indeed interrelated where success or failure of one is associated to the other. With this, Technology Education and Globalization, as intertwined disciplines, must be inculcated across curriculums and program offerings to address the demand of the changing and challenging times. Besides, researches on technology and globalization are encouraged among educators.

### KEYWORDS:

EDUCATION, GLOBALIZATION, TECHNOLOGICAL DIMENSIONS, TECHNOLOGY.

### TECHNOLOGY AND GLOBALIZATION

Technology has the potential to be a valuable asset in the promotion of globalization. Technology innovation and application has broadened the world's borders and promoted economic, political, and cultural globalization (Rifai, 2013). Additionally, recent technological advances have aided in the acceleration of global development. Consistent technological improvements have contributed to the rising globalization of the modern world (Weisblat, 2019).

Technology is transforming the world into a global community (Custer, 1995; Ghemawat, 2017), with technological advancements greatly facilitating globalization (Chouhan, 2015; Kaufman, 2015). Correspondingly, globalization is a means to further technology. Aslam et al. (2018) emphasized that globalization has increased the spread of technology across borders. This relationship is revealed in the three significant findings of Aslam et al. (2018).

1. Globalization has accelerated the dissemination of knowledge and technology across borders. The dissemination of technology between countries is critical to the generation and distribution of global growth.
2. Globalization has accelerated the spread of technology across borders by making it easier for countries to obtain access to foreign expertise. It also increases worldwide rivalry, which increases enterprises' incentives to innovate and absorb foreign technologies.
3. Technology leaders gain from one another's innovation. Knowledge and technology do not

flow in a straight line.

Globally, technology has played and continues to play a multipurpose role among individuals and across companies. Technology affects cultures, institutions, governments, economy, and a variety of other domains (Custer, 1995). Rapid technical improvement has played a significant role in hastening globalization across multiple dimensions. Mitcham (1978, 1979) stressed four major technological conceptual dimensions.

1. *Artefact (tools, manufactured objects, etc.)*. Utensils, apparatus, utilities, tools, and machines are the different types of technological things. All of these artifacts are intended to be utilized, lived in, or operated in some way.
2. *Knowledge (scientific, engineering, uniquely technological 'how to' knowledge, as well as insight from the social and physical sciences)*. Making and using processes are often discussed in terms of human activity.
3. *Process (problem-solving, research & development, invention, innovation)*. This manner of technological manifestation has thus far undergone the most rigorous philosophical criticism.
4. *Volition (ethics, technology as a social construction, technology as a social force)*. Perfectly depicts the issue; technologies appear to be intertwined with every conceivable will, purpose, love, desire, need, intention, affection, and decision.

With the foregoing, this paper identified the top technology trends, technological dimensions of globalization, and technology education.

## TOP TECHNOLOGY TRENDS

Top technical advances have dramatically increased prospects for furthering globalization. The effects of technological progress on the global economic structure are causing massive changes in how companies and nations organize production, trade goods, invest capital, and develop new products and processes (National Research Council, 1988). Duggal (2021), Haase (2021), and Saurabh (2021) introduced innovations that are at the top of the list for 2021, even questioning the existence of a global pandemic. Although technologies are constantly emerging and evolving around us, these top new technology trends provide great job opportunities now and in the near future (Duggal, 2021).

1. *Artificial Intelligence (AI) and Machine Learning (ML)*. AI was created with the goal of making computers more useful and capable of autonomous reasoning (Thompson et al., n.d.). The science and engineering of creating intelligent machines, particularly intelligent computer programs, is known as artificial intelligence (AI). It is analogous to the similar goal of utilizing computers to study human intellect, but AI does not have to limit itself to biologically observable ways (McCarthy, 2007). ML is concerned with the subject of how to build computer programs that improve on their own over time (Mitchell, 1997).
2. *Robotic Process Automation (RPA)*. RPA is the use of software to automate business operations such as application interpretation, transaction processing, data handling, and even email response. RPA automates manual tasks that people used to accomplish (Duggal, 2021; UiPath, n.d.).
3. *Edge Computing (EC)*. EC is intended to assist solve some of these issues by avoiding the latency imposed by cloud computing and delivering data to a datacenter for processing. With the expansion of IoT devices and the introduction of 5G fast connectivity, the case for EC is being made by locating computation and analytics close to where data is generated (Shaw, 2019).
4. *Quantum Computing (QC)*. A computing method that makes use of quantum phenomena such as superposition and quantum entanglement. Because QC quickly queries, monitors, analyzes, and acts on data, it aided in the prevention of COVID-19 and the development of possible vaccinations. In banking and finance, quality control is used to manage credit risk, as well as for high-frequency trading and fraud detection (Duggal, 2021; Haase, 2021; Saurabh, 2021).
5. *Virtual Reality and Augmented Reality*. Augmented Reality enriches the user's environment while Virtual Reality immerses them in it. Although this technology trend has so far been mostly employed for gaming, it has also been used for training,

entertainment, education, marketing, and even injury rehabilitation. Either can be used to train surgeons on how to perform surgery, to provide museum visitors with a more immersive experience, to improve theme parks, or even to improve marketing (Duggal, 2021; Haase, 2021; Saurabh, 2021).

6. *Blockchain*. Blockchain technology is a framework that maintains public transactional records, also known as blocks, in numerous databases, referred to as the "chain," in a network connected by peer-to-peer nodes (Simplilearn, 2021).
7. *Internet of Things (IoT)*. WiFi is being used in the construction of many "things." IoT has already enabled devices, home appliances, automobiles, and other items to connect to and exchange data via the Internet. According to projections, about 50 billion of these IoT gadgets would be in use worldwide by 2030, resulting in a huge web of interconnected items ranging from smartphones to kitchen appliances (Duggal, 2021; Haase, 2021; Saurabh, 2021).
8. *5G*. Whereas 3G and 4G technologies allowed us to access the internet, use data-driven applications, and enhance bandwidths for streaming on Spotify or YouTube, 5G services are predicted to alter our lives. 5G services are scheduled to be available globally in 2021, with more than 50 operators supplying services in around 30 countries by the end of 2021 (Duggal, 2021; Haase, 2021; Saurabh, 2021).
9. *Cyber Security*. The field that assists businesses and organizations in defending devices, computers, and services ("C.I.A.") against malicious actors such as hackers (Simplilearn, 2021). This will continue to be a popular technology because it will constantly advance to guard against hackers, and the number of cybersecurity jobs is expanding three times faster than another tech employment (Duggal, 2021; Haase, 2021; Saurabh, 2021).

## TECHNOLOGICAL DIMENSIONS OF GLOBALIZATION

The Different Dimensions of Globalization (2012) identified the following Technological Dimensions of Globalization:

1. *Globalization is inescapable, inevitable or natural*. Even in a digital world, globalization is not unavoidable – a significant number of experts continue to believe in globalization's virtually limitless potential, with the majority of them focusing specifically on digitalization and communications technology, though some attention is still paid to transportation infrastructure (Ghemawat, 2017). Vietnam's President Tran Dai Quang stated that globalization is an unavoidable and irreversible trend; nevertheless, we can help shape it to be more

people-centered, inclusive, and sustainable (Asia-Pacific Economic Cooperation Secretariat, 2017).

2. *Globalization is the shrinking world.* The shrinking world theory describes how technology has influenced the world we live in today... With the advent of technology, the globe appears to have shrunk because everything is now at our fingertips (ICography, 2018).
3. *Globalization is driven by technology; it is dependent on technological advancements in information, communication, and transportation.* This is obvious in the world we live in today. We are to communicate with one another and move from one location to another. Similarly, Aslam et al. (2018) acknowledge that globalization has accelerated the spread of technology across boundaries. Globalization and technology, without a doubt, have mirrored interdependence.
4. *Knowledge is homogenized as a result of globalization.* Globalization promotes knowledge unity; nonetheless, Wang (2007) emphasizes cultural identity. Globalization not only promotes homogenization but also strengthens cultural identity. The worldwide relevance of local knowledge is provided by cultural identity, as is a feeling of self, community, and nation (Wang, 2007).

## TECHNOLOGY EDUCATION

Technology Education would be of greater demand in addressing the challenges of globalization. Custer (1995) emphasized that, given the pervasiveness of technology in cultures worldwide, and the virtual certainty that technology will continue to expand in both exciting and terrifying ways, citizens of the global village must have at least a basic understanding of technology and what it means for their lives. Indeed, Technology Education significantly addresses technological illiteracy which correspondingly attends to the demands of globalization.

Indeed, technology education is necessary to meet emerging globalization standards as well as unprecedented challenges organizations may encounter. In the post-pandemic phase, the global economy will require even more globalization (Contractor, 2021), which values the importance and requires the application of the different technological dimensions. Individuals must be assisted by technology education in performing activities for which they were not originally prepared, preparing for a nonlinear route, improving team skills, using information independently, and, eventually, laying the framework for sophisticated thinking linked to globalization realities (Tullao, 2003). This creates a larger burden for educators, as educational institutions are now held accountable for the quality of technology instruction they provide (Kankaew et al., 2021).

Technological advancements influence teaching and

learning. The use of technology in education as a teaching tool is increasing (De Souza et al., 2021). In today's fast-paced environment, technology education must be supported by knowledge and skills development, which may emphasize conceptual understanding (Ibañez & Pentang, 2021), problem-solving (Pentang et al., 2021), and cognition (Domingo et al., 2021) among others.

## CONCLUSION

The conceptual dimension of technology as well as the technological dimensions of globalization has shown its prowess and impact with the economy, politics, security, society, culture, and environment among others. However, few researches have established these observations. Most information reported were found through blogs and online articles (but not books or journals). With these, in conjunction with the challenges it posed to the educational sector, encourages researches and advanced innovations to be conducted to prepare and produce learners who possess "techniques and globalized character" and are ready for the threats and opportunities provided by advancement in technology and globalization. These further suggest that, educators, as catalyst of change of the challenging times, must do researches to cater concerns and adapt with trends and issues on global education posed by different technological dimensions.

To address the changing and challenging times, Technology Education and Globalization, as interdependent disciplines, must be instilled across curriculums and program offerings. Cyber ethics and netiquette, digital literacy, and global actors are just a few examples of 21st century skills and characteristics that must be integrated into all disciplines of curriculum, instruction, and assessment practices among educational institutions and educators. As technology and globalization advance, there is an increasing need to improve the teaching and learning experience. Graduates must be prepared holistically for future employment, professional development, community service, and personal advocacies beyond borders to meet the challenges of technological advancement and globalization.

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