The Contributions of Society 5.0 to Shadow Education: A Conceptual Paper

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Abstract

Society 5.0, invented in Japan, is a concept of a society looking to the future and creating solutions to social problems, improving the quality of life by using the latest technologies like AI, IoT, robotics, and big data. Its aim is to individualize education in order to bring down shadow education through tailored learning experiences. The paper contributes what Society 5.0 has to offer in shadow education, particularly in terms of the potentials of AI and big data analytics in customizing learning and bridging educational gaps. Five key findings that emerge from the review are first, the integration of advanced technology to enhance educational experiences. Second, personalized learning can improve learning outcomes and decrease the reliance on private tutoring. Third, sustainable development and enhance students' resilience by providing better education, despite of their socio-economic background. Forth, developing good collaborative ecosystem to develop innovative teaching methods and technology to reduce the dependence on shadow education. Lastly, lifelong learning support that assisting individuals adapt to cultural changes and rapid technological era. In conclusion, while Society 5.0 may reduce the demand for shadow education, it would succeed only through workable implementation strategies parallel to technological development and societal acceptance. Further research in the future should try to expound on the long-term impacts of an integration of Society 5.0 principles into education and devise frameworks underpinning equal access to such technologies.

Keywords:

Society 5.0, Shadow Education, Private Tutoring, Technology, Education

INTRODUCTION

The provision of additional educational help outside of the conventional educational system is referred to as "shadow education," sometimes known as private tutoring or "supplementary education." Shadow education also known as the mimics of school education system since they are using the same syllabus. In addition, it includes also a range of extracurricular activities that students participate to support their usual schoolwork, such as coaching, tutoring, and enrichment. Theses can be in a medium of private tutoring, group lessons, internet educational resources, or specialized test-prep courses (Luo & Chan, 2022). Shadow education has become a prevalent phenomenon worldwide and attracted researcher's interest in the past two decades. By giving additional resources and support to students who might not have access to a quality education or individualized attention in their daily schools, shadow education offers the ability to solve educational inequities. It can lessen the impact of socio-economic disparities on educational results and assist close the achievement gap between privileged and underprivileged kids.

Furthermore, it can help students perform and succeed better in school. It can assist students in overcoming difficulties with learning, consolidating concepts, and developing stronger basic knowledge by providing individualized education and personalized approaches (Kamaruddin & Saringat, 2022). In other ways, better grades, higher graduation rates, and more opportunities to pursue higher education can result from this. Shadow education are also very helpful by creating positive learning atmosphere at home, a sense of responsibility for education, and a stronger parent-child bond. This greater involvement by the parents created when they need to find the best tutors or educational programmed for their children (Jansen et al., 2020).

Shadow education may have certain advantages, but it also has some restrictions and disadvantages that should be taken into account, such as the possibility that it would exacerbate educational gaps or put excessive academic pressure on students. It is a challenge for society to strike a balance between the advantages of supplemental education and ensuring equitable opportunity for high-quality education. Hence, we need to implement new era of technologies such as Society 5.0 to close these gaps in order to have a better educational environment.

Society 5.0 is a concept that originated in Japan and envisions the next stage of societal development, integrating technology and human-centered approaches to address various challenges. It represents a future vision of a human-centric society that leverages advancements in technology, such as artificial intelligence (AI), the Internet of Things (IoT), robotics, and big data, to tackle social issues and improve the quality of life for all individuals (Önday, 2020).

During pandemic season, Society 5.0 have proven to help saving the society in many ways such as enabling remote work and communication and facilitating transition to online learning during school closure. Furthermore, it can also enhancing Telehealth technologies to reduced burden on healthcare services, e-commerce and delivery services and help educating and creating awareness towards the virus (T. Rana et al., 2020; Fatonia et al., 2020 & Anthony Weldon et al., 2021). However, research about the contributions of Society 5.0 towards shadow education in worldwide are still lack. Hence, in this paper, it will be explained in depth.

LITERATURE REVIEW

Society 5.0

Society (Society 5.0) is a philosophy that introduces Japanese Prime Minister Shinzo Abe. He said that "Technology is not as a threat by society, it should be perceived as a support.". Japanese Federation of Economic Organizations Keidanren had purposed the 26-pages of manifesto regarding the Society 5.0 philosophy considering the expected development economics and sociology reform. Önday (2020) mentioned that the main concept of Society 5.0 is based on five mains key principles. Firstly, Society 5.0 places human welfare as the core of its vision. It seeks to establish a society where technology serves the needs and aspirations of individuals, empowering them to lead meaningful lives.

Secondly, the harmonious integration of the physical and digital worlds has been highlighted. It aims to establish a setting where individuals can communicate and work easily across numerous sectors by connecting various technologies and platforms. Kurniawati el al. (2021) also agreed that increasingly sophisticated technology makes various jobs more accessible and more practical to communicate and add relationships easily for the progress of a company.

Thirdly, it leverages cutting-edge technology to solve issues pertaining to society, including AI, IoT, robotics, and big data. The convergence of IoT and AI marries of both and enables strong capability of resolving a broad range of problems (Feifei Shi et al., 2020). Innovative solutions are developed using these technologies in a variety of industries, including healthcare, transportation, energy, agriculture, and education.

Fourthly, it promotes sustainable development and enhance resilience. It aspires to address issues with environmental sustainability, reduce down on the consumption of resources, and create systems that can endure and recover from a variety of stresses and catastrophes (Fukuda, 2020). Lastly, everyone will be able to participate in and gain from developments of technology in the society described by Society 5.0. It attempts to establish a pleasant and cooperative ecosystem that motivates many stakeholders, such as individuals, companies, academic institutions, and governments, to collaborate in pursuit of mutually beneficial goals (Giusto, 2022).

Society 5.0 is seen as a response to the challenges faced by modern societies, such as aging populations, urbanization, environmental degradation, and economic disparities. It strives to leverage technology and innovation to create sustainable solutions that improve the overall well-being and quality of life for individuals, while also driving economic growth and societal progress.

Overview of Shadow Education in Worldwide

In Europe and Asia, attitudes towards shadow schooling can be differ. In European, the acceptance of shadow education differs between nations. Private tutoring has a long history and is widely considered as a supplement to formal education in several nations, including the United Kingdom, Germany, and France (Karin Guill et al., 2019). However, the need for private tutoring is not as great in other nations like Finland and Sweden, where the public education system is adequately acknowledged (Christensen et al., 2020).

In order to tackle the shadow education sector, several regulatory frameworks have been developed in European nations. Some nations have laws in place to maintain transparency and high standards, including licensing requirements for private tutors or rules for tutoring facilities. However, different nations have various levels of regulation and implementation (Walker, 2020). Furthermore, the concern over the possible growth of educational inequality through shadow education is developing across Europe. Students who can afford private tutoring may have an advantage over those who cannot, leading to unequal access to opportunities for learning.

In other perspective of Asian countries, shadow education is extremely common and well-liked. Private tutoring is engrained in the educational tradition of nations like South Korea, Japan, China, Singapore, and Hong Kong. It's frequently viewed as essential for excelling in school and gaining an advantage over competitors. In Asian societies, the popularity of shadow schooling is influenced by the intense competition for admission to prestigious colleges and employment prospects, where academic achievement is highly valued (Hultberg et al., 2020). Many families spend a lot of money on private tutoring to make sure that their kids do well on important examinations.

Entrich & Lauterbach (2020) mentioned in their study that the issues concerning the high levels of academic pressure placed on students and the persistence of educational inequality have been emphasized by the presence of shadow education in Asia. The gap between students from wealthy families and those from poor families might widen as a result

of the overreliance on private tutoring. Furthermore, in some Asian countries such as South Korea, the government has monitored closely the shadow education system. The policies have been implemented in order to mitigate the impact of private tutoring, including restrictions on the hours of operation and the subjects covered.

Overall, although while shadow schooling is ubiquitous and well accepted in numerous countries throughout Europe and Asia, its disadvantages, including inequity and academic stress, are equally acknowledged. Despite the fact that the approach and intensity of regulation differ between nations, governments and educational systems are taking steps to regulate the industry and address these concerns by implementing Society 5.0 to close the gaps in the shadow education.

Contributions of Society 5.0 to Shadow Education

According to Society 5.0, all people should have equal access to education (Ondey, 2020). Shadow education often emphasizes personalized and customized instruction to cater to individual learning needs and preferences (Entrich, & Lauterbach, 2020). Similarly, Society 5.0 envisions the use of technology to tailor educational experiences, adapting to the unique needs and interests of learners (Wibawanto, 2020). Both approaches recognize the importance of individualized learning to maximize educational outcomes. It may also encourages individualised and flexible methods of teaching.

Technology like artificial intelligence (AI) and data analytics are being used to create adaptive educational programmes or platforms that able to examine student's progress and adjust lesson to meet their specific requirements (G. Smitiene et al., 2021). By integrating technology in education, Society 5.0 can help bridge the gap between those who have access to shadow education and those who do not. It can provide online learning platforms, digital resources, and personalized educational tools to ensure that all students have access to high-quality education regardless of their background or location. This can give all students the same possibilities to receive top-notch education and lessen the need on pricey private tutoring.

The implementation of technology in education also has been highlighted by Society 5.0. It can give students access to a broad range of educational resources and support by integrating digital platforms, interactive learning tools, and online resources into the governmental educational system (Roblek et al., 2020). It highlights the integration of cutting-edge technologies, such as AI, IoT, and big data, to solve societal challenges. Shadow education often focuses on personalized instruction to address individual learning needs. Society 5.0 can enhance this approach by leveraging technologies such as AI and big data analytics to provide adaptive learning solutions. By analyzing data on students' strengths, weaknesses, and learning preferences, Society 5.0 can create personalized learning experiences that cater to the unique needs of each student, reducing the reliance on expensive private tutoring. This may reduce the need for additional resources from the shadow education system and guarantee that all students have access to high-quality educational resources.

Furthermore, Society 5.0 may emphasizes the collaboration among diverse stakeholders, including citizens, businesses, academia, and policy makers, to address societal challenges (Carayannis & Morawska-Jancelewicz, 2022). Similarly, shadow education involves active engagement between students, parents, tutors, and educational institutions (Yu & Zhang, 2022). By fostering an environment of collaboration, it can bring together educators and experts to develop innovative teaching methods and educational technologies that can be integrated into mainstream education. This can reduce the reliance on shadow education as the

sole means of obtaining additional educational support and instead promote collaboration within the formal education system itself. The collaboration may exchange the educational goods and services, innovative practices, and innovative methods of teaching. It can lessen dependency on shadow education as the only source of additional educational assistance by encouraging collaboration within the formal educational system.

In order to adapt to the shifting demands of the future, Society 5.0 also able to advocate lifelong learning and further education (Lopes & McKay, 2020). It can assist people in acquiring the skills as well as knowledge required to thrive in our modern world by encouraging a culture of lifelong learning. As people become more independent in their educational and developmental journeys, Shaturaev (2021) says that this may reduce the need for intensive private tutoring or supplementary education.

While Society 5.0 can help resolve some of the problems associated with shadow education, it's important to consider the potential challenges and limitations. Ensuring equitable access to technology, addressing the digital divide, and maintaining a balance between human interaction and technology-mediated learning are crucial factors to consider in implementing Society 5.0 in education.

Applications of Society 5.0's in Shadow Education

The Society 5.0 principal have been implemented tremendously nowadays. Many applications have been produced using this principal. The main common application is online tutoring and mentoring. This platform has been implemented tremendously during the pandemic outbreak (Hau et al., 2020). The platforms able to connect students with qualified educators and mentors. This can provide personalized support, academic guidance, and additional resources to students, reducing the need for costly private tutoring. For example, students can get in touch with knowledgeable tutors from a variety of backgrounds who specialize in a wide range of fields of study. These platforms can also offer adaptive learning experiences catered to the needs of certain students by utilizing AI and data analytics. Furthermore, it can also provide students with a wide range of educational resources, including digital textbooks, interactive learning materials, and online libraries. This guarantees that students, regardless of their location or socioeconomic status, also have access to high-quality educational materials.

Secondly, the adaptive learning platforms. Society 5.0 can develop adaptive learning platforms that utilize AI and data analytics to personalize instruction (Carayannis, & Morawska-Jancelewicz, 2022). Online tutoring and mentoring platforms can facilitate interactions between students and tutors from different regions and cultural backgrounds. This promotes cultural exchange, diversity, and cross-cultural understanding, enriching the learning experience for students. It can also identify students' strengths and weaknesses, adapt the content to their individual needs, and provide real-time feedback to enhance learning outcomes.

Thirdly, the most sophisticated performance that will surely attract the students is the virtual and simulation technology. Mourtzis et al. (2023) mentioned that Society 5.0 can leverage virtual reality (VR) and augmented reality (AR) technologies to create immersive learning experiences. For example, virtual laboratories and simulations can provide hands-on learning opportunities, especially in subjects such as science and engineering, reducing the reliance on physical resources by creating and environment like the real situation.

Lastly, the digital learning resources. Society 5.0 can promote the development and accessibility of digital learning resources, including open educational resources (OER), interactive modules, and educational apps (Zaid & Alabi, 2021). Online tutoring and mentoring

platforms can provide students with a wide range of educational resources, including digital textbooks, interactive learning materials, and online libraries. This ensures that students have access to high-quality educational content regardless of their location or socio-economic background. These resources can enhance self-directed learning, promote knowledge sharing, and expand educational opportunities beyond the traditional classroom.

It is important to consider that while Society 5.0 can bring advancements to shadow education, a balanced approach is crucial. Maintaining a combination of technology-mediated learning and direct human interaction can help provide comprehensive educational support and cater to diverse learning needs.

Limitations of Shadow Education Towards Society 5.0 Implementations

One of the main limitations to implement the Society 5.0 towards shadow education industry is the access and connectivity. Society 5.0 heavily relies on access to technology and reliable connectivity. The digital divide, especially in disadvantaged areas, can limit the effectiveness of technology-based approaches in reaching all students because not all individuals and communities have equal access to technology resources such as computers, smartphones, and reliable internet connectivity (Carayannis et al., 2021). The digital divide, especially in underserved or remote areas, can hinder the widespread adoption of Society 5.0's applications in shadow education. Without addressing this access disparity, certain segments of the population may be left behind, exacerbating educational inequalities.

Furthermore, for online teaching and mentoring services to work effectively, dependable internet connectivity is required. The seamless delivery of online educational services, however, might be hampered by connectivity problems, such as restricted internet access, sluggish speeds, or inconsistent connections (Cui et al., 2023). This could cause learning processes to be disturbed, which would reduce the success of Society 5.0's endeavor in the area of shadow education. In some area, there may not be or be insufficient internet access infrastructure, particularly rural ones. The accessibility and effectiveness of online tutoring and mentoring platforms may be limited by a lack of essential infrastructure, such as broadband networks and cellular coverage. To ensure that Society 5.0's applications can be implemented successfully, it is essential to upgrade and expand the infrastructure in underserved areas.

Shadow education often provides one-on-one or small group interaction, which can be crucial for personalized learning. Alimohammadlou and Khoshsepehr (2023) mentioned that Society 5.0's increased reliance on technology may reduce opportunities for direct human interaction, which can be important for addressing individual learning needs and building meaningful relationships. In other hands, Carayannis and Morawska-Jancelewicz (2022) also said that the initiatives under Society 5.0 mainly rely on people's technical literacy and digital skills. But not all children, parents, or teachers have the essential digital literacy to make the most of and profit from online mentorship and tutoring services. The potential of Society 5.0's applications in shadow education can be limited by a lack of digital literacy. This can prevent participation and involvement. To overcome this restriction, initiatives to give training and assistance in digital literacy are crucial.

Last but not least, Society 5.0 can be very costly to those who cannot afford it. While Society 5.0's technological solutions can reduce the cost of supplementary education, access to technology itself can be a financial barrier for some individuals and communities (Mishra & Pandey, 2023). The cost of devices, internet connectivity, and digital resources can still pose

challenges for equitable access. Online tutoring platforms could be expensive, making them inaccessible to students and their families who are struggling financially. Although Society 5.0 intends for equal access, budgetary restrictions can prevent online teaching and mentoring services from being widely used. No matter their financial situation, all students should have access to these platforms at a reasonable cost or with financial help maybe from private sectors, NGOs or government.

CONCLUSION

In conclusion, by implementing the principles of Society 5.0 in education systems, countries in Europe and Asia can address the shadow education problem by providing equitable access to education, personalized learning experiences, collaboration and knowledge sharing, and the integration of technology in order to enhance the effectiveness of shadow education. However, there are limitations that need to be considered. Since Society 5.0 depends fully on technology it's critical to take into account the unique cultural, social, and economic conditions of each region to make sure that the advantages of Society 5.0 are attained without posing additional difficulties or exacerbated pre-existing educational disparities. In order for these constraints been resolved, collaborations or fundings may be very useful especially from private sectors, NGOs and government. In future, more study can be done on the impact of the Society 5.0's implementations towards our society.

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