


# Chapter 3

## Augmented Intelligence for Knowledge Management and Green Education in the Post-COVID-19 Era

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### ABSTRACT

*Augmented intelligence is a paradigm that integrates machine capabilities with human cognition, amplifying cognitive abilities and optimizing decision-making processes. Integrating augmented intelligence into knowledge management can significantly improve experiential learning and training at lower costs while maintaining higher standards. Before the epidemic, AI-based transformation in knowledge acquisition, dissemination, and responsiveness began, which expanded rapidly during the global COVID-19 pandemic. Consequently, virtual knowledge management, online learning, hybrid training, and similar approaches have become familiar, while quality and real-time human participation have declined due to monotonous static features. Hence, this chapter discusses how to redesign knowledge management and green education systems with augmented intelligence/reality to enhance higher standards in virtual learning and training through advanced hybrid platforms such as holographic labs, 3D holographic training systems, bionic lenses, and electroencephalography for future generations.*

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## INTRODUCTION

Today's knowledge management processes and academic learning systems have undoubtedly undergone a remarkable AI technological transformation, especially after the COVID-19 epidemic. Automation technologies are incredibly replacing traditional learning platforms with hybrid systems that enhance opportunities for knowledge sharing across the world. The *hybrid learning systems* for academic and organizational purposes are mostly designed by artificial intelligence (AI) applications (Chng et al., 2023). Even though artificial intelligence transforms almost everything into an automated process, AI-based experiential learning systems require further improvement for realistic modules. Real-time and realistic experimental modules can be developed using augmented intelligence and augmented reality settings, such as *educational augmented applications, retrospective analysis, electroencephalography, bionic lenses, 3D holograms, and intensive safety systems*. However, AI programs in experimental cases may make unexpected decisions due to input errors (Agajanian et al., 2023). For instance, AI computers think in algorithms, but the human brain does not. Hence, decision-making by AI is limited to inputs, while limitations lead to risks (Bhattacharjee & Ghosh, 2024). Consequently, experimental decision-making with AI is somewhat challenging without human perception in the high-tech, post-COVID-19 world. Distance learning, hybrid lab experiments, statistical analysis, real-time research, engineering installation, and virtual engineering practices are some of the real-time facilities that mostly require immediate verifications and judgments by human intelligence. Augmented intelligence can be an excellent setting for the hybrid transformation of those facilities, for instance, see Figure 1.

Even though the worldwide epidemic sharply indicated the limitations of experiential learning systems, hybrid transformations in real-time learning and knowledge management systems are still at an initial stage (Bhattacharjee & Bansal, 2023; Doshi et al., 2023). In-class education systems and in-person organizational training processes have shifted online, but knowledge management procedures for virtual education, academic training, organizational training, and other experimental processes are still underrated on artificial intelligence platforms due to lack of human participation. Besides, textbooks, class assignments, lectures, training materials, and other theoretical study materials have now been replaced with digital forms.

However, one common question may arise: *'Is this sufficient to ensure quality learning without human intelligence?'* Therefore, integrating augmented intelligence facilities should adopt to improve both static and experiential learning systems through enhancing human intelligence in the post COVID-19 world (Hiran et al., 2024; Fagbola et al., 2022). Augmented intelligence extends the opportunity to spread knowledge across the world and merges human intelligence and computer intelligence to develop real-time experiential learning systems (Jahanshahi et al., 2023; Mijwil et al., 2023). Such advantages increase real-time knowledge mining, while a potential threat has emerged toward *zero-knowledge brain development* due to AI-based static learning processes. For example, many engineering tasks can now be easily completed by AI applications. Consequently, engineers have almost forgotten manual processing and may not be able to perform the same tasks without AI in the future. So, it's time to expand the scope of human participation with machine learning technology.

Teaching theoretical lessons to students or professional learners through virtual static content is effective, but providing experimental or judgmental instructions can be somewhat challenging due to time, quality, and understanding factors (Udvaros & Forman, 2023). A real-time education system with the highest standard of learning materials will ensure better understanding of knowledge and a sustainable learning process with maximum satisfaction (Eminaga et al., 2023). Therefore, competitive knowledge

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