Navigating the Educational Frontier: Assessing Engineering Professors' Adoption of Education 4.0 Methods

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Abstract

Education 4.0 is a new paradigm that is already transforming the learning experience. The fourth industrial revolution unveiled vast opportunities for Artificial Intelligence and Internet of Things. Employing those smart techniques paves the way for an advanced education system where customized lifelong learning is universally accessible. However, realizing the full benefits of Education 4.0 hinges on enhancing the capabilities of educators to ensure they can navigate such sophisticated technologies and methods. This study aims to explore the variables affecting the readiness to utilize the knowledge and skills of Education 4.0 amongst engineering professors in the University of Jeddah. In total, 22 faculty members across various ranks and disciplines participated in the study. The results revealed the level of educators' familiarity with Education 4.0 methods such as personalized learning, blended learning and virtual/augmented reality. In addition, the benefits and obstacles of each method is documented. The results also indicate that there is a positive correlation between academic rank and familiarity with Education 4.0, suggesting that faculty members with higher academic ranks tend to have a better understanding of these modern teaching methods. The present study has also identified a number of recommendations to enhance the underlying factors that influence the adoption of Education 4.0 in the college. Future research could evaluate the extent to which educator's familiarity with Education 4.0 contribute to better student engagement and therefore a better participatory learning environment.

Keywords
Education 4.0, engineering education, survey, lifelong learning, learning environment

Biographies
Yasir M. Aljefri is an Assistant Professor of industrial engineering at the University of Jeddah, Dhahban 23881, Saudi Arabia. He received his B.Sc. degree in industrial engineering from King Abdulaziz University, Jeddah, Saudi Arabia, in 2007, MEng degree in engineering management from the University of Alberta, Edmonton, AB, Canada, in 2012, and PhD degree in Systems Design Engineering from the University of Waterloo, Waterloo, Ontario, Canada, in October 2017. Dr. Aljefri's research interests include conflict analysis, multiple criteria decision analysis, group decision and negotiation, policy design, social and environmental systems analysis, risk management, project management, and financial analysis. In his doctoral research, Dr. Aljefri focuses on mathematical modeling and analysis of conflict situations having misperception among the engaging decision makers. His various applications address strategic study of oil and gas conflicts, climate change dilemma, water conflict, as well as geopolitical disputes.

Abdullah Alrabghi is an Associate Professor of Industrial Engineering at University of Jeddah. His research interests include Discrete Event Simulation and simulation based optimization. His current work examines advanced applications of simulation based optimization in industry where he published several conference and journal papers. He obtained his PhD in Manufacturing from Cranfield University (UK), his MSc in Engineering Business

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Abdulaziz Altabsh is an Industrial Engineering graduate from the University of Jeddah, possesses a strong academic background complemented by practical experience. Holding a Nano Degree certificate in Business Analytics, Abdulaziz showcased his commitment to staying current with industry trends. His summer training at Jeddah Cables Company as a Quality and Production Engineer provided hands-on experience in quality control and production processes. Subsequently, as a Maintenance Supervisor at Kidana Development, Abdulaziz efficiently managed the complaints database during the crucial Al Hajj month in Makkah. This experience, combined with his academic achievements, positions him as a versatile and capable professional prepared to contribute effectively to the field of industrial engineering.