

# Innovative Industrialisation – the Impact of Education 5.0 on University Operations in COVID-19 Times

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## Abstract

The National University of Science and Technology (NUST) leads in the delivery of Education 5.0 through research, education, innovation and industrialisation, leveraging collaboration and engagement. NUST creates production facilities through in-house designs from the ground up. Its international collaborations include those with the Botswana International University of Science and Technology (BIUST), University of Eswatini, SAE<sup>2</sup>Net, UK universities and the Royal Academy of Engineering. The aim is to create stronger links between industry and academia, and enhance doctoral training in manufacturing excellence. The talk presents a case study of NUST's role in Innovative Industrialisation through various collaborative initiatives within and without Zimbabwe. The cases where NUST participated as either a hub or a spoke in the projects on international collaborations and Industry - Academia partnerships were born to benefit education towards Education 5.0 are detailed. These have become handy in the COVID 19 pandemic response by the National University of Science and Technology.

## Keywords

Research, teaching and learning, innovation, scholarly engagement, and industrialization.

## Biography

**Mqhele E. Dlodlo** (SIEEE1987–88, MIEEE1988, FAS, FZweIE, Pr.Eng.(ECZ) 2011) earned a PhD (1996) from Delft University of Technology, a master's degree in electrical engineering (1989) from Kansas State University, and two bachelor's degrees in electrical engineering (1980), mathematics and independent studies in engineering management (1983), from Geneva College, Beaver Falls, PA, USA.

He is a Professor and Vice-Chancellor of National University of Science and Technology, Bulawayo, Zimbabwe where he is promoting Education 5.0 in action on innovation and industrialization. At University of Cape Town, Rondebosch, South Africa, he remains an Emeritus Associate Professor in telecommunications in the Electrical Engineering Department where he served between 2005 and 2018. He was also an Assistant Dean for Africa-centered Internationalization in the Faculty of Engineering and the Built Environment. His research interests are in wireless communication systems, networks and applications. Previously, Prof. Dlodlo designed curricula, taught, consulted, researched, headed departments and faculties at NUST as well as the Bulawayo Polytechnic over twenty one years. In 2003 he became a Fulbright Senior African Scholar at Virginia Tech in America, studying Learning and Information Technology Initiatives for academic leadership in research, learning, and fundraising.

**William M. Goriwondo** is a registered Professional Engineer with an MSc. degree in Manufacturing Systems & Operations Management as well as a Doctor of Philosophy (PhD) degree. Proven track record of technical, operational and strategic leadership, spanning over 20 years in Industry and Academia. Currently the Executive Dean of the Faculty of Engineering at the National University of Science and Technology (NUST), a Senior Lecturer, Researcher and an Engineering & Management Consultant. Member of the Institute of Directors Zimbabwe (IoDZ), Fellow and Board member of the Zimbabwe Institution of Engineers (ZIE). William has won several Awards that include the ZIE's Stevens Award (2019) for his work on training engineering on Project Management principles using computer

software. He has also won the Global Engineering Education Award by the IEOM Society. An experienced Project Manager and team player with advanced strategic planning skills. A published researcher with over 20 peer reviewed journal papers and conference proceedings as well as several other technical newspaper articles. He is a passionate leader in engineering education, manufacturing excellence, resource utilization and World Class Manufacturing (WCM). Prior to joining NUST in 2006, he held several engineering and management positions at BP and Shell Marketing Services as well as being Production Manager at Turnall Fibre Cement.