

Challenges in Engineering Education: A Review

Md. Mostafizur Rahman, Umme Salma Ferdousi, Tamanna Hasan and Tasnuva Sharmin

Department of Textile Engineering
World University of Bangladesh (WUB)
Avenue 6 Lake Drive Uttara Sector 17, Dhaka, Bangladesh
rahman6@textiles.wub.edu.bd, salma.ferdousi@textiles.wub.edu.bd,
tamanna.hasan@textiles.wub.edu.bd, tasnuva@textiles.wub.edu.bd

Dr. Md. Abdus Shahid

Department of Textile Engineering
Dhaka University of Engineering and Technology (DUET)
Gazipur, Bangladesh
shahid@duet.ac.bd

Dr. Ferdous Ahmed

Department of Environmental Sciences
International University of Business Agriculture and Technology (IUBAT)
Dhaka, Bangladesh
ferdous.ahmed@iubat.edu

Abstract

At present, we are the inhabitants of a fast world. Hence, our lifestyles are becoming very speedy day by day. These turbo ways of life are mainly the consequence of the establishment of engineering science and knowledge. Engineering is the amalgamation and implementation of scientific knowledge, technical data, experience, and managerial skills. Besides, it's a creative path through which imagination comes to reality. Analytically, engineering activities have shifted our society from conventional cycles to airships, glass fiber-based airplanes, rockets, submarines, electric cars, and counting. In addition, engineering actions transfer the cotton or polyester-based textile fabrics to bulletproof vests, flameproof apparel, and astronauts-wear. Besides, plastic-type polymers have become sports cars, artificial joints, and building structures. Engineering education, knowledge, and its implementation are the playmaker for creating new vibrations in our lives. It is engineering education that has paved the way to Industry 4.0. This influential engineering education and knowledge are not only a syllabus or subject. It's a curriculum containing multidisciplinary courses of theoretical contents, extensive lab work, field visits or fieldwork, group discussion, project management, cost management, managerial skills, and leadership. The final engineering products or services are impossible to achieve successfully and efficiently if any curriculum requirements remain partial or absent. The perfect "Engineering Environment" (a term we have used in this review paper) is a mandatory requirement to achieve engineering success. Many difficulties are approaching in delivering engineering education to harvest active and well-organized engineers. These problems are all over the world but are more noticeable in developing countries. Different issues such as politics, bureaucracy, and misplacement of unfit people, self-interest, weak management, and shortage of budgets are hindering engineering education and services. Even in many countries, the government is responsible for downward engineering education and knowledge. In this review paper, we have tried to put a subtle eye on the challenges of engineering education and the engineering environment. We have also discussed the ways to go in advance.

Keywords

Engineering, education, knowledge, challenge, and society.

Biographies

Mr. Md. Mostafizur Rahman is working as Sr. Assistant Professor and Head of Department of Textile Engineering, World University of Bangladesh, as well as the team leader of the departmental quality assurance cell and the chairman of the curriculum committee. At present, Mr. Rahman is a Ph.D. Fellow of the department of textile engineering, Dhaka University of Engineering and Technology (DUET). Md. Mostafizur Rahman graduated from Ahsanullah University of Science and Technology with a Bachelor of Science in Textile Technology. He completed the Master of Science in Textile Engineering from Mawlana Bhashani Science and Technology University. Mr. Rahman also served as the chairman of the Self-Assessment Committee, Department of Textile Engineering in 2017 -18 under the higher education quality enhancement project (HEQEP) of the University Grants Commission and has enough experience to design and review the OBE curriculum, course profile, assessment strategy and also overlooks the activities and professional development of faculty members. He has published several papers in international journals and also published book chapters under a publisher: Wiley – Scrivener. Md. Rahman has research works on various chemical treatment effects on fabric properties, the effect of ultraviolet protection finishes, the effect of yarn quality on fabric properties, natural polymer based composites etc. Mr. Rahman is interested in research in the following area: Biodegradable composites, Medical textiles, Modification of cotton fiber with synthetic polymer, Modification of jute fiber.

Umme Salma Ferdousi is working as a lecturer in the Department of Textile Engineering at the World University of Bangladesh. She completed her graduation from Bangladesh University of Textiles (B.Sc. in Textile Engineering). She is passionate about serving the world with environmentally- friendly, sustainable textiles and sustainable education.

Tamanna Hasan is a lecturer of Textile Engineering at the World University of Bangladesh (WUB). She started her academic career at WUB in 2021. Earlier she served as an executive at Epyllion Group in operations. She has received training in Quality Management Systems, Lean Manufacturing, and Operational management there. She wants to implement her industrial experience in research and academic career. She obtained her B.Sc in Textile Engineering from the Bangladesh University of Textiles (BUTEX). Her specialization is in Fabric Engineering.

Tasnuva Sharmin is currently working as a lecturer in the Department of Textile Engineering at World University of Bangladesh (WUB). She has obtained her undergraduate degree (BSc. in ME) in Mechanical Engineering from Islamic University of Technology (IUT) in 2022. Her specialization was in Refrigeration and Photovoltaic systems. In future, she plans on to develop a career in research and academia in the field of Mechanics and Material Sciences.

Dr. Md. Abdus Shahid is a Professor in the Department of Textile Engineering at Dhaka University of Engineering and Technology (DUET), Gazipur 707, Bangladesh. He is especially interested in the development of functional textiles and has a research and teaching interest in both textile engineering and nano engineering. He has published research articles of more than 50 in various renowned journals and conference proceedings. Dr. Shahid is a life fellow of The Institute of Engineers Bangladesh (IEB); life member of The Institution of textile engineers and technologists (ITET) and life member of Bangladesh Physical Society (BPS).

Dr. Ferdous Ahmed is an Assistant Professor of the Department of Environmental Sciences at IUBAT-International University of Business agriculture & Technology. He worked as an Assistant Professor (Adjunct) in the School of Environmental Science & Management at Independent University in 2017-2018. He obtained his PhD in Environment Science and Management from the University of Malaya, Malaysia in 2016. He received his BSc and MSc degree in Botany from the University of Rajshahi, Bangladesh. However, after his PhD study he also worked as a Postdoctoral Research Fellow at the same university. He has four years working experience as a research associate at the University of Malaya, Malaysia from 2011-2015. His area of specialization is climate change adaptation & mitigation policy, sustainability studies, waste management.. He is the member of ACCCRN Network and EEPSEA (Economy & Environment Program for Southeast Asia) and the Commissioned Member of IUCN. He received Brightsparks Scholarship for PhD study in Malaysia and received Postdoctoral Research

Fellowship from High Impact Research under the Malaysia Higher Education. Apart this he got several conferences and training funding/sponsor to present his research findings in Japan, Korea, France, Belgium, Thailand, Indonesia, and Malaysia. He has published 30 journal papers including sole book under Springer Nature.