Sixth Short-Term Capacity Building Programme on
'Research Ecosystem and Technology'
Report

The AIU-AI-AADC (Association of Indian Universities - Avinashilingam Institute - Academic & Administrative Development Centre) and Research and Development Cell of Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore organized sixth Short Term Capacity Building Program on Research Ecosystem and Technology from 28th August to 1st September 2023. This short-term program aimed to empower the participants with insights into the research ecosystem, cutting-edge technologies, and best practices that will bolster the quality and impact of research projects. 75 participants from various higher education institutions (HEIs) attended the program in virtual mode.

The program was formally inaugurated with prayer song. Welcome address was given by Dr. K Ramya, Nodal officer, AIU-AI-AADC. The program brief was presented by Dr. P. Lalitha, Director R & D of Avinashilingam Institute. In his Inaugural note, Dr. Mangala Sunder Krishnan, Department of Chemistry, Indian Institute of Technology, Madras emphasised on the need to communicate science to through quality journal publications, books, patents and product development. The session ended with a wonderful take home message as follows: 'You will be known and remembered not for the hundred pieces that you discovered but by the one piece that most people would find useful in their lives'.

Dr. KK Kailash, Professor, Department of Political Science, University of Hyderabad discussed about Rationalisation and Responsibility of Research and emphasised research needs to be FAIR – Findable, Accessible, Interoperable and Reusable. These four attributes provides more transparency to research work and discussed about resolving ethical dilemmas.

The next session led by Prof.S.P.Thyagarajan, Distinguished Professor & Advisor to Chancellor, VIT Universities discussed the significance of Institutional Regulatory Board Guidelines for Research. The Guidelines such as Informed consent, research in developing countries, protection of vulnerable populations, distribution of the burdens and benefits and role of ethical committees were discussed. Ethical principles namely Autonomy, Beneficence, Non-maleficence and Justice to be followed in research involving human subjects.

In the subsequent session, Dr. P. Lalitha highlighted the facilities for research in India and in Avinashilingam Institute. Further, the speaker discussed about I STEM, Turnitin and Researgence software. Ms. PonNivetha, Research Scholar of Chemistry, demonstrated the Response Surface Methodology (RSM) using Design Expert (DoE) version 13. The session clearly projected DoE as a structural method for studying a product, process or system and demonstrated about optimization with appropriate examples.

Dr Kuralarasan Kumar of Ghent University, Belgium demonstrated the application of 'Zotero' and the 'R software' for referencing purpose. The utilization and benefits of Turnitin with special focus on plagiarism and Grammarly software for text check in preparation of a scientific article was explained by Mrs.Geetha, Information Scientist of Avinashilingam Institute.

The subsequent session led by M.V.Subha, Associate Professor, Department of Management Studies, Anna University Regional Campus, Coimbatore presented a vivid talk on Open Research and its significance. The advantages, disadvantages and barriers to open access publishing were also elaborately discussed. Dr Fazzinussa from University of Madras introduced Clarivate Analytics and End Note Software Management with a demonstration of the software. Most popular styles of citations such as APA, MLA, Chicago etc. were discussed with examples.

Shri. Cedric Joseph M of C Intelligence discussed at length about the features and modules of Researgence RIMS. The purpose of "Researgence" is to create a comprehensive platform for storing and accessing research works from institutions. Demonstration was provided regarding the usage of Journal Book which provide an in-depth overview of journals, including indexing, scores, impact factor, publication details, and quality metrics.

The subsequent session on 'IPR, Patents and Copyrights' was led by Dr. Bharat N. Suryawanshi, Assistant Controller of Patents and Design, RGNIIPM, Nagpur. The speaker highlighted the availability of resources on the official website and encouraged participants to explore them to gain insights into intellectual property rights (IPR). The speaker emphasized that any idea originating from the human mind qualifies as intellectual property. Examples included innovative solutions for diseases, alternative energy sources like solar panels, and advancements in transportation such as electric vehicles. The step-by-step procedures for obtaining patents and copyrights were also highlighted during the session.

Shri. Stani Jude John of Statista India Private Limited discussed the major features of Statista - Research Database namely statistics, reports, market insights and infographics. Statista offers a global database, enabling users to access content from various geographic regions. Statista provides unlimited campus access and also users can download statistics in various formats. Five different citation formats are available in Statista to ease the referencing process.

Pramod K Nayar, UNESCO Chair in Vulnerability Studies, University of Hyderabad stressed on the importance of environmental humanities as a discipline within the realm of humanities. Discussing the literature of climate change, he underscored the importance of cultural responses alongside scientific ones. He introduced the concepts of ecocriticism and multi-species ethnography. Further, the speaker insisted participants to engage with the broader interdisciplinary framework of the discipline, which encompasses economics, philosophy, geography, history and more.

Ramesh Sivanpillai, Senior Scientist of University of Wyoming emphasised the importance of publishing articles in quality journals, identifying highly cited journals, benefits a researcher receives through publication, and getting funds for publication. Professor also shed light on identifying Web of Science journal and Scopus journal and explained Q1, Q2, Q3, and Q4 journal criteria. The speaker also discussed on Citation for articles, H-index, Self-citation and Total citation.

Dr. Shubhada Nagarkar from Savitribai Phule Pune University led the session on 'UGC Care listed Journals and Communicative Research'. The speaker discussed the importance of having manuscripts published in the care list journal. The process of structuring research papers to get maximum output and ways of writing impactful publications were discussed.

In the subsequent session handled by Dr. Lalitha on 'Selection of Right Journals' factors such as scope, audience, impact factor, and reputation of the journal was emphasised. Identification of appropriate journals for various disciplines in UGC Care List was demonstrated. The speaker also cautioned o predatory journals and suggested ways to publish quality manuscripts.

Dr.Deepa Boppanna, Attorney from Chennai explained about the patent filing procedure in India and discussed various sections of Patent Act 1970. To qualify for patents, inventions need to new, useful and non-obvious. Patent provides monopoly right to inventors. The speakers quotes few

examples that cannot be considered as inventions such as Time Machine and Biological Warfare Weapons. Copyright subject matter was presented along with examples. Filing procedures such as provisional and complete application were explained in detail.

Dr.Anita Agarwal, Head, TDT of DST led the session on 'Supporting early career researchers'. The speaker discussed on contextual referencing of STI policy, Research funding agencies in India, need to enhance quality and relevance of R&D, translation, Connecting academia and R & D labs, industry startups, MSMEs and ministries. The DST support chain for technology development was highlighted with numerous organizations/programmes such as Science and Engineering Research Board (SERB), NSTEDB, Technology Development Board (TDB), and Technology Information, Forecasting and Assessment Council (TIFAC) each having a separate activity that supports researchers with the latest technology. The planning and execution of a SMART research proposal was thoroughly outlined.

Dr.Pavithra V R , CSIR Fellow and Entrepreneur discussed on the incubation procedure, role of incubators, and support schemes for start ups. Funding Bodies of State Government namely TANSEED and IVP and that of Central Government namely Start Up India, BIRAC, DST, MSME, and MHRD were highlighted.

Prof.Wong of INTI, International University, Malaysia discussed the catalytic role of Multidisciplinary and Interdisciplinary research in achieving sustainable developmental goals. The speaker presented examples of designing a smart health monitoring service and a new plant-based therapy for multidisciplinary research. The skills required to do interdisciplinary and multidisciplinary research such as integration, holistic thinking, effective communication, synthesis, collaboration, open mindedness' and problem solving were discussed.

The valedictory address was given by Dr. HemanthKumar Aiyer, Senior Lead Scientist of Aditya Birla Science & Technology Centre, Mumbai. He discussed the research process and its implications for technologies such as data gathering, cloud computing, AI, ML, data analytics, and so on. The distinction between invention and innovation was discussed. Innovation formulae are creativity multiplied by risk taking. TRL levels were explained in stages. The speaker also discussed the percentage of GDP spent on R&D by the United States, China, India, and Israel and noted that India's contribution to R&D is very low and needs to be improved.