

Faculty Development Programme on Innovative Methods, Skills and Eco-Friendly Technologies

A five-day Faculty Development Programme on ‘Innovative Methods, Skills and Eco-Friendly Technologies for Quality and Impactful Research’ was organised by the Association of Indian Universities, New Delhi in association with Amity University (AU), Gurugram, Haryana, Academic, and Administrative Development Centre, Amity Academic Staff College on January 30-February 03, 2023 through virtual mode.

Dr. Sanjna Vij, Programme Director, AASC, AUH during the address, welcomed everyone to the programme and presented an overview of the event, and also introduced dignitaries. Dr Vij highlighted that the FDP is scheduled, keeping in mind the faculty’s professional growth, as they will learn about best practices for writing quality and impactful research papers. She also stated that the faculty will also learn about innovative methods through which one can publish the paper in various reputed national and international journals.

Prof. Vikas Madhurkar during his address highlighted that India has seen an increase in the number of scientific research publications, but the quality of those publications has lagged behind that of the United States, the United Kingdom, and other developed nations. The absence of infrastructure, suitable resources, and incentives was among the primary reasons for the poor quality of research publications. Dr. Madhukar stated that India has one of the largest higher education infrastructures, however, it does not create scholars who are focused on producing excellent research. He explained that for supporting high-quality research, this kind of FDP will assist the participants in getting their problems and concerns addressed.

Prof. P B Sharma, Vice Chancellor, Amity University, during his keynote address said that good times have arrived for India as *Aatmanirbhar Bharat* helped to create a conducive climate for research in our nation. In terms of R&D, India has caught up to the rest of the globe. In order to change lives and the humanities in general, Prof. Sharma underlined the need to rethink research and that our focus should now be on research for development. Quality and relevance should be the main goals of the study. Prof. Sharma stated that quality has no meaning without relevance. He also encouraged the researchers to engage more in collaborative research and also trans-departmental research. According to Prof Sharma, the objective and the outcome of the research

should go hand in hand, so the outcome that we are expecting should be well put in our minds before we begin with our research.

The Guest of Honour, Dr. Pankaj Mittal, Secretary General, AIU said that during the covid epidemic, it became very difficult to impart information without physically meeting, and online education ended up being the only option. The only way to overcome this obstacle was by using technology. Teachers all around the world have begun educating their students online, but she noted that there is a significant difference between teaching online and teaching online effectively. Because teachers are increasingly facilitators rather than informers. The future of education, according to Dr. Mittal, will include the integration of Artificial Intelligence (AI) into individualised instruction. She urged the researchers to engage in technologically friendly research because it is urgently needed.

Dr. Amarendra Pani, Director (I/c), and Head, Research Division, AIU said that the purpose of research is to inspire some change and we should not continuously keep on criticizing the Indian research system as we are improving notably. Dr. Pani pointed out some of the basic purposes of research like research should be application-oriented and should add knowledge to our existing knowledge. Dr. Pani also highlighted that teachers are working for human development and the focus should be on the impactful learning of the teachers. Dr. Pani reflected on how we must make our teachers future-ready because the future is in their hands. He stated that research has to be improved not only on the individual level but on the collective level.

The Guest of Honour, Prof. Shyam Menon during his address stated that one of the most important factors in the Faculty Development Program is peer learning and he said that creating an ecosystem of research is of utmost importance in conducting qualitative research. According to Prof. Menon research must percolate every cell of the higher education process, research is not confined to Ph.D. programmes only, but it has to be made an important part of the higher education curriculum itself. Prof. Menon mentioned that our focus is not to create an elite group of researchers but to develop a research spirit among the masses. Prof. Menon said that earlier the teacher was the mediator between the text and the student but now he is the liberator, a teacher has to transcend and generate new knowledge. Dr. Menon ended on this note by saying that abundance of research projects is needed because only the subset of that will have the caliber of percolating into the spectrum of qualitative research.

The Guest of Honour, Prof Narahari Sastry said that we need to be inventors and discoverers rather than followers but that will take time. He emphasized the need for teachers to have a proper understanding and clarity of research. He said that strong minds will discuss research and weak minds will discuss individuals. Dr. Sastry showed belief in the Indian system of research that is improving as a result of which is our very own Chandrayaan and the Indian-origin covid vaccines which are the safest. He also gave credit to the capacity and capability of our Indian research. Dr. Sastry said it is very important as researchers to realize the problems of our country and focus on our strengths and resources which can be employed in the research to be conducted. He pointed out that in this time when the whole world is looking at the ancient Indian scriptures for knowledge, there is a need for Indian researchers to relook at our traditional knowledge. Dr Sastry said that our Indian constitution urges its citizens to develop a scientific temper, which is so progressive thing as a country and hence we should try to achieve that.

The Guest of Honour, Prof Sandeep Sancheti, Provost (Vice Chancellor), Marwadi University, Rajkot, Gujarat said that research is knowing the unknown and it's like hitting in the dark. He says the generation of new knowledge, assimilation, and dissimilation of information is research. He mentioned that research bent of mind is very crucial for research, age doesn't matter in research. Prof Sancheti believes that young minds are less cluttered, so they are the best fit. He quoted, "Catch them Young" should be the mantra as young minds have tremendous potential of showing extraordinary results in the field of research. Prof. Sancheti points out the fear of failure is one of the prime reasons why people don't take up research, but we have failed to understand the importance of failure because he believes failure is the best teacher, if something didn't work, that failure would definitely teach us ways how it would have worked. Prof. Sancheti emphasized the importance of team making, team making makes research more effective and successful and it also cuts down on cost and time. He ended on this note saying that research should be for mind satisfaction.

The Chief Guest of the event, Prof. Manas Kumar Mandal opened his speech by presenting a very well-made PowerPoint Presentation which gave us deeper insight into the topic of discussion. He started by giving a few questions, "What is more important, doing the right project or doing the project right?" His take on this was that both are equally necessary. Prof. Mandal emphasized that the right framework of mind is very essential for research to be carried out. Prof Mandal asked what is to be focused on while setting the framework of the mind, identity, or integrity.

Attitude or aptitude? Innovation or Intuition? Agreement or Argument? Context or Content? Mind or mindset? Anything that is not copied is innovation and there is a framework for innovation too and the purpose of research should be to bring new knowledge from none or to challenge existing knowledge, said Prof Mandal. He pointed out that in a country like India, in our villages where people lack the theoretical knowledge are still doing some kind of research to find out solutions to their problems, the example of which is the manmade double-decker living roots bridge in Cherapunjee which people made when their government failed to do so. He ended by saying that the need of the hour is to create an interface between the top-down researchers and the bottom-level researchers to bring out qualitative results.

Prof. Rajesh Nair proposed his vote of thanks. He gave his heartiest thanks to the esteemed Chief Guest, Guest of Honour, and Panelist for their valuable time and discussion on the main theme.

The Second half of the Plenary Session began with Dr. S N Panda, Professor, and Executive Director (Research), Chitkara University on the topic 'Intellectual Property Protection'. Dr. Panda highlighted the concept of innovation as a new approach, concept, and system, but he added that it is distinct from the invention. He further classified the idea of innovation into further categories, namely management innovations, product innovations, process innovations, and technology innovations. Dr. Panda briefly discussed the four research methodology pillars. He moved on to Convergent and divergent thinking, ideas that arise from psychology, which have been combined with the idea of innovation and how it affects both existing and emerging markets. Dr. Panda, therefore, concluded that there is potential for the adoption of innovative, eco-friendly technologies to support daily activities associated with modern lifestyles.

Dr. Rakesh Kumar Khandal, President of R&D and Business Development at India Glycols Ltd. Delhi, presented a presentation on 'Innovate Talents and Eco-friendly India'. He discussed how research and technology are related, claiming that technology still needs a lot of R & D. He noted that teaching is an uncommon profession and, if selected, is solely viewed as a means of livelihood, not a vocation chosen out of passion. He noted that when the question 'What do you want to be?' is asked to the kids, they will list off every possible profession or job except for that of the teacher. Dr. Khandal discussed the differences between traditional teaching and learning and discussed the ancient and Vedic approaches to education in which the student, not the teacher, was the central role.

Dr. Ambika Devi, Head, Amity School of Science, Engineering, and Technology, Amity University Haryana started by paraphrasing Edward Teller, who once said that the science of today is the technology of tomorrow. Dr. Ambika spoke on 'Connecting the Love of Research and Development Leading to Excellent Life and Career' and she also discussed how academia, industry, and research are all components of the same field. highlighting the importance of research skills for academicians' personal and professional development. She pressed on the notion of the blending of academia and research will progress the country in both the academic and technological spheres. In three sections, she outlined the key components of a research culture.

On the second day, Prof Suresh Kumar Garg, Professor, Delhi Technological University, Delhi began by talking about the objectives of the research which includes comparing two or more theories, or determining the present status of different tools, benefits, difficulties, and so on, or to establish the relationship between two or more attributes, the grouping of variables, etc. He emphasized how developing an appropriate model and hypothesis is important for carrying out research. He also stated that studying the relationship between some parameters like dependent and independent variables is essential so that we can simplify the relations and make more meaningful relations out of those. He ended on the note that understanding and reflecting on your own research work is very important and he urged the research scholars to develop the intuitive sense along with the use of software.

The next session was delivered by Prof. Sanjay Kumar Jha, Director, Liberal Arts and Foreign Languages, Amity University, Haryana. He opened his speech by pointing out the mistakes research scholars generally do while writing their research papers. Beginning with research questions to the introduction and structure, Prof. Jha touched upon all the possible mistakes one can do. He also talked about the various types of knowledge like traditional knowledge, intuition and scientific knowledge. He advocated the use of scientific knowledge in research because it doesn't accept anything at face value, it proven with various experiments. He also gave an interesting statistic that 55% of matter added with 45% manner results in an impactful research paper. By the manner, he meant structure, length and language of the research write-up. Prof. Jha touched upon every segment of a research paper and how it is to be written.

The next speaker was Dr Anirban Das, Amity Institute of Science Engineering and Technology, Amity University Haryana, Gurugram. Dr. Das began by discussing the myth and fact of the innovation ecosystem, he stated that modern innovators are teams and innovation requires many types of expertise which includes financiers, consultants, designers and many more. He pointed out that the inputs required for innovation are creativity, research, knowledge, and information. According to him, there are certain components of innovation, and they are policy, strategy, process, and insight. He also talked about why ecosystems matter in carrying out impactful research and he laid down the characteristics of ecosystems.

The next Speaker was Prof. Sangnik Dey, Institute Chair Professor, Centre for Atmospheric Sciences, Indian Institute of Technology Idea, New Delhi. He spoke on 'How to Publish in the Research Fields'. He spoke about various research fields and journals such as natural sciences and atmospheric sciences journals, and to the same degree, he regarded nature journals as an interdisciplinary journal. The editorial process was described by Dr. Dey with the assistance of an algorithm as when the author submits a manuscript and it receives a tracking number. The editorial office performs an initial quality check on the manuscript to ensure that the paper is formatted correctly. An Editor in Chief is assigned to the manuscript and decides whether to send the manuscript to a Senior Editor for assessment. Positive, constructive, and even negative criticism is part of this process. He elaborated on the reasons why the manuscripts might be rejected with a help of a bar graph, one of the major reasons was listed as; the submission of inappropriate or off-topic manuscripts.

The next speaker, Dr. Zeeshan Fatima, Amity Institute of Biotechnology, Amity University Haryana started the discussion by giving the participants a brief of the word 'Antibiotic' and its Greek Origin. She ran the thoughts of the participants through the history of antibiotics from the first discovery of the antibiotic, Penicillin by Alexander Fleming in 1928 to the golden era of Antibiotics (1940-62). She moved the discussion to the motif of Drug resistance and its chronology, and how it takes 10,000 compounds to obtain 1 compound that is finalized for manufacturing and commercialization. She gave detailed information on drug resistance and its causes through the means of a graph and a diagram; incorrect dosage, improper infection control, and contaminated equipment may be among the possible causes behind drug resistance. On the third day, Dr. S Venkata Mohan, Scientist, CSIR-Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad began his speech by talking about sustainability and why is it important

for us to move towards sustainability now. He also addressed the issue of climate change and mentioned that moving towards sustainability is the only way we can deal with it. He also spoke about the ever-rising demands for energy around the globe and this is the time for meeting the energy requirements by switching to renewable energy sources. He also highlighted that India is now the world's third largest renewable energy producer with 40% of the renewable energy mix. Dr. Mohan expressed his concerns about carbon dioxide emissions and the need for the world to change its habits accordingly. He also talked about fossil-based or linear vs circular economy and why we should move towards the circular economy. He also put forward his expert views on sustainable development goals while talking about the challenges and opportunities we face while making a transition towards sustainability. He ended by saying that people around the world are researching sustainable living and with time we will surely get there.

Dr. Ritu Kumar, Amity Business School, Amity University Haryana talked about research tools and why we, as research scholars should use them. She stated that research tools and data play an increasingly important role in research and that it can save our time and add depth to qualitative work. She also believes that using research tools effectively increases the productivity of the research. Dr. Kumar then moved on to talk about some of the software tools of research like statistical software used for social science research which as the Statistical Package for the Social Sciences (SPSS), SAS which also performs these functions and is gaining popularity among the researchers, Consent Forms which is a necessity for anyone doing research with human subjects. She ended her discussion on a note by saying that using software tools or AI tools is neither unethical nor illegal, but it is us, the people who make it so. Hence, she urged the researchers to use all the new tools without losing their honesty.

The next speaker, Dr Varghese began his session by displaying a well-made and informative presentation titled 'Role of Quantitative Software Tools in Quality and Impact Research'. He began with what is quantitative Research and how it is used. He moved on to the 'Steps in conducting survey-based research' which included a 13-step process, which was explained by Dr. Varghese informatively. Some of the quantitative software research tools listed in the presentations were MS Excel and SPSS. He also listed out the essential features of a good software tool, such as being User-friendly, Capable of handling large amounts of data, Supports various data formats. The tools for Data entry were described in detail by Dr. Varghese giving the

participants a vivid picture of how can they use tools like spreadsheets and entry software to their benefit.

The session came to an end with an interactive Question and Answer session where participants were more than eager to get their queries solved.

The final speaker, Dr. Ujjaini Dasgupta, Amity Institute of Biotechnology, Amity University Haryana, began her discussion on the theme 'Research Software Tools & Eco-friendly Technology'. She introduced the panelists to the field of her research, which she spoke about with much passion. She then spoke about the research software tools, which are used popularly in the biotechnology field of research. Some of the software tools she listed and gave detailed information about were, GraphPad, which is used to perform T-tests, one-way ANOVA, and two-way ANOVA, ImageJ was regarded by Dr, Dasgupta in high importance, Bio render is used commonly and comes as a way to make a particular model of your work and such. She illustrated various Eco-friendly Biotechnologies that have come into existence in the last few decades. Blue biotechnology was the first one to be touched upon by Dr. Dasgupta, consisting of Aquaculture and immunology. On the topic of Nanotechnology, Dr. Dasgupta detailed some examples for a better understanding of the participants

On the fourth day, Dr Ravinderjit Singh Walia, Head, Production and Industrial Department, Punjab Engineering College, Chandigarh talked about the motivation behind conducting research. He classified the motivation behind the research into two categories: internal drive and external drive. The internal drive is basically the research interest that we have within us coming from a sense of achievement/fulfillment or curiosity or strong ambition. The external drive includes external factors like degree and diploma, peer pressure, and so on. According to him the main purpose behind conducting any research should be to be better informed and take less biased decisions, in contrast to guessing, hunches, intuition, and other personal experiences. Dr. Walia also gave us guidance on how to choose a research project, he highlighted that good research largely depends on the selected problem. He stated that if it's a good research problem, we will open doors for other people to follow, and if it's not then our research will not be followed by anyone. Dr. Walia ended on a very beautiful note saying it is not possible to make everyone happy at the same time, so it is needed that without losing our heart and patience we carry on with our research.

Prof. P C S Devara, Director and Professor, ASEES and Head, ACOAST/ACESH, Amity University Haryana began his session by talking about the use of technology to meet the bridge of gap in research. He also talked about sustainable development and focused on goal number thirteen of the sustainable development goals. He gave us an insight into oceanic and atmospheric research and talked about modern observational techniques to investigate any atmospheric, oceanic and geographical phenomenon. He also discussed Active and Passive Remote Sensing. Prof. Devara gave a detailed explanation of LIDAR- Light Detection and Ranging, a state-of-the-art technique being used in diversified fields, and also gave us examples of Lidars used for Ocean Research.. Prof. Devara ended his speech by pointing out some important gap areas pertinent to development and mitigation techniques and focused on natural remedies like cloud or rain scavenging.

Prof. Sumit Narula, Director, Journalism and Mass Communication, Amity School of Communication (ASCO), Amity University, Madhya Pradesh. Prof. Narula took an eye-opening session on how to identify predatory and cloned journals. He defined cloned journals as a counterfeit mirror of an authentic journal that exploits the title and ISSN of legitimate journals. In contrast to predatory journals, clone journals are more likely to accept papers from authors since they have developed as the mirror image of reputable journals. He also stated that predatory publishing is an exploitative publishing business model that involves charging publication fees to authors without checking articles for quality and legitimacy and without providing the other editorial and publishing services that legitimate academic journals provide, whether open access or not. He essentially pointed out that only two impact factors are to be considered – Cite Score by Elsevier (SCOPUS) and Journal Citation Report by Clarivate Analysis (Web of Science). He ended his session by saying that there is an increased need for scholars to be aware today before publishing the paper in a journal

Dr. Anish Gupta started by defining the general term ‘research’ before moving on to the IMRAD format and reminding the audience that choosing the correct journal is the most crucial step. He advised locating the research area and selecting it with great care. He gave a brief summary of what would be found in a scientific research article before going on to outline the procedure. The first step was picking a suitable title. Dr. Gupta asked the participants how they choose the titles for their research papers, and they enthusiastically responded. According to Dr. Gupta, the

drafting of the research paper's content and the procedure of acquiring data are very important. Dr. Gupta provided advice on how to write a good research paper, including the need for the article to be exact and clear, and the need for a thorough description of any novel procedures that are utilised.

Next Session was taken by Dr. Indu Shekhar Thakur, professor and director of the Amity School of Earth and Environmental Sciences at Amity University Haryana, Dr Thakur started by discussing environmental issues like climate stressors and biodegrading and how to solve them. Dr Thakur also explained carbon dioxide sequestration and described the genes and enzymes involved in carboxylation. Dr. Thakur then provided a quick overview of the role of machine learning and its applications as an example of artificial intelligence in microbiomes.

The next Speaker was Dr. Rishi Manrai from Amity Business School, Amity University Haryana. He started with a presentation on 'How to Prevent Journal Desk Rejection'. Dr. Manrai stated that the goal of writing a research paper can be to give a fresh or original thought, and examine or wrap up a certain field or subject. The title should be intriguing to draw the reader in, according to Dr. Manrai, who also advocated this idea at the start of the plenary session. The title and keywords are significant because they provide the reader with their first impression of the research paper. He discussed the necessity of connecting various parts of the study through discussion. As sometimes papers are only chosen based on a literature review, a poor literature review might result in a negative gap analysis and rejection by high-end impact journals. To help with this, Dr. Manrai recommended the literature review can be done area-wise and Methodology and experimentation are important aspects of a paper, especially a scientific paper, an author can ideally describe how the problem was studied, describe of lab setup, and discuss which environmental and methodological assumptions were taken. The question of 'What have you found?' can be answered in the results section, in formats of tables or figures.

On fifth day, Dr. A V Senthil Kumar, Director, Department of MCA, Hindusthan College of Arts and Science, Coimbatore began his speech by discussing the basics of a research paper and why is important to publish our research papers, he outlined the reasons to help society with that research, to gain appreciation and publicity for the research, it keeps the researcher alive and motivates others to research too and above all it can be a source of earning. Dr. Kumar discussed that by paying attention to our citations we can learn who is building on our work, depending on

the level of engagement we might also get our future collaborators. He highlighted some of the top indices like Web of Science, Scopus, Ei Compendex, and so on. He also discussed ISSN Number and how is to be calculated along with information about ISBN Number and DOI (Digital Object Identifier). Dr. Kumar also talked about Google Scholar Metrics like h-index and h-core and how to find it. He ended his speech by urging researchers to beware of cloned journals and he also suggested that every researcher must have a CV.

Dr Monika Arora, Professor, Amity Business School, Amity University Haryana. Dr. Arora opened her session by discussing research at the very grassroots level. She discussed the prospects of good research which ultimately benefits society. She highlighted the basics of a good research paper as purpose defined thoroughly, consistency, the research process detailed, the research design thoroughly planned, and the conclusions based on research and not own thoughts. She stated that before writing our research papers, we have to study related research papers and take one closely related paper as the base paper for our research. She also talked about deciding on the title of our research paper, she suggested that we should search for at least four to five titles and then go for refining them until we decide on one. She also suggested keeping broader keywords related to our research in mind before we finalize the title. Dr. Arora gave a good insight into the literature review of research, and what it must include, and she stated that the techniques that we are going to use should also be included in the literature review. She ended on the note by saying that researchers must consider the research as their own baby, take care of it, and nurture it till it is fully grown.

Prof. Surinder Jaswal, Deputy Director (Research) and Pro Vice Chancellor, Tata Institute of Social Sciences (TISS), Mumbai, Guest of Honour for the Valedictory Session, shared her thoughts on the qualitative impact of research. She spoke about Innovative Research and especially reflected upon the term 'Research' that has undergone a great shift from Pure Research to Research as conducted today. She emphasised upon agile mind and body to carry out fruitful qualitative research that should use new age methodologies based on interdisciplinary research carried out by well-rounded and strong scholars who should be able to come up with solutions to problems faced by humanity at large. Her stress was upon Adaptive Innovation Model with its new responsibilities. She motivated researchers to follow a range of methods and techniques that cut across different disciplines and to utilize Knowledge Economy to do away with stagnancy in research.

Prof. P B Sharma, Vice Chancellor, AUH accorded a warm welcome to Guest of Honour, Dr Dhananjay Joshi, Vice Chancellor, Delhi Teachers University. Dr. Joshi spoke at length about his experience as faculty with Amity University. He encouraged all to imbibe noble thoughts from all directions. He highly praised NEP for its emphasis on education that would generate food, cloth, shelter, health, and value base education for the development of India. He praised Kothari Commission which said that the Destiny of the nation is in its classrooms. He lauded the Commission for its outlook that aimed at Universal enrolment and access to State of Arts Infrastructure, Universal Retention at the rural level, and imparting universal quality education. He asked for autonomy for teachers. He elaborated on this by saying that teachers should not be overburdened, and should be given a selection of topics and tools and a choice of research topics. For students, his advice was to retain all that they learn in online mode. He stressed the physical mode of imparting education as it was more lucrative with its physical connection to the heart and soul of a student. Dr. Joshi spoke on the importance of universal quality education and Institutional Culture where ambiance needs to be created as a motivational force for faculty and students.

Dr. Sanjeev Bansal, Dean, Faculty of Management Studies, Director and Head, Amity Business School, AU, Guest of Honour for the Valedictory Session stressed simple research that should be dedicated in nature. He spoke highly about purposeful and controlled research that should be meaningful and outcome-oriented. According to Dr. Bansal, ethical research can benefit society, and people with quality are the ones who can carry out fruitful and beneficial research. Dr. Sanjna Vij proposed the vote of thanks at the end of the Valedictory Session.