

### **Researching within and across disciplines: A response**

All animals, big or small are capable of learning through life experiences, which plays an important role in the survival of an individual. What makes human beings different from other animals is that they are able to complement informal learning through a more formal process called education. In the human society, education is being used to pass knowledge, values, beliefs, skills, habits and attitudes from one generation to another, unlike in other animals where what an individual learns from birth to death ceases to exist beyond its lifespan. Therefore, education can be considered as a unique human enterprise, which plays an important role in establishing the boundary between humans and the rest of the animal kingdom. Human beings are also unique in the sense that they have an insatiable thirst to gather and document knowledge, perhaps driven by human curiosity and the desire to explain what we perceive through our senses. Research is the engine that generates knowledge in the human society.

The academia has a major role to play in this human endeavor of knowledge management as their fundamental duties include dissemination of knowledge and generation of new knowledge. Therefore, knowledge production is one of the core obligations of an academic. The academia comprises a number of different disciplines and sub-disciplines that have developed their own unique approaches as to how knowledge is generated and shared. As a result, most researchers tend to operate within self-imposed silos defined by their respective disciplines. However, this approach sometimes defeats the very purpose of research, which is to uncover the truth. Sometimes, it may not be possible to uncover the truth by looking at a research question through a discipline-specific lens, as illustrated by the ancient Indian parable of the blind men and an elephant.

Thus, addressing some of the emerging global issues require a multidisciplinary, interdisciplinary or transdisciplinary approach. These terms, even though used interchangeably, refer to the involvement of multiple disciplines in varying degrees, in seeking answers to a given set of questions. Multidisciplinary approaches draw knowledge from different disciplines but stay within their boundaries. Interdisciplinary approaches attempt to harmonize links between disciplines into a coordinated and coherent whole. Transdisciplinary approaches attempt to integrate knowledge across disciplines and transcend their traditional boundaries. Even though there is a general consensus among researchers about the need for such approaches, there are many challenges when it comes to putting it into practice. One way to overcome these challenges would be to build an understanding among researchers from various disciplines about specific subcultures, norms and conventions associated with different disciplines which would pave the way to identify common threads of thought and practices that are present among different disciplines

The Research Ethics Committee on Social Sciences and Humanities of the Faculty of Arts has held a panel discussion titled 'Researching within and across disciplines' with the aim of initiating such a dialogue among researchers representing a diverse array of disciplines. Panelists representing a wide range of disciplines from performance studies to medicine have presented their views focusing on five main themes: typical methodologies used in the discipline, accepted research output, the stage at which the research findings are published, evolution of the conventions in publications and threats to research. The aim of this response is to present a synthesis of the views expressed by the panelist as well as to provide some personal views about the topic of interest.

Based on the views expressed by the panelists it is evident that all researchers perform a common set of activities irrespective of whether their focus is the biophysical world, cultural universe or human enterprise. These include, observation, formulation of a research problem, logistics, information gathering, analysis and communication.

All inquiry begins with some observation, which leads to the framing of a question. The effectiveness of research will be determined by the ability to ask appropriate and well-articulated questions, which in turn depends on prior knowledge regarding the object of interest. Exploring prior knowledge involves exhaustive and continuous literature research, which is common to all disciplines, while some disciplines place greater emphasis on this aspect compared to others. The second stage is the formulation of a hypothesis, a theory or a concept that can be articulated, tested or manifested. The third stage is the logistics where the researcher must evaluate the resources required, such as funds, personnel, space, time and required skills. This may involve writing a research proposal to seek the necessary funds or getting the required clearances. This step is also common to all disciplines, although the logistics required may vary among disciplines based on the nature of the inquiry involved. Some disciplines place a heavy emphasis on quantitative methods while others gravitate more towards qualitative approaches. Generally, quantitative methods require more resources compared to qualitative approaches. The fourth stage is where data or information is acquired, which once again varies among disciplines. The fifth stage is where acquired information or data is examined thoroughly, honestly, and objectively to reach a conclusion. The sixth and the last stage is communication of the findings of the research which is the stage at which new knowledge is created.

There is considerable variation among the disciplines with respect to stages four, five and six. Depending on the methods employed, the fourth stage may last from a few days to many years. Intellectual integrity plays a pivotal role in defining the outcomes of this stage as data acquisition can be heavily influenced by personal biases entertained by the researcher. Further, there are many reported instances where the researcher has intentionally fudged the data to suit the desired outcomes. Qualitative

methods are more vulnerable to researcher bias due to the reflexive, subjective nature of qualitative research. However, it should be noted that even quantitative research is not completely immune to bias. Likewise, when considering stage five, the analytical tools used for qualitative research are not as rigorous as the analytical tools that are available for the analysis of data generated using quantitative methods. Even though statistical methods are quite robust, failure to select the correct analytical tool may lead to erroneous conclusions. Further, with the advent of artificial intelligence it has become possible to process large numerical data sets generated using quantitative methods that affords a distinctive advantage for quantitative research.

Considering the mechanisms used to communicate the outcomes of research, different disciplines tend to have distinctively different approaches. This in turn appears to be governed by strong moral and ethical norms that are unique to a given discipline. For instance, in science and medicine most publications have multiple authors. Especially in the field of medicine, it is quite common for researchers who are working on a common disease in different countries to come together and publish their findings. Likewise in science, it is a common practice for researchers who are working in different sub-disciplines to work on a common problem. Therefore, in these disciplines there is already an enabling environment for researchers to work together on common research problems. On the other hand, in humanities the method of communicating research outcomes as well as determining authorship is somewhat different, where single authored publications are the norm than the exception.

Therefore, if we are to promote multi-disciplinary, inter-disciplinary and trans-disciplinary research it necessary to overcome these discipline-specific practices and find common ground regarding research methods, analytical tools and communication. Even though trans-disciplinary approaches confer a number of benefits and opportunities for researchers, a cursory examination of the published research by academics of the University of Colombo to date indicate that there are very few examples of such research in the past. These reported examples of trans-disciplinary work are mostly between science and medicine. Even though there are many interphases between many of the disciplines such as humanities and science, humanities and medicine, science and law, etc. these interphases remain hardly explored at present.

On the last question addressed, which is threats to the discipline, many of the panelists have identified a common set of issues. *Inter alia*, these include lack of funding and especially in the area of science and technology, a higher emphasis towards applied research over fundamental research, lack of institutional support, a gradual deterioration in the standards of research, predatory and salami publications, and plagiarism, including self-plagiarism.

If we are to successfully address these threats, it is important to identify factors that are contributing to these threats. The root cause of many of these threats lies in fundamental changes that are taking place in the milieu within which research

is being done. First, full-time appointments or promotions in academic institutions are determined based on research productivity rather than teaching quality, creating a culture of publish or perish. Second, research productivity is measured using matrices that are based on a single or few criteria such as *h-index*, that show a strong bias towards certain disciplines such as science and medicine while other disciplines are not properly assessed. For example, analysis of the top 100 authors from the University of Colombo listed in Google Scholar based on number of citations shows a heavy bias towards medicine (58) and science (35) and only six from humanities and one from management. There is a tendency for institutions to use these matrices when recognizing academics, e.g. Senate Award of the University of Colombo being based on number of citations and *h-index* or UGC Circular 05/2018 (i) outlining a scheme to measure research performance based on the *h-index*), determining funding, and supporting publication costs where many disciplines are likely to get marginalized. Third, most funding agencies are giving priority to research projects with practical applications forcing researchers to abandon fundamental research that may not provide payoffs in the immediate or foreseeable future. Fourth, a greater emphasis is placed by the academia on commercialization of research and forging affiliations with industries. This can heavily influence the outcomes of research as there is a greater emphasis on obtaining patents that impose severe restrictions on publishing the findings, leading to privatization of public knowledge. Fifth, advances in digital technology that have created a new platform for publishing research outcomes as well as holding research conferences, have also led to bogus journals and conferences that has resulted in a significant reduction of research standards across disciplines. These changes have brought about a fundamental paradigm shift where researchers are now driven by the need for survival rather than satisfying their intellectual curiosity, which has forced many to abandon research ethics and responsible conduct of research. This poses a huge threat to the knowledge creation process as a lot of erroneous knowledge is being added to the body of knowledge. This will pose an added challenge to forging research collaborations among disciplines as disparate disciplines have different ethical philosophies, pedagogies, expectations, and realities which will make it difficult to find a collaborative spaces for effective knowledge transfer across disciplines.

However, no matter how challenging it may appear, it is important to promote research across disciplines. I believe this panel discussion organized by the ERCSSH of the Faculty of Arts has helped shed light on the challenges that have to be overcome in achieving this feat, which is only the end of the beginning. The next step would be to find ways to mainstream the concept of trans-disciplinary research within the academic community of the University of Colombo.

***Devaka K. Weerakoon***

*Senior Professor, Department of Zoology, University of Colombo*

## **Acknowledgements**

We would like to thank the following students for volunteering their time towards transcribing and editing a first draft of the presentations included in this section: Anupa de Silva, Devni Dharmasooriya, Yowan Dias, Pramod Dilshan, Pamudi Guruge, Ridma Jayawardane, Lihini Jayawardene, Nipuni Kaushalya, Divya Lakshumi, Lithara Nanayakkara, Fazmiya Noordeen, Harini Piyatissa, Isuru Prabhath, Shenali Ranasinghe, Kusali Rupasinghe, Thanuri Somasiri, Nipuni Wanniarachchi.