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The Interdisciplinary Research Team not the Interdisciplinarian

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BACKGROUND

Worldwide there is a growing interest in multidisciplinary and interdisciplinary research. This Viewpoint addresses some of the pitfalls of, and barriers to, being an interdisciplinary researcher. Engaging in interdisciplinary research is not an easy option for an individual discipline expert. It requires individual skills, ability to see beyond one's discipline and perhaps personality characteristics (e.g. being a team player).

Interdisciplinary research may involve a mixed-methods approach underpinned by conflicting, and according to some incommensurable, research philosophies. The paper uses some examples drawn from experiences of working in interdisciplinary teams to illustrate its potential.

In the commercial, education, the media or government sector some professionals are perhaps interdisciplinary in their thinking and their practice. They work to solve a problem, deliver a service or a policy, each bringing a specific skill and/or experience. For example, in industry it really does not matter whether the marketing manager of a new drug has a degree in nursing, sociology or pharmacy. What matters is that they can deliver a good job. In many countries there is a growing appreciation of multidisciplinary and interdisciplinary research. Increasingly research papers are being published by interdisciplinary projects, teams and/or based on interdisciplinary approaches. It is worth noting that there exist several terms to describe the different ways researchers from different

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disciplines work together including cross-disciplinary, multidisciplinary, interdisciplinary, transdisciplinary, and collaborative research.¹ Sometimes used interchangeably, each has a slightly different meaning.

Multidisciplinary involves two or more disciplines working in together, offering different pieces of a jigsaw and producing more than the sum of their parts. Disciplines often work closely together to produce new knowledge, where researchers from different disciplines understand and engage in all components of a study and share their different viewpoints of findings and interpretation.² Apart from working with researchers from different disciplines, researchers may also be collaborating with "non-academics such as non-governmental organizations (NGOs), health service providers or community organizations".³ Interdisciplinary approaches are considered to be more desirable than multidisciplinary team working because they can lead to further insights about the issue under study.⁴ Cross-disciplinary is a more confusing term as it potentially refers to all the other three approaches, i.e. more than one discipline working together to a much more integrative approach (e.g. interdisciplinary or transdisciplinary). This paper focuses on key characteristics of the interdisciplinary approach and researchers conducting such research.^{1,5}

Recent calls from many funding bodies highlight their eagerness to fund interdisciplinary research with interdisciplinary applications promoted in the University Grants Commission in India (https://www.ugc.ac.in/pdfnews/5816125_Promoting-and-Improving.pdf) as well as in the UK. The current national process of assessing the quality of UK research introduced a special Interdisciplinary Advisory Panel to the existing discipline-specific panels, associating interdisciplinary advisors to each discipline. Such openness to interdisciplinary research did not exist in previous assessments.¹ Currently individual discipline-specific research UK panels highlight the importance of interdisciplinarity, for example in Area Studies (=Geography):

"With its focus on understanding a country or region, Area Studies draws on relevant disciplines and methodologies from both the humanities and social sciences for understanding the country, region or issue under study. As such, it is by its very nature both multi- and inter- disciplinary and encouraging of trans- disciplinary initiatives that explore creative ways of working across disciplinary boundaries".⁶

It is widely acknowledged that interdisciplinarity

is needed to not only address so-called 'wicked problems', but also areas that have stigma attached to them. These are problems that are too big, multifaceted, and complicated to be addressed, let alone solved, by one single discipline, problems like climate change, the COVID-19 pandemic, or the global refugee crisis. When achieving results in applied areas of research, it is important to note that UN Sustainable Development Goal (SDG) 17 focuses on building partnerships.⁷ SFD 17 further encourages researchers to embark on more interdisciplinary research especially when working on more applied or practice-based disciplines.

The interdisciplinary researcher

An article outlining the difficulties of 'doing' interdisciplinary research in Public Health outlined the key characteristics of 'the ideal interdisciplinary researcher'⁸. We perceive interdisciplinary research as a team effort, whereby researchers trained in different academic disciplines come together to complement the skills and perspectives of each to address 'difficult' research questions.

Within any interdisciplinary research team topic specialists can face challenging questions requiring a broad range of skills and knowledge from across their discipline.⁵ Thus, an economist, specialising in micro-economics, may have to represent the social science perspective in a study addressing environmental pollution or global warming, as they might be asked by the biologist on the team about macro-economic issues. We must always remember that people outside your discipline, including other experts on your interdisciplinary teams, know relatively little about the sub-specialties within your discipline. To the others on the team, you are the discipline expert, not the geographer who has specialised in one part of South India. Your colleagues assume that you have geographical knowledge about Pakistan or Sri Lanka. Similarly, the public health researcher, specialised in leprosy, is likely to be asked detailed questions by her non-medical team members about other health issues, for example risks associated with COVID-19 or Leishman disease. In aspects of psychology, the psychologist provides the understanding of the core issue, but a sociologist or public health expert can bring their insights to understand the issue in hand, especially when talking about application and awareness.⁹

The interdisciplinarianist

One can envisage the concept of interdisciplinary to be present in one academic, the so-called

interdisciplinary. One person, who is the embodiment of different disciplines coming together, the equivalent of the Renaissance polymath, a person with knowledge about many different subjects. Or more generally the debate on generalist versus specialists,¹⁰ for example in journalism:

"While it is our ambition to manage many different areas of expertise at the same time, an inevitable consequence is that we will not be able to become experts in all the fields that our work somehow draws from. This will likely affect the quality of research we do on those fields we are not completely familiar with. Thus the work of an interdisciplinary will probably be more superficial, in some aspects, than the work of those scholars who have deep knowledge in that particular field which the interdisciplinary has not managed (or even wanted) to cover as fully".¹¹

Cheas draws the logical conclusion that "it is thus better to be a little bit less ambitious (i.e., not try to cover everything; recognize our own limits) and try to do a good job covering those fields that we are more familiar with. And simultaneously be open to the work of others; try to learn how our work could contribute to theirs', and vice versa, in order to broaden and deepen everybody's understanding of the matter."¹¹ We argue that it is good to be ambitious, but do not to try to know everything yourself and then produce work that is more superficial. Interdisciplinarity research works best through team of experts experienced in different disciplines bringing multiple factors essential to the success of interdisciplinary work.¹²

What does it take to be an interdisciplinary researcher?

Personality characteristics that often contribute to someone who may be an interdisciplinary researcher. You have to be curious enough to work with others in different disciplines but equally respect their expertise. Studies show that interdisciplinary researchers include greater creativity, increased the capacity for problem solving and innovation.⁵
^{13 14} This approach may produce more accessible and realistic knowledge which is of key interest to both academics and policymakers.⁸ It is essential to be team player, while also collaboratively working towards a common goal of addressing a difficult research question. There is a need to not only be open-minded and negotiate; but to have a degree of flexibility and tolerance of the other experts' ignorance about your own discipline, especially if your discipline is not the lead discipline in the

interdisciplinary collaboration. Having excellent knowledge of your discipline while being able to think on your feet in team meetings, the interdisciplinary would not be a purist (neither methodologically nor theoretically). In short, not everyone is cut out to be an interdisciplinary researcher.

Research philosophies and methodologies

Interdisciplinary research encourages researchers in teams to consider the perspectives of other disciplines. At a deeper level it may also require one to consider different epistemologies and methodologies and perhaps reconsider one's own. Pragmatism is often associated with interdisciplinarity in research, although it is not the only possible approach associated with interdisciplinary research. Pragmatism is also firmly rooted in mixed-method approaches to research.¹⁵ Mixed-methods research uses the strengths of both qualitative and quantitative approaches individually, particularly in combining approaches to maximise strengths and minimise weaknesses inherent in each approach. The researcher is expected to be aware of the methods and requires them to use it based on the question and/or research at hand. For a Pragmatist researcher using mixed methods approach means to focus is on 'what works', rather than grand ontological or epistemological debates.¹⁶ Pragmatism offers a set of philosophical tools which one can use to address real-life problems. Often requiring the researcher to make decisions that may not be a pattern in their field of research.

An example of work that showcases the relevance of interdisciplinary work, comes from an ongoing project in India that started off with a goal to improve awareness of mental health issues in society. From a psychological perspective addressing this would prove challenging, especially with the associated taboo to mental health issues and people's reluctance to seek support within psychological or psychiatric settings. However, when a team of a psychologist, social health experts and medical doctors with experience in public health came together, the team became more diverse. Allowing the team to address the issues in mental health from a well-being perspective. The project has a broader goal, integrating various aspects like education seminars, public health workshops and research to be carried under one umbrella. When looking at community psychology and its application, interdisciplinary research is the way forward. Interdisciplinary research is more inclusive,

pragmatic and flexible to address any challenging topic at hand^{17,18}, whilst also integrating knowledge from all contributing disciplines to create new knowledge and insights.

Expectations of the discipline

Each of the authors of this paper has been trained in quite different academic disciplines, ranging from, public health, demography, sociology, psychology, midwifery, and health education. Within academic disciplines we all have our own scientific language (and jargon), perception of high-status journals, ideas what a good paper looks like, expectations of authorship (i.e. number of co-authors or authorship order), preferred methodologies (qualitative, quantitative and mixed-methods) etc., in short 'the way we do' here it in my own discipline. You are in some ways the defender of your discipline, but effective interdisciplinary teams require clearly measurable by increasing the commitment of the team members and such team deals the heterogenous issues to the targeted beneficiaries. Literature has repeatedly concluded that interdisciplinarity and disciplinary specialisation are mutually dependent, and this is often a prerequisite for interdisciplinarity research using complementary processes in the generation of knowledge from multiple perspectives.^{19,20} Hence, to understand the dynamics of interdisciplinary research it is critical to understand the relation between disciplinary specialisation and interdisciplinarity across the disciplines.

For a practice-based discipline such as midwifery, interdisciplinary research can also have practical implications. Davis Harte and colleagues report a study which uses video recordings to enable an interdisciplinary analysis of the complex environment that is the birth space.²¹ Since researchers, apart from the midwife, cannot be at the birth, but having video recordings midwives' taking own field notes means that the privacy of the birthing environment can be maintained whilst the inter-disciplinary research team can analyse the data. Here an interdisciplinary approach of midwifery, architecture, design, communication, and public health can study the complexities and interactions of design, behaviour, communication, and experiences.

We started this paper recognising that interdisciplinarity is often not the same problem in industry, government, or NGOs as it can be in research. One example linking research with practice in the health services would include clinical audits, where interdisciplinary research can bring together better insights from many different

practitioners in the area of one disease or condition. During multidisciplinary meetings inputs from clinicians (e.g. nurses or physiotherapists) can feed into decision-making together with insights from psychologists or accountants. Working in teams with neurologists, sociologists, psychologists and mental health workers can further bring together change in the direction or focus of that research to help it focuses on the key mental health issues of the day.

Final thoughts

This is not a sociology paper, an education article, a psychology viewpoint or a public health paper, it sits across the various disciplines. It allows a researcher interested in exploring interdisciplinary research to have a point of reference. Three of our conclusions are: first, individual researchers should not try to learn and understand everything in an attempt to become an interdisciplinarian. We believe it is much more fruitful to be topic or discipline specialist whilst being open-minded enough to accept the perspectives and ways of working of other disciplines. Secondly, not everybody has the ability to be an interdisciplinary researcher, or to make a positive contribution to an interdisciplinary team. Finally, interdisciplinary research is a tool that can address bigger, more complicated, stigmatised and/or practical based research questions more effectively. Such bigger problems, be it around health, poverty, global warming, pollution, food security or conflict resolution, typically can't be solved by one single discipline, these so-called 'wicked problems' often require input from many different disciplines to get the best out of each and generate a synergetic effect whereby the whole of the solution is more than its individual parts.

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