Training PhD students

Session: Searching, reading and synthesising

Skills and competencies
Analysis, understand epistemology, search scholarly databases, read academic journal papers

Duration and scheduling
An interlinked series of sessions over one week

- Introduction and multidisciplinary teams: 2 hours
- Epistemology and methodology: 2 hours
- Introduction to databases and searching: 6 hours
- How to read a journal article: 2 hours
- Presentations of contributions of disciplines: 2 hours

Mode of delivery
With a group, in person or virtually

Video: https://youtu.be/KU9YzKJDEk4]

Outline
Running over the course of a week, these sessions are structured around problem solving, as students learn and apply essential research skills. They build their understanding about their own and other students' disciplines: the epistemology and methodology of each discipline, the kinds of knowledge it produces and the ways in which this knowledge can address a public-health issues such as under-five mortality and morbidity.

Session: Introduction and multidisciplinary teams

Outline
PhD students are likely to come from a range of different disciplines such as medicine, nursing, environmental health, epidemiology, demography, therapeutic sciences, psychology and sociology. Each discipline can contribute to our understanding of particular public/population health issues. By working in disciplinary teams, students get to know each other, work across institutional boundaries and reflect on their discipline. Tasks continue over several sessions.

Objectives

- For students to get to know each other
- To introduce the contributions of students' disciplines

Preparation
Facilitators
Flipchart and markers (in-person)
PowerPoint slide of the task instruction (virtual)

Steps
1. Participatory exercise (0–45 mins)

Students move between two sides of the room – one side labeled "agree" (ie this is true for me) and the other side "disagree" (iethis is not true for me). The facilitator makes a series of statements, such as:

"I have travelled to East Africa before"
"I have a child(ren)"
"I have changed a baby's nappy/diaper"

Through the discussions that follow, students start to learn about their peers and conversations about gender roles and norms are initiated.

The final statements are about disciplines, such as:

"I am a medical doctor/specialist"
"I am an epidemiologist/biostatistician"
"I am a sociologist/anthropologist"

At this point, participants remain in their disciplinary group, while others move until everyone is in a group. The facilitator splits or joins groups until each group has three to five members.

2. Group task (45–60 mins)

The facilitator explains the task. In their groups, students research (through a literature review) what their discipline contributes to our understanding of a specific public-health issue, for example, the factors that contribute to child under-five mortality and morbidity. It is important they limit their search to key papers from their discipline. After an initial search, the group must agree on ten papers that have made the greatest contribution.

3. Group exercise (60–120 mins)

Students discuss in their groups how they define their discipline. They begin to develop search terms and a search strategy to identify literature on the contribution of their discipline to the issue. This process continues through other sessions for the whole week.

Outcomes

After this session, students should be able to:

1. Engage with other learners across institutional boundaries
2. Define their discipline within disciplinary teams

Assessment

Self-evaluation through discussion

Session: Epistemology and methodology

Outline

In groups, students answer questions about knowledge. They learn the links between ontology, epistemology, methodology and methods in general, and go on to discuss the epistemology of their own discipline.

Objectives

- Engage with epistemology and the links to methodology
- Analyze the epistemology of their discipline

Preparation

Facilitators

Prepare four sets of two or three questions each about knowledge
Prepare input on the links between ontology, epistemology, methodology and methods
Flipchart and markers (in-person)
PowerPoint slide of the task instruction (virtual)
PowerPoint with input (virtual)

Steps

1. Group-based activity and feedback (0–60 mins)

Students form four to eight groups, of mixed disciplines. The facilitator gives each group two or three questions to discuss, such as:

What is knowledge?
Whose knowledge counts?

The groups feedback their answers in plenary. They adding only new answers if another group has made the same points.

2. Short input to synthesize concepts (60–75 mins)

The facilitator consolidates the discussion. S/he shows the links between ontology, epistemology, methodology and methods; presents different research paradigms; and outlines the epistemology and methodology of each one.

3. Group exercise (75–120 mins)

Meeting in disciplinary groups as previously, students discuss the epistemology of their own discipline.

Outcomes

After this session, students should be able to:

- To discuss epistemology and the links to methodology
- To analyze what the epistemology is of the group's discipline

Session: Introduction to databases and searching

Outline

This day-long session introduces doctoral students to various scholarly databases. They learn through practice how to search them effectively for specific information for research needs.

Objectives

- To build literature-searching skills
- To become familiar with relevant databases

Preparation

Facilitators

For in-person training, use a data projector
Request Research4Life access codes for the purpose of the training, where possible

For online learning, prepare:

The learning management system you will use, such as Moodle, Canvas or Blackboard, and upload reading materials
Voice recorded Powerpoints
Zoom for plenary discussion and Q and A
A chat service, such as Google chat or Whatsapp

Prepare to use these databases:

PubMed https://pubmed.ncbi.nlm.nih.gov/, a free resource supporting the search and retrieval of biomedical and life sciences literature
Those databases accessible by respective institutions
Hinari accessible platform available at some institutions)

Students

Each student needs a laptop and internet access/ wifi

Steps

1. Developing a search strategy

The facilitator defines a search strategy and explains its importance
S/he explains keywords, synonyms, truncation, wild cards and controlled vocabulary such as medical subject headings (MESH)

2. Introduction to PubMed

Students use the strategy they developed
The facilitator isntroduce Title/abstract searching
Students learn to apply filters such as study design (such as systematic reviews), age and date of publication
They scan initial results for relevance, make any amendments necessary and re-run the search

3. Customize search strategies for other databases

Find out which symbols each database uses, such as * or ?
Run searches and scan the results for relevance
Re-run the search if necessary

4. Introduction to Research4Life

Use Hinari as an example to access full-text journal articles (where possible)

5. Continue to develop individual strategies

In their disciplinary groups, students develop strategies; run searches in appropriate databases; and download selected, relevant references
Facilitators assist where necessary

Outcomes

After this session, students should be able to:

1. Identify and access electronic databases appropriate for various disciplines related to public health
2. Understand how to use various search techniques and search terms such as keywords/text words and subject headings
3. Transfer acquired skills in order to search for information in other databases
4. Store and organize information systematically and transparently
5. Know how to keep track of the search process and how to stay up-to-date

Resources

Guides to using databases

Hinari training portal: https://www.research4life.org/training/

US National Library of Medicine PubMed Tutorial: http://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html

Further reading

Eyers, JE (1998). Searching bibliographic databases effectively. Health Policy and Planning 13, 339-342. https://academic.oup.com/heapol/article/13/3/339/577845?login=true

Shultz, Mary (2007). Comparing test searches in PubMed and Google Scholar. J Med Libr Assoc. 95(4): 442–445. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2000776/

Session: How to read a journal article

Outline

Doctoral students are expected to be proficient readers, analysing academic papers critically and writing systematic reviews as part of their research. This two-hour session introduces skills to equip them for these practices.

Objectives

To equip doctoral students to

- Read and analyse journal articles effectively
- Synthesize scientific evidence for their literature reviews

Preparation

Facilitators

Choose an article for pairs to analyse in step 3

Line up the videos for students to watch as part of the session

Share links to materials for further reading

Steps

1. Introductory video (0–20 mins)

https://www.youtube.com/watch?v=Tty_xCTq4WU

2. PowerPoint lecture (20–60 mins)

Download from:

https://www.research4life.org/wp-content/uploads/2019/02/Part_A_How_to_Read_a_Scientific_Paper_2018_12.pptx

3. Analyse an article in pairs (60–90 mins)

The facilitator circulates an article and students pair up to read and analyse it together

4. Plenary discussion and presentations (90–120 mins)

The group discuss "What is the structure of a journal article?", with reference to the IMRaD format – Introduction, Methods, Results and Discussion

Students present their analysis of a manuscript of their choice

Outcomes

After this session, students should be able to:

1. Describe the organization of a journal article
2. Explain the key actions involved in reviewing a journal article
3. Identify the challenges of reading journal articles and how to mitigate them
4. Analyse a journal article relevant to your research

Resources

Subramanyam, R. V. (2013). Art of reading a journal article: Methodically and effectively. Journal of Oral and Maxillofacial Pathology, 17(1), 65–70. https://doi.org/10.4103/0973-029X.110733

Ecarnot, F., Seronde, M. F., Chopard, R., Schiele, F., & Meneveau, N. (2015). Writing a scientific article: A step-by-step guide for beginners. European Geriatric Medicine, 6(6), 573–579. https://doi.org/10.1016/j.eurger.2015.08.005

A free MOOC which offers some training in critical appraisal: https://www.classcentral.com/course/critical-appraisal-techniques-healthcare-literatu-17906.

Session: Presentations of contributions of disciplines

Outline

In this learner-led session, students synthesise what they have learned over a week of interrelated sessions. Grouped by discipline, students present what they have discovered about the contribution of their discipline to the particular public health problem (such as the factors that contribute to child under-five mortality and morbidity). Together, they recognise the links between the epistemology, paradigms and methodology that underpin disciplines and the types of knowledge that are generated within each discipline.

Objectives

- To present groups' findings from literature searches about the contribution of particular disciplines to the selected public health problem
- To interact with each other's presentations with follow up questions, discussion and comparisons
- To reflect on the influence on policy and practice of knowledge from different disciplines

Preparation

Students

Prepare presentations, each 10 to 15 minutes long, on the findings from their literature searches

Steps

1. Group presentations (0–90 mins)

Each group presents for 10–15 minutes on the findings from their literature searches, with five minutes for questions of clarity from others

2. Reflections and discussions (90–90 mins)

In plenary, students discuss the presentations and draw out overarching insights related to how knowledge is produced, what kinds of knowledge, with what kind of contribution to public health and with what potential impact on policy and practice

Outcomes

After this session, students should be able to:

1. Discuss the role of the different disciplines in solving public health problems
2. Discuss how the epistemology and linked paradigms and methodologies that dominate and underpin disciplines form the basis for the types of contributions that different disciplines make

Assessment

The primary assessment tools are:

- a reflection by student peers
- a self-assessment of how their presentation compared to other groups