AIRS

Advanced Information Research Skills

AIRS Module 1

The research question

Contents

Module 1: The research question

Workshop presentation (YouTube, 31m03s)

Learning objectives

This module identifies the process in the formulation of research questions, and identification of key and relevant vocabulary. By the end of this module you should be able to:

- Design a research question that applies the six properties of a good research question as identified by Foss and Waters (see the background reading in Module 1.1 and watch the video in Module 1.2).

Applying the content to your resource log
As you progress through this module, consider, and refer to the requirements of the resource log and apply your learning to each question.

Resource Log

Your research question (15 marks)

a. Write **ONE** research question for your area of research demonstrating the 6 properties identified by Foss & Waters [See *Module 1*].
b. List your theoretical construct/s from within your question and discuss their recognisability.
c. Explain how your research question addresses the remaining four properties identified by Foss & Waters: Transcends the data, Significance, The capacity to surprise, Robust.

1.1 How to formulate a good research question

Now that you are doing your own research, you need to formulate your own research question or questions to be answered. A good research question helps to:

- guide the research process
- construct a logical argument
- write a literature review
- plan thesis chapters
- devise efficient search strategies.

Recommended reading that supports this module:

Foss, S. K., & Waters, W. J. C. (2007). Developing your itinerary: the preproposal. In S. K. Foss &

W. J. C. Waters (Eds.), *Destination dissertation: a traveler's guide to a done dissertation* (pp. 35–46). Lanham: Rowman & Littlefield Publishers.

Difference between a research question, title, hypothesis and research focus

A research question is not the same as a thesis title, research problem, hypothesis or research focus, although they are interrelated and support one another. To further define these elements:

- A *research question* summarises the significant issue your research will investigate.
- The *title* consists of the topic and outcome of a research project.
- The *research problem* explains the knowledge gap your research will address.
- A *hypothesis* is a predicted answer to the research question that can be tested and is based on prior research.
- *A research focus* specifies the scope or domain of inquiry.

A research question is clear, focused, concise, complex, arguable and doable. The research question shines a light, is a guide or compass for your research and help you to construct a logical argument.

1.2 The six properties in detail

According to Foss and Waters, a well-defined research question has six properties:

1. Theoretical construct - identifies the theoretical construct/s you want to learn more about
2. Recognisability - assists you to use terminology which is recognisable in the field of expertise
3. Transcends the data - transcends the data used to conduct the research
4. Significance - draws attention to the significance of the research
5. The capacity to surprise - has the capacity to surprise the researcher as they research
6. Robust - encourages a complex answer (i.e. not a 'yes' or 'no' response)

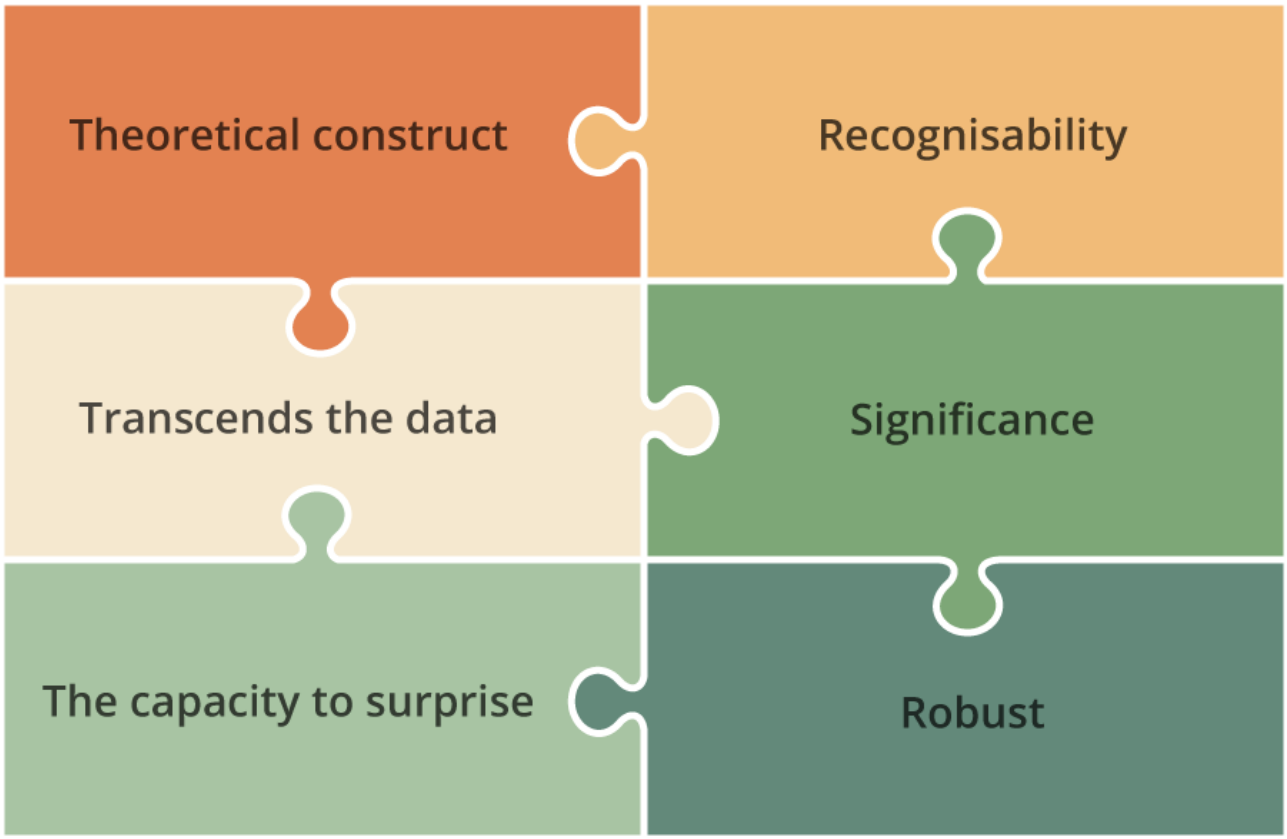

Figure 1 Properties of a good research question

Watch the video

What do I need to consider when writing a research question?

Identify the theoretical construct

The theoretical construct is the phenomenon, event, or experience you will be researching. There are usually more than two theoretical constructs in any one research question.

> *Example*: Within a thesis titled 'An empirical investigation of health information system failure in regional Sri Lanka' the theoretical construct is 'health information system'.

You need to find and search for synonyms for the theoretical construct to ensure you do not miss finding important research because of superficial differences in vocabulary.

> *Example:* 'Public health planning' is similar in meaning to 'health information system'. Both these phrases are used in the literature and might need to be researched.

Recognisability

A well-defined theoretical construct helps to identify relevant versus irrelevant research. Theoretical constructs need to be recognisable and identifiable in the literature, known terms in the field of expertise and/or subject headings in the databases. The theoretical construct must be clear, precise and must conform to the technical usage in your discipline. As you formulate your research question – consider if you will be able to locate and distinguish the theoretical constructs easily from other constructs that appear in the literature.

> *Example*: Instead of the broad topic: 'health information systems' choose 'decentralised health information systems in developing countries'. Focusing on a subset of health information systems enables you, as a researcher, to recognise specific information relevant to a tightly defined construct.

Transcend the data

The method you use to answer your research question is (usually) not included in the question itself. This is because different kinds of data can be used to answer your research question and the significance of your research should go beyond the methods you have used to determine your answers.

> *Example*: A researcher could collect data by: conducting interviews, conducting experiments, writing a meta-analysis or studying a particular region in depth to justify solutions applicable to broader geographic, demographic or socioeconomic groups.

There are some dissertations where the data might be specific enough to include in the research question.

> *Example*: A creative industries dissertation may define a time period, a choreographer or type of artistic practice.

Significance

Your research question should suggest how your study will increase knowledge of the theoretical construct. You need to convey what interests you about the theoretical construct and what will be different about it by the time your work is finished. Significance will reflect specialised knowledge in your discipline.

> *Example*: Your new contribution might be to suggest ways to make health information timely and reliable to ensure *evidence-based health planning in decentralised, developing world health systems*. You begin your research knowing that health information systems lack good information; your new contribution will be to offer evidence-based insight and solutions to impact health information systems in developing nations.

What makes research exciting and surprising is discovering insights and solutions that you will not know at the start of your research.

Capacity to surprise

Your research question should have the capacity to surprise. You should not already know the answer to the question you are asking. Valuable research surprises your reader with new ideas or new relationships between existing ideas. Your research question needs to hint at surprising possibilities to increase the probability of original results.

> *Example of an unsurprising research question*: 'How do health information systems fail to provide reliable, timely information?'

This research question presupposes that all aspects of health information systems fail and that there are no possibilities other than to confirm this statement. A researcher is unlikely to be surprised with this sort of question because their data will simply confirm this judgment.

Choosing an unsurprising, expected approach with your research question compromises your capacity to contribute to your discipline with original publications. If you already know the answer to your research question at the start you are simply documenting known information, rather than researching.

> *Examples of surprising research questions*:
>
> 'How do climate-driven changes in the biophysical environment affect the sustainability of sub-tropical parklands?'
>
> 'What are the impacts of Starbucks on the consuming patterns of its patrons?'

Each of these research questions allow for surprising and original answers. Do not worry about whether your question will produce significant findings. A research question that follows these six principles and is guided by the expertise of your supervisory team will yield new discoveries about your theoretical construct.

Robustness

Your question must be capable of generating multiple insights about the theoretical construct you are studying, and thus lead to complex results. It should not be a question to which the answer is 'yes' or 'no' because such an answer will not produce a complex result.

> *Example of a non-robust research question*: 'Are public health information systems in Sri Lanka effective for accurate decision-making?'
>
> *Example of a robust research question*: 'How do regional health information systems provide information support for evidence based health planning and interventions?'

A robust question allows for surprising and complex results, such as discovering that there are some effective sub-systems within a broadly inefficient system. A well written research question makes research interesting to write and to read.

In summary, writing your research question is one of the first things to focus on when you begin your research journey. Your question identifies your contribution to research, has the capacity to

surprise and can produce robust results. A good research question scaffolds and is central to your entire research project.

Watch this video: This video gives further clarification on the six properties with examples of deconstructing research questions.

1.3 Explore good research questions

Activity – Consider the strengths and weaknesses of these questions

Watch this interactive workshop activity which highlights the six properties of a good research question, then consider the strengths and limitations of each question below.

What are the ethical issues to be considered in humans forming interpersonal relationships with machines as a possible solution to society's loneliness epidemic?

- **Theoretical constructs:** Clear and recognisable/identifiable in the databases and found in the literature:
  - "interpersonal relationships" - subject heading in PsycInfo
  - "machines" - a controlled term in Compendex
  - "loneliness epidemic" - a well-defined, precise and recognised term in the mass media.
  - "ethical issues" - is a key phrase found in the literature on the topic.
- **Transcends the data:** Different methodologies and data could be used to answer this question - the researcher has not explicitly mentioned method or data in the question - hence this question transcends the data.
- **Significance:** Recent research has warned that loneliness and social isolation may be a greater public health hazard than obesity - this gives weight to the significance of the question.
- **Capacity to surprise:** It may be possible for companion robots to ease that sense of isolation and so it is important to understand the ethics of forming close relationships with machines - the outcome of the research is not known.
- **Robust:** This question can't be answered with a yes/no, the question is complex with multiple ethical issues yet to be identified and so cannot be simply answered.

What is the impact of political approaches to domestic sex workers on human trafficking policy in Australia?

- **Theoretical constructs:** Clear and recognisable:
  - "human trafficking" - subject term in Proquest Criminal Justice
  - "sex workers" - subject term in Proquest Criminal Justice
- **Transcends the data:** There are many potential sources of data and methodological approaches that can be used to answer the question, and these are not stated in the question.

- **Significance:** There is little reliable data about the extent and nature of the crime, so a better understanding of how these approaches have worked will be useful and practical.
- **Capacity to surprise:** The question allows for surprising and original answers and makes no assumptions.
- **Robust:** The results will be complex rather than simplistic - a multifaceted question is open to allow multiple ways of investigating and evaluating the evidence.

How can childhood health screening programs contribute to calculating the risk of cardiometabolic disease in adulthood and assist in delivering targeted early intervention programs?

- **Theoretical constructs:** Clear, recognisable theoretical constructs that are broad enough to have multiple keywords and aspects to research indicating the level of complexity required of a HDR project:
    - "childhood health screening" - broad term encompassing a range of testing (weight, BMI, blood glucose) that is a subject heading in the CINAHL database and a widely used term that refers to multiple testing protocols across multiple physiological concepts.
    - "cardiometabolic disease" - broad term used to encompass multiple diseases such as diabetes, stroke, and heart disease. This is a Medical Subject Heading (MeSH) in databases such as PubMed. Using this term allows for each disease to be isolated and searched separately as a keyword/synonym.
    - "early intervention" - term used by multiple agencies (such as Queensland Health, The Department of Child Safety, Australian Department of Health and Welfare) when describing programs or strategies to prevent or intervene at an early stage of an illness or disease.
- **Transcends the data:** Data not included in the question - identifies a population type (children) but not a location or which children will be involved in data collection so it transcends the data.
- **Significance:** Identifies the public health implications of disease prevention in adulthood.
- **Capacity to surprise:** It's not yet known if biomarkers of childhood in certain areas can be used in risk calculation for major disease states in adulthood.
- **Robust:** Multifaceted and not able to be answered with a 'yes' or 'no'.

Activity – Practical examples of the six properties

Try out this interactive exploration of the 6 properties - for practical examples and how you could respond to Question 1 in the Resource Log.

Alternatively, read the transcript of this activity.

1.4 Create a good research question

Activity – Create a good research question

Create a research question that incorporates each of the six principles. Some of the following structures might be helpful:

What is the nature of ...	How do ... differ	What are the functions of ...
How do ... perceive	What factors affect ...	What strategies are used ...
How do ... respond	How do ... affect	What are the effects of ...
How are... defined	Under what conditions do ...	
What is the relationship between ...	What are the mechanisms by which ...	

Discuss your research question with your supervisory team and make sure they approve it before you start accumulating too many articles and books. Write down your research question at the start of your resource log. By the end of AIRS, you will most likely have altered your research question considerably, which reflects your research journey and your increasingly sophisticated understanding of your topic.