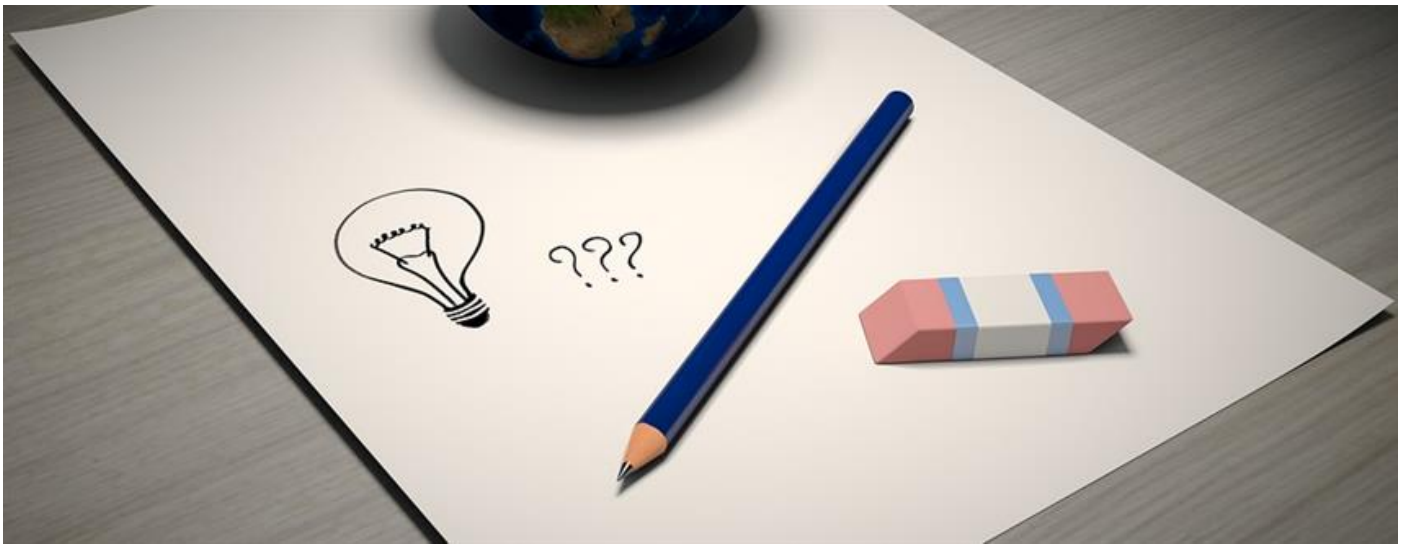
How to Identify a Meaningful Research Question

Author
Enago Academy

Post Url
https://www.enago.com/academy/things-need-know-writing-good-research-question/



When starting a new research project, it is important to develop a sound research question. This is a crucial step in the research process, as it will guide your research activity. Therefore, you should not rush to write an effective research question.

A properly written research question has several characteristics.

- It should be clearly defined, and free of jargon.
- The question should be sufficiently focused to steer your research to its logical conclusion. It should summarize an outstanding issue or problem you want to investigate through research-by a literature review or an experimental study or a theoretical exercise.
- It must be addressed within your limited time frame and other available resources (e.g., money, equipment, assistants, etc.).

Major Steps to Write a Research Question

Often, you already have a broader subject that interests you. For example, say organismal biology. However, this alone will get you nowhere, whether you are a graduate student or professor writing for a grant. Following steps can help you to organize priorities.

- Narrow down your broad idea to a topic that can be investigated (e.g., biodiversity maintenance). It is easier to do this if you follow your own curiosity and are passionate about a particular research question or problem.
- Get a good and accurate feel for this general topic. Do some preliminary reading, on top of what you know already. Here, review papers are very helpful (note: these are not the same as meta-analyses!). Ask yourself, what has been done previously and more recently? How were these studies conducted? What hypotheses were tested? After some weeks at this, you should be able to identify key gaps in knowledge, i.e., new questions. You may also find conflicting evidence or inconsistencies in the literature. It is the time to revisit old questions again (i.e., do a replication).
- This step is often the hardest. Here, you must refine the topic further — and “run with it”. This is sometimes a matter of taste or style. Other times it can be dictated by what is most logistically feasible to do. In worst cases, you follow a fad or are told by your supervisor what to do. Following our example, you may go on to ask, “What are the ecological processes that contribute most to maintaining biodiversity”, or consider “How is biodiversity maintenance threatened in different ecosystems”. At this point, get the pen out. Write down potential “how” and “why” questions. Write full sentences, not fragments, to clarify your thinking.
- In the final step, you now scrutinize your list of candidate research questions. Be critical. You want to filter them. Ask yourself, can I actually find/collect the data necessary to address this question or problem? Will the method be feasible to do it? Is my question overly broad or narrow, or too subjective or objective?

Revise Your List

Aspects of feasibility are best tested in pilot studies or modeling scenarios. Here, you could factor in costs in terms of time, labor, and tools.

Review your questions carefully. Take these three for instance.

A) How is global biodiversity maintained?

B) Which biotic processes contribute most to maintaining local plant diversity in Western Amazonian forests?

C) What limited biodiversity at site X in Amazonia in the last 5 years?

(A) is much too broad – there are many possible processes, and these will vary geographically. However, (C) is too narrow and probably impossible to answer. (B) is neither too narrow nor too broad. It is specific enough to guide a research project and is feasible.

Likewise, a too objective question will limit you. Take “How many species of trees are there in New England forests”. This is factual information now. So it does not lend itself to argumentation. A more subjective question would be “What is the relationship between climate change and tree diversity dynamics in New England forests?” Also, try to avoid overly simplistic questions (e.g. “Where do forest fires occur most?”), which could be answered with Web searches nowadays. Instead, ask something more complex, like “What are the effects of logging on forest fire frequency and intensity?”

It is Okay to Modify Your Question

Be flexible and adaptable. A good research question is not permanent. Do not be afraid to modify your research question, revising it as you investigate it more. For example, key data may be lacking, or a new study is published that challenges some presumptions you had. In hypothesis-driven research, a good research question can easily be transformed into a testable hypothesis.

In sum, an effective research question is thoughtfully formulated. It interests not only you but potentially other researchers as well. It should follow accepted ethical standards (honesty, no stealing of ideas or fabrication of data, or no harming of human/animals subjects). A useful rule-of-thumb for a well-formulated research question is to follow Hulley *et al*.’s “FINER”: feasible, interesting, novel, ethical, and relevant.

Cite this article

Enago Academy, How to Identify a Meaningful Research Question. Enago Academy. 2017/08/17. https://www.enago.com/academy/things-need-know-writing-good-research-question/