

Preliminary thoughts on your research project

Background: Information required for an educated lay person to understand this research

Step 8. Introduce and explain the key concepts or terms encountered in Steps 1 through 7. Pay attention to the order of these concepts or terms.

Significance: The positive effect that the successful completion of your research is likely to have on addressing an important problem.

Step 1. Substantiate, with documentation from the literature, the existence of the environmental or health issue in academia or our society.

Step 2. Detail the societal, economic, environmental, and/or health benefits if this environmental or health issue is addressed, OR the societal, economic, environmental, and/or health losses if this environmental or health issue is not appropriately addressed.

Research question (aim)

Step 3. Point out, using short, succinct sentences, what is needed to be understood if we would like to address this environmental or health issue.

Hypothesis-driven research: A particular yes-no (general) question in your mind.

- A tentative assumption (your best bet) made in order to draw out and test its logical or empirical consequences.

Descriptive research: A theory or tool that is needed.

Innovation (creativity or originality): A new and substantially different way of addressing an important problem that requires departure from the status quo and could lead to new horizons

Step 4. Substantiate the absence of effort in this field OR the existence of a critical barrier.

- Is the lack of investigation into this issue because (i) nobody has ever paid attention to this issue, OR (ii) existing theoretical concepts, approaches, methodologies, or instrumentation do not work?

Step 5. Analyze the reason why nobody has paid attention to this issue, OR, why existing theoretical concepts, approaches, methodologies, or instrumentation do not work.

- How do current scientists look into this issue? (the strengths and weaknesses of the relevant literature and existing data)

Step 6. State what we can do, OR what is required to do, so as to improve the current situation.

Step 7. If possible, state whether and how the approach proposed in Step 6 has been *successfully* applied elsewhere. If not, state how it is anticipated to work.