
Perspectives on Negative Research Results in Pervasive Computing

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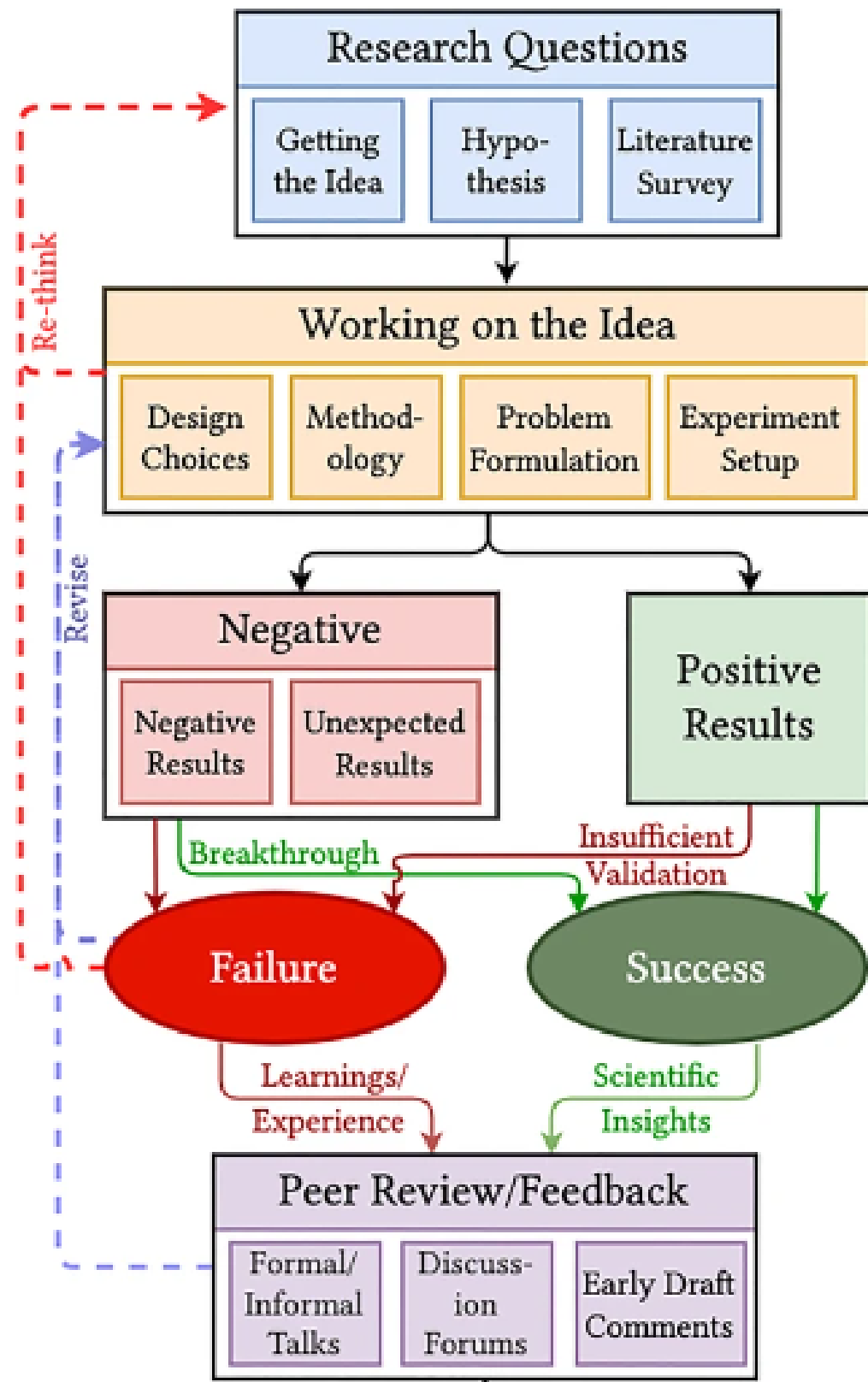
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Introduction

Understanding the value of negative research results in pervasive computing is crucial for advancing the field. Embracing the challenges and failures can lead to valuable insights and innovation. This presentation explores the importance of negative results in research and their impact on pervasive computing.

Understanding Failure in Research



Cycle of research



FAILURE TAXONOMY

The Origin of Failures

1. Clear Problem Statement and Hypothesis:

- Why it matters: Starting with a clear problem and hypothesis is crucial.
- Importance: Without clarity, research is prone to failure.
- Advice: Stress the need for a solid understanding of the problem to avoid going off track.

2. Related Work Exploration:

- Why it matters: Thoroughly exploring existing work prevents wasted efforts.
- Importance: Neglecting related work can lead to pursuing already solved or unsolvable problems.
- Advice: Encourage researchers to look back over several years in rapidly evolving fields like pervasive computing.

3. New Research Topics:

- Why it matters: Researchers often explore new topics to be pioneers.
- Importance: Being early on a topic can be challenging without an established community.
- Advice: Acknowledge the value of vision papers in presenting early findings without a well-established community.

Failure Types in Pervasive Computing

01

Unconvincing Results: Results that cannot be verified due to a lack of datasets, real-life experiments, or ground truth.

02

Under or Overperforming Experiments: Experiments with performance deviations that could be fixed, such as oversights in system design, infrastructure issues, or buggy code.

03

Setbacks and Lessons Learned: Setbacks leading to valuable lessons, including overly limiting or broad assumptions in hypotheses.

Failure Types in Pervasive Computing

04

Unconventional or Controversial Results:
Results that contradict community expectations, making them challenging to prove reliably.

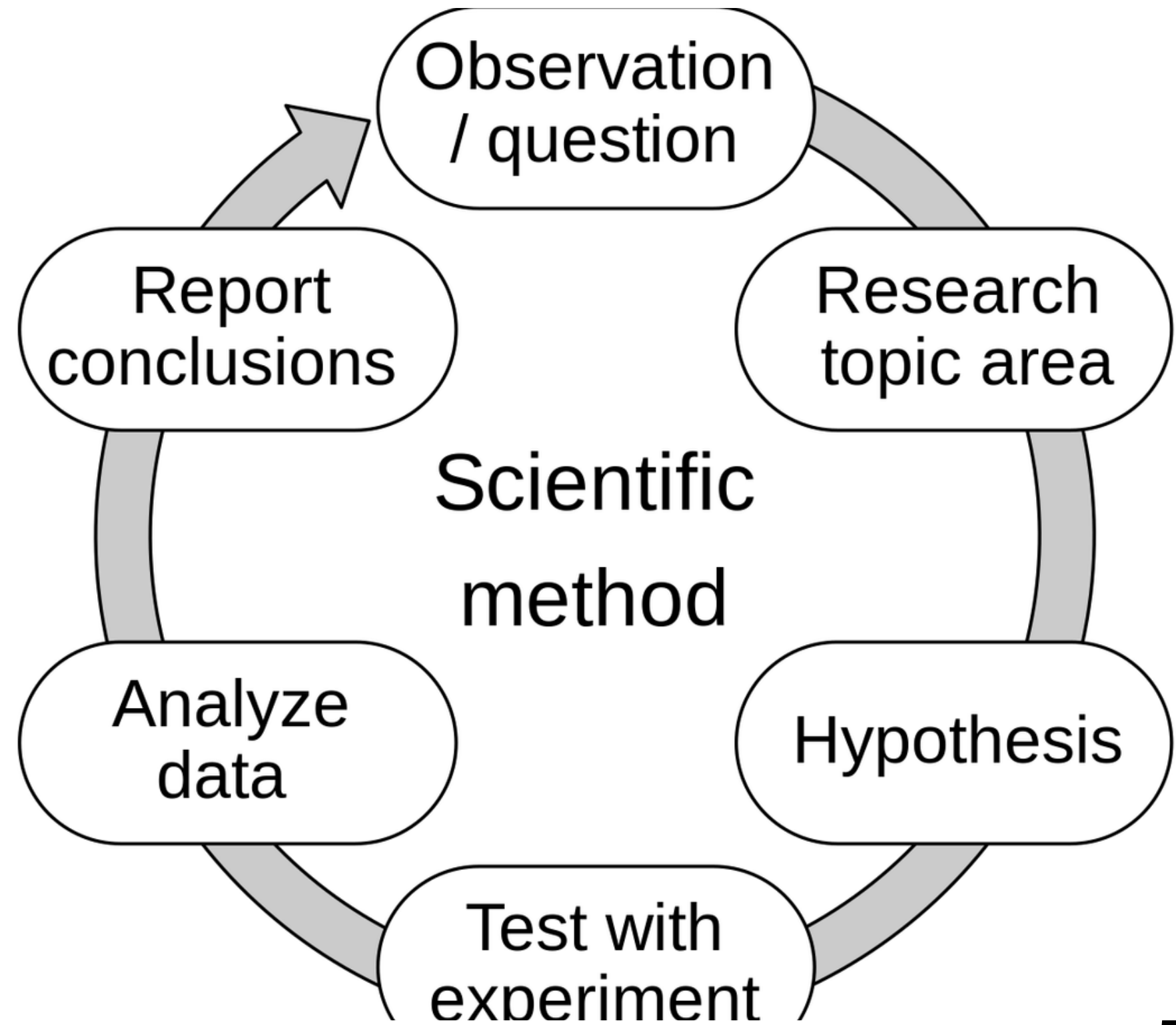
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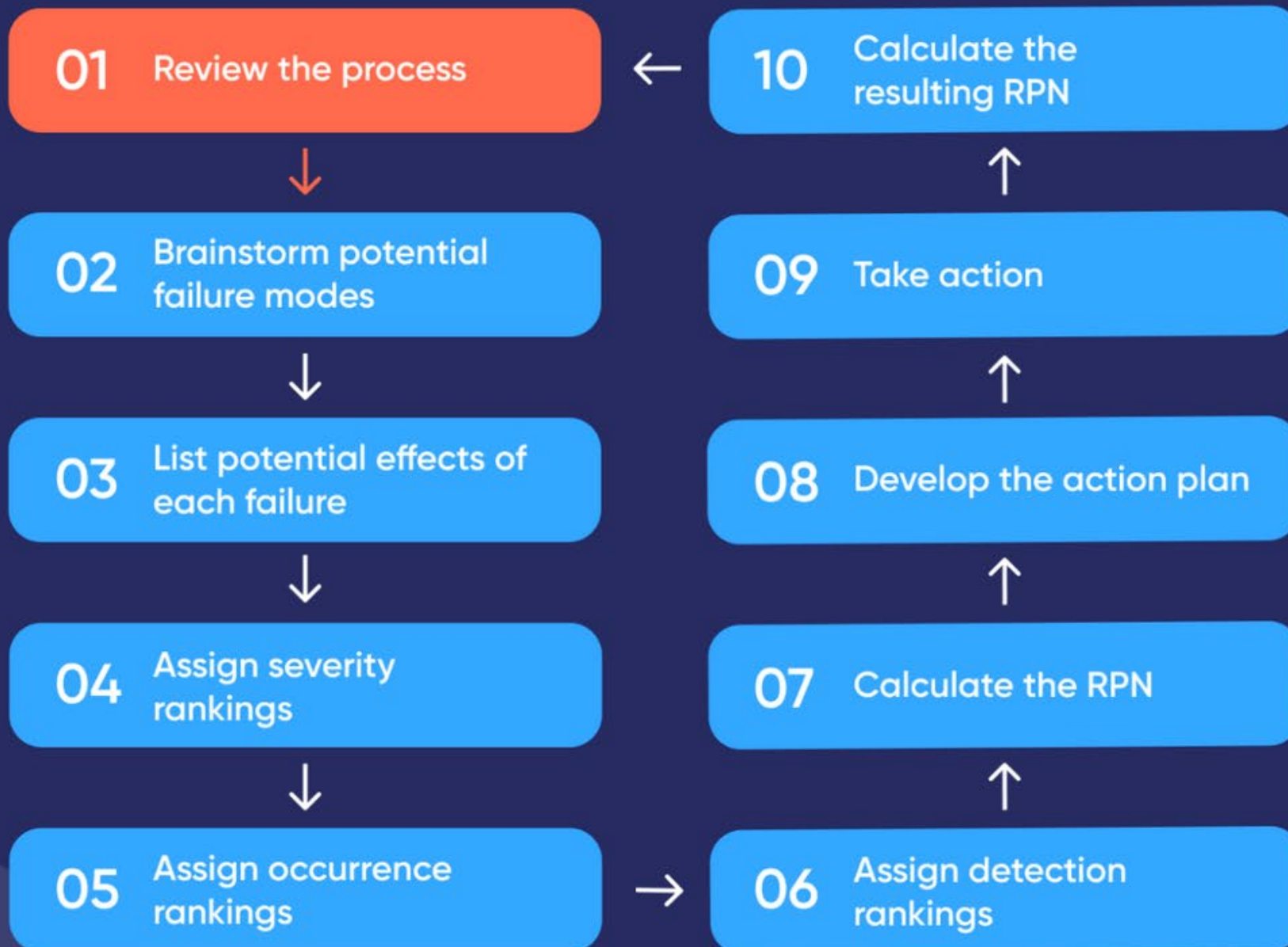
Non-Publishable or Hard-to-Publish Outcomes:
Outcomes that, while correct, might be challenging to publish due to experimental methodology issues or limited contributions.

06

Unexpected Roadblocks Affecting Publications:
Roadblocks like ethical concerns, institutional policy breaches, or difficulties in collaboration with commercial entities that may halt research progress.

FAILURE MITIGATION





Learning from failure

A CALL-FOR-ARMS FOR HEALTHY

1. The Value of Reporting Failures:

Context: Researchers often hesitate to report unexpected results.

Key Point: Reporting failures and negative results is essential for preventing others from repeating the same mistakes.

Insight: Emphasize the importance of recognizing the value in both successful and unsuccessful variations of research.

2. Guardians of Publication Quality:

Context: Critique the existing review process and its role in shaping what gets accepted.

Key Point: The focus of reviewers and editors should be on checking the correctness of work, not just improving the prestige of the publication venue.

Insight: Advocate for a shift in mindset among reviewers, urging them to value correctness over excitement.

3. Publication Space for Failures:

Context: Discuss the dilemma of how failures and negative results are communicated.

Key Point: Explore the idea of dedicating publication space, possibly in an appendix or a reserved section, to communicate unexpected results.

Insight: Debate whether having dedicated publication venues for negative results could encourage more risk-taking and innovation.

4. Normalizing Failures as Researchers:

Context: Present the need to normalize failures as an integral part of the research process.

Key Point: Encourage publication venues to integrate lessons learned from negative results into their programs.

Insight: Propose using social media, workshops, and events to share stories of setbacks, failures, and overcoming challenges, fostering a culture where setbacks are seen as valuable learning experiences.



FAILURE CULTURE IN RESEARCH

Innovation Leadership Lessons Learnt

1

Understand how to lead innovative people

2

Ask for forgiveness instead of permission

3

Analyze the failure and its root cause

4

Act fast

5

Learn from failure

**THANK
YOU**

