Discovery Learning 3: Innovation Safari

From One Challenge to Many Ideas to Few Solutions

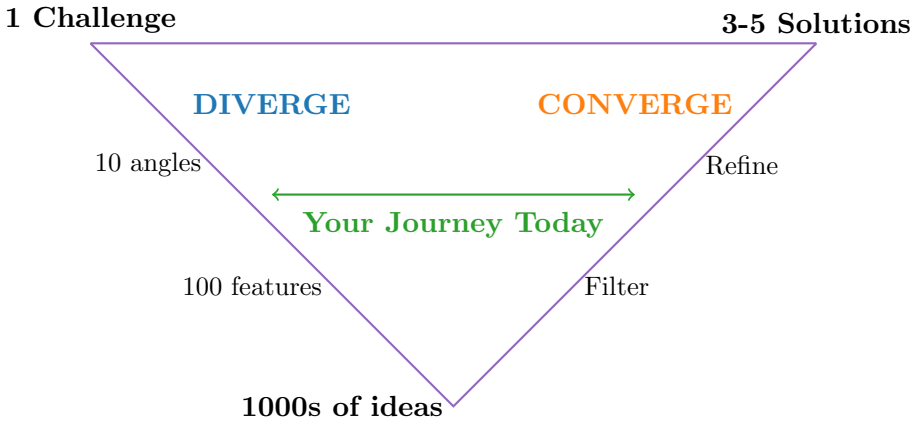
Machine Learning for Smarter Innovation - Pre-Lecture Activity

Learning Objectives

By completing this activity, you will discover:

- How innovation naturally expands then converges (the diamond pattern)
- Why we need systematic filtering at scale
- How clustering helps organize the innovation process

The Innovation Diamond Journey



Phase 1: DIVERGE - Expansion of Ideas

Your Challenge

"Reduce plastic waste in universities"

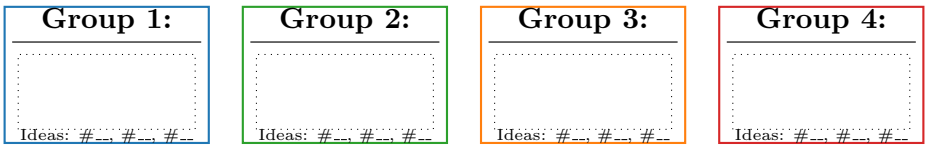
Exercise 1: Rapid Ideation (5 minutes)

Generate at least 20 different ideas to address this challenge. Don't judge - just create!

Idea	**Cost** Low/Med/High	**Scale** S/M/L	**Tech** Y/N	**Time** Quick/Long	**Impact** 1-5
1. _____	o	o	o	o	o
2. _____	o	o	o	o	o
3. _____	o	o	o	o	o
4. _____	o	o	o	o	o
5. _____	o	o	o	o	o
6. _____	o	o	o	o	o
7. _____	o	o	o	o	o
8. _____	o	o	o	o	o
9. _____	o	o	o	o	o
10. _____	o	o	o	o	o
11. _____	o	o	o	o	o
12. _____	o	o	o	o	o
13. _____	o	o	o	o	o
14. _____	o	o	o	o	o
15. _____	o	o	o	o	o
16. _____	o	o	o	o	o
17. _____	o	o	o	o	o
18. _____	o	o	o	o	o
19. _____	o	o	o	o	o
20. _____	o	o	o	o	o

Exercise 2: Natural Grouping

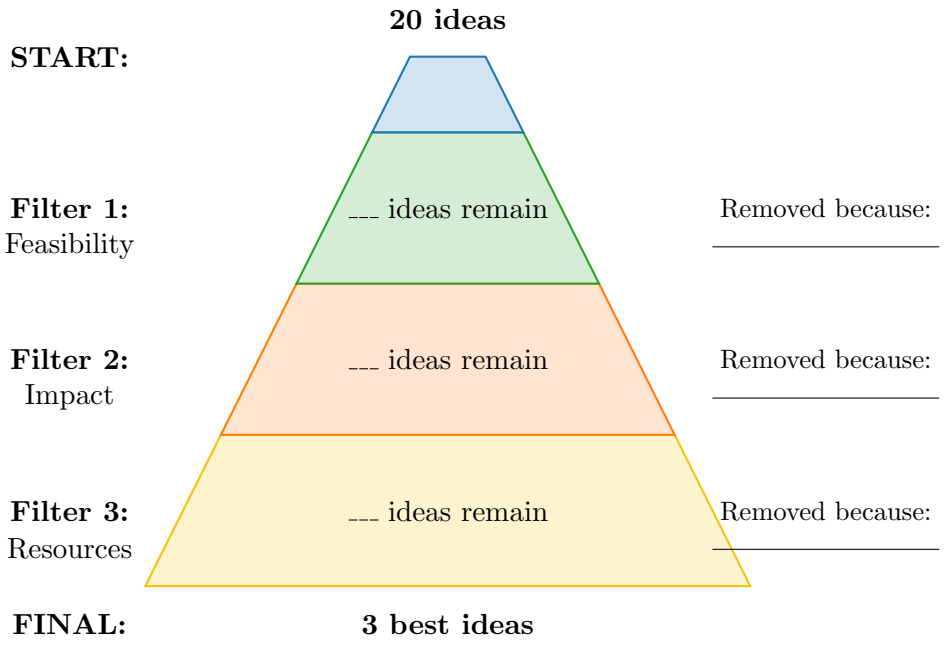
Look at your 20 ideas. Which ones naturally belong together? Create 3-5 groups below:



Phase 2: CONVERGE - Filtering to Excellence

Exercise 3: The Filtering Funnel

Apply successive filters to narrow down to your best 3 ideas:



Your Top 3 Solutions:

1. _____
2. _____
3. _____

Discovery Moment: Pattern Recognition

What Patterns Emerged?

Looking at your groups and filtering process:

- Which group had the most survivors? _____
- What feature best predicted success? _____
- What surprised you about what got filtered? _____

The Scale Problem

Reflection Questions

1. **Grouping Challenge:** Did all your ideas fit neatly into groups? What about the "weird" ones?

   _____

   _____

2. **Filter Fairness:** Did good ideas get eliminated? How could better features prevent this?

   _____

   _____

3. **Imagine Scale:** Your university collected 5,000 ideas from students. How would you even begin to organize them?

   _____

   _____

4. **Pattern Prediction:** If a computer analyzed your 20 ideas, what patterns do you think it would find that you missed?

   _____

   _____

Prepare for Next Class: The Innovation Diamond

You've just experienced the innovation diamond:

- Started with 1 challenge
- Expanded to 20+ ideas (imagine 5,000!)
- Converged to 3 solutions

In our next lecture, you'll learn how machine learning can:

- Handle millions of ideas
- Find patterns humans can't see
- Optimize the filtering process
- Ensure no good idea gets lost

Think about: What if we could analyze every innovation idea ever proposed at every university worldwide?