Activity

1. On card, write your **Discipline/Major/Field**
   (undergraduate major or current field)
2. Insert into your **name tag holder**
Find and stand near people from similar fields
Find someone from a **totally different field**
Thinking about what this means for student teams

Developing & Applying a Measure of Multidisciplinarity

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Steady Growth in Talk of Multi-, Inter-, and Transdisciplinarity

Academic Journals with Multi-disciplinary, Inter-disciplinary, or Transdisciplinary in any Searchable Field

* Higher education or college or university or post secondary or postsecondary or undergraduate
Klein Places the 3 Terms on a Spectrum

Multidisciplinary
Juxtaposing
Coordinating

Interdisciplinary
Blending
Linking

Transdisciplinary
Transcending Boundaries

Position on spectrum depends on how they interact

Quantify Multidisciplinarity of Team Composition
Whole Fields Built around Topic in Other Contexts

• Scientometrics
  • Bibliographies to construct Global Maps of Science

• Measures of Interdisciplinary Research
  • Inform administrators, policy makers
  • Quantify interdisciplinarity
    • Colleges
    • Departments
    • Centers
    • Individuals
Simple Equation

- Rao–Stirling diversity index ($D$)

$$D = \sum_{i,j(i>j)} d_{ij} p_i p_j$$

$p_i = \text{Proportion of team members from the group}$ (easy)

$d = \text{Cognitive distance between two groups}$ (hard)
Developed a Measure for Distance (d)

• 2 Components
  1. Overlap in elective and required courses
     • US System: Students take courses from many departments
  2. Cross-listed courses
     • Thermodynamics in ME = Thermodynamics in Physics
     • Shared home department → shared pool for in-major electives

• Generated social network diagrams (global map)
• Calculated diversity indexes
• Mapped individual teams onto the global map
Disciplinary Distances (Global Map)
Mid-level Index
Health Informatics on FHIR VIP Team

18 students
7 majors
0.30 Diversity Index
**Higher Index**

*Global Social Entrepreneurship VIP Team*

- 12 students
- 8 majors
- 0.40 Diversity Index
Lower Index

Robotic Human Augmentation VIP Team

55 students
5 majors
0.18 Diversity Index

Lower index ≠ Less meaningful
What now?

• Weaknesses
  • GA Tech-specific
  • Influenced by organizational structures
  • Represents US practices

• Could. . .
  • Develop multi-institution measure (let me know if interested)
  • Use distances & student interaction to place teams on the scale
  • Look at “disciplinary entropy” on teams (information theory)
Transition to Next Topic

Find a natural collaboration
(adjacent field, personal interest, etc.)
Transition to Next Topic

Find someone who you **don’t know** how you’d **collaborate with**