# Effective collaboration in interdisciplinary (student) teams: competencies for 21st century research and research education

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# Today

- Why collaboration?
- Collaboration: aspects of group dynamics
- What kind of group is an interdisciplinary science group?
- Possible pitfalls
- Competencies

- (list of references at the end)

# Why collaboration?

- Complex problems
- Link between research, education and society
- “Good” collaboration leads to:
  - More efficient results
  - More effective results
  - More creative results
  - More innovative results
  - More member satisfaction
- But: collaboration is quite difficult

# Collaboration

- Many definitions, so a possible definition:

‘collaboration occurs when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain’ (Wood and Gray 1991)

- Three important aspects:
  - Task
  - Relation
  - Process

# Aspects of group dynamics and their possible negative impact (1):

| Aspect | Possible negative impact |
|---|---|
| Power structures | Rigid power structures |
| Inclusion/exclusion | Exclusion |
| Identity | Marginalisation |
| Cultures, norms and values | Cultures, norms and values that are not shared |
| Cognition and mental models | Mental models that are not shared |
| Diversity | Social category and value difference |
| Communication | Lack of common vocabulary, lack of communication in general |

# Aspects of group dynamics and their possible negative impact (2):

| Aspect | Possible negative impact |
|---|---|
| Interpersonal relations | Negative interpersonal relations |
| Emergent states | Lack of trust, lack of cohesion, lack of safety, lack of a group climate for change and learning, conflict (relation and value conflict) |
| Psychological safety and fear | Fear |
| Group history | Bad past experiences as group or individual |

# What kind of group is an interdisciplinary science group?

- In many ways, interdisciplinary science groups have the same characteristics as other groups
- But in some areas, interdisciplinary groups are a very specific kind of group, with specific problems and opportunities for group work

# Interdisciplinary science groups (1)

Type of member affiliation and relationship:
- Have a social group affiliation
- Are an interpersonal relationship based on work
- Are formed on the basis of common interest

Dynamics:
- Tend to focus on cooperation and competition
- Are moderately cohesive

Content:
- **Usually informationally diverse**
- Function on the level of content and procedure

# Interdisciplinary science groups (2)

Task:

- Are more task-oriented
- Task: they mainly **deal with conjunctive, complex, interdependent, conceptual tasks**

Competencies:

- Are more focused on **technical competencies**

Outcomes:

- Focus on cognitive or skill outcomes
- More geared towards mastery goals

# Specific possible pitfalls

Focus on task leads to a lack of focus on the relation side of group work

Informational difference is a possible source of innovation and creativity, as long as this diversity is used and task conflicts do not spill over into relation conflicts and/or lead to marginalisation and/or exclusion

Different disciplinary cultures, mental models and vocabularies make it difficult to form common norms, mental models and vocabularies needed for effective and innovative collaboration

Because of the interdependent nature of the tasks, conflict over relation, process or values can lead to serious problems

# Interdisciplinary collaboration competencies: two “meta”-competencies (1)

- 1) Reflexive Process Competency

  To understand group dynamics and to be able to reflect on the process as a group, including the relational side of group work
  - Requires knowledge, and reflection and intervention skills

- 2) Bridge Builder Competency

  To find a way to understand “the other”, and to take advantage of diversity
  - Requires a certain value attached this understanding, a positive attitude towards “the other” and communication skills

# Interdisciplinary collaboration: “meta”-competency 1

- The first competency is focused on managing the process of interdisciplinary group work
- Every group is different, so there is no ‘one competency fits all’, but to be able to reflect on the process and to be able to thereby change the dynamics is a competency that could prove to enhance all interdisciplinary group processes

# Interdisciplinary collaboration: "meta"-competency 2

- Diversity can go both ways: it can enhance group processes and outcomes, and it can lead to endless conflict and no positive outcomes at all

- Therefore the second important competency would be to see the value in diversity and to know how to build bridges and communicate across difference

# Interdisciplinary collaboration competencies: individual or group?

- It is an emergent group state with an individual competency component

| "Meta"-competency | Individual competency | Emergent group state |
|---|---|---|
| Reflexive Process | Understand group processes, ability to reflect on group processes and to explain them to the group | Reflexive group awareness of group processes , group processes are subject of conversation |
| Bridge Builder | Genuine interest in understanding the other, communication skills that aid that understanding | A climate of understanding, trust and safety |

# Thank you!

- Questions?

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