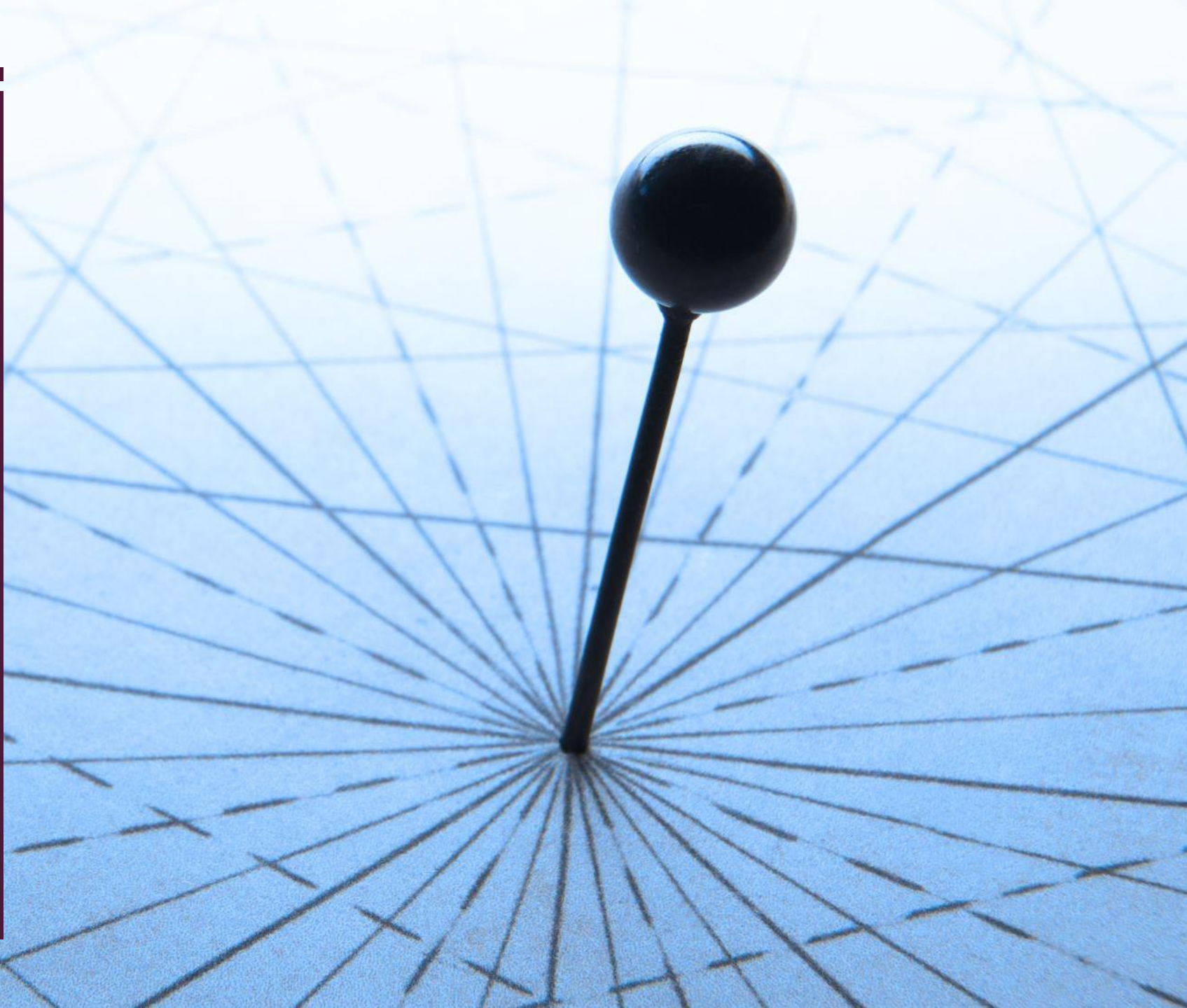


I. SENSEMAKING WITH CONCEPT MAPPING



COURSE CONTEXT & DESIGN PROBLEM

| | |
|-------------------------------|---|
| Context | Online undergraduate Information Science course |
| Design Problem | Students struggled to see how system-design concepts relate in meaningful ways. |
| Instructional Solution | Designed a two-step concept mapping task (Individual Map to Group Map) requiring collaboration to merge and refine ideas. |
| Tools Used | CmapTools, synchronous video meeting |
| Key Impact | Supported deeper explanation of relationships between concepts. Students actively engaged in comparing and merging their understanding. |

INSTRUCTIONAL DESIGN SOLUTION: A TWO-STEP CONCEPT MAPPING TASK

Learner Instructions (summarized):

- Create an individual map identifying key concepts.
- Meet in a group of three online.
- Build one **shared concept map** (min 20 concepts)
- Label relationships clearly.
- Submit final map.

Design Elements Included:

- Clear prompt + structured instructions
- Minimum concept count to guide depth
- Use of visual mapping to scaffold understanding
- Collaboration guidelines to support negotiation

setup

Cmap tutorial: how to use the software and what maps look like

How to use CmapTools & Adobe Connect

interaction: should we try to control the collaboration with explicit scaffolds and terms or not?

PART 1: Individual remaps

Full teams: as homework, all students individually read **Chapter 14** (pp. 509-544) and then make a Cmap of the reading to turn in before due date

Jigsaw teams: as homework, all students individually read **Chapter 14** and then make a Cmap of section 1 (pp. 509-527) or section 2 (pp. 527-544) or **section 3** (pp. 521-536), turn it in before due date

data: pre-collaboration individual maps and maps of the two reading sections

PART 2: Groups online

Collaboration: online, triads/dyads work in Cmap to create a common map for their team, turn it in.
Reflection paper: In your own words, describe the group activity and group dynamics, did you like it?

data: collaboration team maps & descriptions of the small group dynamics

PART 3: Posttest

Posttest Individual activity: Chapter Quiz, draw a map of the content, survey items

data: quiz scores, survey info, post-collaboration individual maps

psu.edu https://meeting.psu.edu/p9hcshiq29f/?launcher=false&fcsContent=true&pbMode=normal

Most Visited ETC Help Desk Getting Started Latest Headlines

Attendee List (1)

▼ Hosts (2)

- Amy Hughes Garbrick
- Amy Hughes Garbrick 2

▼ Presenters (3)

- Robert White
- John J Smith
- Red Cardinal

Participants (0)

Chat (Everyone)

----- (04/01/2012 19:59) -----
Amy Hughes Garbrick: Hi John!
----- (04/01/2012 20:00) -----
Amy Hughes Garbrick: Hi Bob
Amy Hughes Garbrick: hi Red

Video

Share - Amy Hughes Garbrick

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graph TD
    SDD[Systems Design & Development] --> SDLC[Systems Development Life Cycle]
    SDD --> Programming
    SDLC --> Investigation
    SDLC --> Analysis
    SDLC --> Design
    SDLC --> Development
    SDLC --> Implementation
    SDLC --> Maintenance
    Investigation --> EconFeas[Economic Feasibility]
    Investigation --> TechFeas[Technical Feasibility]
    Analysis --> IOReq[Input/Output Requirements]
    Analysis --> StorReq[Storage Requirements]
    Design --> prototype
    Development --> AlphaTest[Alpha Testing]
    Development --> BetaTest[Beta Testing]
    Implementation --> TechSupport[Technical Support]
    Maintenance --> Repairing
    Programming --> StepwiseRef[Stepwise Refinement]
    Programming --> ControlStructure[Control Structure]
    Programming --> algorithm
    Programming --> Coding
    Programming --> Testing
    Coding --> Languages
    Languages --> Query
    Languages --> Macro
    Languages --> HighLevel[High-level]
    Languages --> LowLevel[Low-level]
    HighLevel --> Java
    HighLevel --> Cplusplus[C++]
    HighLevel --> BASIC
    HighLevel --> C
    HighLevel --> Csharp[C#]
    HighLevel --> COBOL
    LowLevel --> Assembly
    LowLevel --> Machine
    Assembly --> AlphabeticCodes[Alphabetic Codes]
    Assembly --> Repetition
    Machine --> Arithmetic
    Machine --> Comparison
```

IMPACTS & REFINEMENTS

Impact Observed:

- Students engaged actively in comparing and merging their understanding.
- Groups with balanced preparation had richer conversations.
- The structure supported deeper explanation of relationships between concepts.

Design Reflection & Iteration

- Reduce pre-workload to avoid cognitive overload.
- Provide guiding questions for negotiation (e.g., “Why connect these?”).
- Add a short post-reflection to solidify understanding.