Problem-Solving and Transfer
Unit 6

EDUC 715 – Spring 2020

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Agenda

- Missing Assignments from Absences
- Oral presentations
    - https://shrtm.nu/86wU
- Reading discussion
- Application activity
- Final project application

Problem-Solving Task Analysis

1. Clarify the given state (conditions, obstacles or constraints).
2. Clarify the goal state (criteria for goal achievement).
3. Search for relevant prior knowledge (concepts, principles, cognitive strategies).
4. Determine IF conditions and goal state imply a known set of problems.
5. Decompose problems into sub-problems –goals.
6. Determine sequence for attacking subproblems.
7. Consider possible solutions to subproblems using prior knowledge.
8. Select a solution path and apply steps and principles.
9. Evaluate to determine if the goal is achieved.
10. IF the goal is not achieved, revise by returning to Step 1.

Transfer

- Effect of previous learning on new learning or problem-solving
- A central goal in education
- Can be positive, negative, or neutral
- Three views of transfer
  - Specific
  - General
  - Mixed
- Need to consider motivation

The Problem of Transfer*

- The fundamental educational question
- It is rare that people learn things in school which apply directly to life and work
- To be effective, curriculum needs to be designed with an eye toward transfer, which often it is not.
- Rapid technological change (and globalization) often penalizes those who are narrowly skilled and inflexible.
- Limited power and generality of human knowledge

Singley and Anderson, 1989
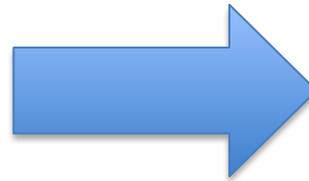
Near and Far

Near Transfer

Far Transfer

Critical Feature Similarity

Critical Feature Differences

Minimal Explicit Feature Instruction

Maximum Explicit Feature Instruction

To Promote Transfer

- Promote subject mastery
- Promote deep learning rather than memorization
- Provide time for learners to learn complex subject matter
- Provide opportunities for deliberate practices
- Promote self-monitoring and metacognitive strategies
- Provide feedback
- Provide conditional knowledge
- Help learners see potential transfer implications
- Provide opportunities to learn in multiple contexts

Choice Article Discussion

1. What are the main points from the article?

2. What are the implications for instruction that come from the article you read?

3. How do these implications relate to the required articles for this unit?

Instructional Design Activity

Analogies

Discussion Board Posting
Select any 1 of 4*

1. Based on what you've learned in this unit, how might you specifically apply strategies to improve the development of expertise and/or promote transfer in your professional context?

2. What are some things that interfere with the development of expertise and/or transfer in your field?

* Include the question in your posting

Discussion Board Posting
Select any 1 of 4

3. How did your knowledge of transfer and the development of expertise change after completing this week's readings? Connect back to specific readings in your discussion.

4. How do issues of transfer relate to cognitive load and the development of expertise?

* Include the question in your posting

For Next Week

- Unit 7: Self-Regulation and Metacognition
- Oral presentations
- Due by the beginning of class:
  - Synthesis paragraph