KNOWLEDGE WORKSHEET INSTRUCTIONS

EDUC 525 - Challenges in Urban Education: Learning

Spring 2019

Instructions

1. Complete Columns 1-4 of your knowledge worksheet.

2. Use this ppt and the worked example provided on blackboard to complete the worksheet.

3. Bring the COMPLETED worksheet to class next week (3/5).

4. You **do not need** to upload the worksheet prior to the 3/5 class.

Column 1 – Assumed Knowledge Causes

1. Think about the declarative (factual, conceptual), procedural, and metacognitive knowledge **required to achieve** your chosen stakeholder intermediate goal.

2. Use the stems from the Knowledge Worksheet Instructions to list the knowledge they lack/need.

3. Make sure that a knowledge type (e.g., procedural, conceptual) is listed for each of the four assumed causes you have listed (see slide 4).

Anderson and Krathwohl Review: Knowledge Types

- Factual - Discrete isolated content elements or "bits of information" (terms details, elements)
- Conceptual - Complex organized knowledge forms
    - Concepts (classifications and categories)
    - Processes (models, theories, structures)
    - Principles (cause and effect generalizations)
- Procedural - How to do something) skills, algorithms, criteria for making decisions ("when to do what") within contexts and domains
- Metacognitive – About cognition in general as well as awareness of and knowledge about one's own cognition
    - Strategic knowledge

Column 2 - Validation

For each assumed knowledge cause:

- How did/would you assess whether your stakeholders actually do/ do not have the knowledge you listed in column 1?

- Do you have actual data collected to validate the stakeholder knowledge in Column 1?
  - If yes, place a (Y) in Column 2.
  - If no, place a (N) in Column 2.

Knowledge Assessment/Validation Examples (By Knowledge Type)

- Declarative
  - Factual – Interviews, surveys, quizzes/polls
    - Ask the stakeholder to list terms, give short answers, answer multiple choice questions, complete recognition tasks.
  - Conceptual – Interviews, surveys, document analysis, quizzes/polls
    - Ask stakeholder to paraphrase, give examples, summarize in own words, classify, categorize, interpret, compare, explain, differentiate

Cont'd

- Procedural – Interviews, surveys, observations
  - Ask stakeholder to perform the skill (apply knowledge), implement, execute a task, generate a plan, design a product (e.g., a lesson plan)
- Metacognitive – interviews, surveys
  - Ask stakeholder to reflect on what they do, what they think, what they think about when they reflect, etc. You can also ask them to self-evaluate.

Column 3 - Solutions Principles

1. Review the theoretical principles we have learned in class related to learning/cognition (see slides 9-12).

2. Choose at least one principle that you will use to determine a solution for each assumed knowledge cause/need.

3. List the principle in column 3.

Principles of Operant Conditioning

1. Changes in the environment can affect behavior.
2. Behavior that is reinforced is strengthened.
3. Behavior that is punished is weakened.
4. The frequency of reinforcement influences the strength and rate of responses.
5. Different reinforcers and punishers have variable effects for different learners.

Principles of Social Cognitive Theory

1. Modeling to-be-learned strategies or behaviors improves learning.

2. Vicarious reinforcement and punishment can increase or decrease behaviors and learning.

3. Effective observational learning is achieved by first organizing and rehearsing modeled behaviors, then enacting it overtly.

4. Modeled behavior is more likely to be adopted if the model is credible, is similar (e.g. gender, culturally appropriate), and the behavior has functional value.

5. Self-regulatory strategies, including goal setting, enhances learning.

6. High self-efficacy can positively influence motivation.

7. Feedback that is private, specific, and timely enhances performance.

Principles of Information Processing

1. Information learned meaningfully and connected with prior knowledge is stored more quickly and remembered more accurately because it is elaborated with prior learning.
2. Frequent practice for short periods of time helps cognitive integration of learning.
3. How learners organize knowledge influences how they learn and apply what they know.
4. Learners' prior knowledge can help or hinder learning.
5. To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned.
6. Integrate auditory and visual information to maximize working memory capacity.
7. Continued practice promotes automaticity and takes less capacity in working memory.
8. The use of metacognitive strategies assists students in becoming self-regulated learners.

Principles of CLT

1. Segmenting complex material into manageable parts and pre-training, among other strategies, enables for the intrinsic load to be managed and learning to be enhanced

2. Decreasing extraneous cognitive load by effective instruction (particularly when intrinsic load is high) enables more effective learning

3. Increasing germane cognitive load by engaging the learner in meaningful learning and schema construction facilitates effective learning.

Column 4 - Solutions

1. How will you apply the solution principle in Column 3 to your organizational context?
2. Solutions can be:
   1. Information
   2. Job aids
   3. Training
   4. Education

See slide 14-17and Clark & Estes

Information

- Tell people something about their job they need to know so they can succeed on their own
- Appropriate when people do not need help practicing in order to apply information successfully
- Can be used to help people identify strategies or procedures that have been used in the past

Job aid

- Contains self-help information employees can use on the job to perform a task
- Appropriate when employees do not need guided practice to achieve complex performance goals
- Appropriate for people who have completed training, but need reminders about how to implement what they have learned
- Useful for experts who are asked to use a new approach, but don't need training

Training

- Any situation where people must acquire "how to" knowledge and skills and need practice and corrective feedback to help achieve specific work goals

- Is information (and sometimes job aids) PLUS guided practice and guided feedback.

- Training can be in any context (in person, online, at home) – training not defined by setting

Education

- Any situation in which people acquire "conceptual, theoretical, and strategic" knowledge and skills that might help them handle novel and unexpected future challenges an problems.
- Current research-based knowledge about why things happen and what causes things to happen.
- Not expected to provide "how to" information since education is about handling novel situations, not specific identified tasks.
- Can happen anywhere – universities, colleges, online, on the job.
- Might be formal school (advanced degrees).