

Final Design Document: Cognitive Apprenticeship Approach

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LTEC 6020: Advanced Instructional Design: Models and Strategies

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Foreword

This final design was written with the following items in mind:

- My design might be characterized as eclectic ... or perhaps chaotic ... so there is obviously room for improvement ...
- Surprised not to see scaffolding more strongly addressed ... surely, I can improve the sparse scaffolds in this course
- Sequencing from simpler to more complex or challenging ... perhaps there was a little of that from individual critiques to more elaborated plans and justifications ...
- Be sure to cite the source for any figures you use ... not sure if yours was original or borrowed
- Be more careful with capitalization in your reference list ...
- A logic model and theory of change go together --- the theory of change describes how a solution is intended to transform a problematic situation into a more desirable situation and the logic model is a visual depiction of the intended transformation ... see <https://cere.olemiss.edu/logic-models-vs-theories-of-change/>

-Jonathan Spector , Jun 30 at 5:47pm

Final Design Document: Cognitive Apprenticeship Approach

The purpose of this document is to serve as an evaluative tool for the cognitive apprenticeship model (CAM) as it relates to redesigning Learning Technologies 6020 - Advanced Instructional Design: Models and Strategies. Our team is charged with creating a logic model and theory of change to showcase the impact on learning, instruction, and performance that our redesign could potentially have. Based on the works of Collins, Brown, and Newman (1987), the framework used to evaluate the course is cognitive apprenticeship. Cognitive, as opposed to traditional, apprenticeship differs in that “rather than concentrating on physical tasks (such as shoemaking), this educational instantiation of apprenticeship concentrates on developing the mental models and cognitive and metacognitive skills that learners need in order to perform tasks in more expert-like ways...” (García-Cabrero et al., 2018, p. 815).

CAM attempts to intercede in four areas of the classroom: Content, Methods, Sequencing, and Sociology. Each part will function as a checkpoint by asking similar questions relating to the learner’s progress (what did you learn?) and discussing the problems and potential solutions throughout the process. In terms of this project, we begin by outlining the areas of content specific to our needs. Secondly, we will explore the methods used to evaluate our project and follow up by discussing skill acquisition and the steps needed to obtain proficiency. Thirdly, we will speak on the learning environment as this is where the skills are being taught and displayed. Lastly, we will demonstrate our working theory of change in a logic model as we outline the steps needed to obtain our overarching goal of insightful impact on learning.

Content

The CA model includes the learning strategies used to develop knowledge of facts, concepts, and procedures to carry out tasks and solve problems. For our evaluative purposes, we

ask the following question: Which strategies were used in providing content for an ideal learning environment?

- Domain knowledge - The detailed ideas, facts, and procedures classified under a subject matter. Students learn much of their domain knowledge through encountering real problem solving.
 - *The instructor served as a Subject Matter Expert (SME)*
(<https://lt.unt.edu/michael-spector>).
- Heuristics strategies - Achieving the tasks that are regarded as effective techniques. e.g., understanding the major claims of an arguments structure by reading through the introduction and conclusion.
 - *Students acknowledged the change of tasks in LTEC 6020 instructions, Achieved the tasks as effective techniques the “rules of thumb” was communicated. (see Sequencing section).*
- Control strategies - Strategies gathered by the learner in solving problems related to the goal.
 - *Students were able to locate strategies in solving problems (see Sequencing section).*
- Learning strategies - Learn or discover new concepts, facts, and procedures in solving problems or carrying out complex tasks.
 - *Students were able to locate strategies in solving problems (see Sequencing section).*

Methods

The teaching methods are designed to help the learner develop and discover knowledge giving the student the opportunity to engage in, observe, invent, or discover expert strategies in context. For our evaluative purposes, we want to know: Are all these methods relied on throughout the course?

- Modeling - Showing how the task is performed to the learner.
 - *Consistently meets expectations.*
- Coaching - Observe learner and assist them while they carry out their task.
 - *Consistently meets expectations.*
- Scaffolding - The teacher provides help to the learner to carry out the task either through suggestions or help. Once the student is proficient, the teacher then fades off.
 - *Needs improvement (see Theory of Change for recommendation).*
- Articulation - Making the learner think and explain their knowledge, reasoning, and problem-solving process.
 - *Consistently meets expectations.*
- Reflection - Analyzing and comparing their learner performance with an expert, other learners, and an internal cognitive model of expertise.
 - *Consistently meets expectations.*
- Exploration - Advocating the learner to try different premises, methods, and strategies that place learner control over problem-solving.
 - *Consistently meets expectations.*

Sequencing

The CA model focuses on structuring the various stages of skill development with the correct learning activities so that designers may synchronize their efforts at creating problem-solving skills. For us and our evaluative project, the following domains were addressed:

Complexity, Diversity, and Conceptual.

- Complexity - Each task or skill being learned should build upon the prior information collected. Did the course do so?

- *Yes. The learner was able to access information from a variety of sources with each module serving as a building block (see examples).*
 - The Legacy of Robert M Gagne
 - The National Academies of Sciences Engineering Medicine
 - Instructional Design
 - Handbook of Individual Differences, Learning, and Instruction
- Diversity - Each task or skill learned should be drawn from broad strategies as the learner progresses through the course. Did this happen? Was the learner exposed to multiple theories throughout the course?
 - *Yes. The learner was able to obtain broad strategies throughout the course (see examples).*
 - The Theories
 - Instructional Design Knowledge Base
- Conceptual - Each learner will have the foundational skills accrued before advancing to a higher skilled strategy. Did the structure of the course build upon the stated method and theories?
 - *Yes. The learner was able to access information from a variety of sources with each module serving as a building block.*
 - Ten Steps to Complex Learning

Sociology

The learning climate that we strive to operate in is one where the learner is fully situated within the environment and are “attempting to join in [so] that it must be situated using authentic tasks, involve cooperation among learners, and rely on learners’ intrinsic motivation” (Garcia-Cabrero et al., 2018, p. 816). In short, the students’ environment needs to be *conducive* to learning the information as they engaged in.

- *Due to the remote nature in which the course is presented, the learning climate is subjective to each student.*

Theory of Change

In developing our theory and constructing our logic model, we intend to show *why* we believe using the cognitive approach framework will effectively achieve our goal of a course remodel evaluation. According to Darabi (2005), as cited by Spector (2000), “a common theme in many instructional design articles is the notion that learning and instructional theories should guide the instructional development process and inform the design of learning environments” (p. 79). For our purposes, we are using a reflective assessment as a means of evaluation and as such, believe we are justified in our endeavor.

We believe that applying our evaluative framework to the course will add to the overall learner experience and serve as a model of scaffolding due to the collaborative/constructivist nature of the framework.

Evaluative/Scaffolding Framework

- Apprentice Appraisal (P2P)
 - Reflection on the CA model to Determine Educational Impact
 - Beneficial? Relevant?
 - Recommendation for Change Motion
 - Re-Evaluate or proceed to next stage.
- Journeyman/Apprentice Appraisal
 - Reflection on the CA model to Determine Educational Impact
 - What worked? What did not?
 - Recommendation for Change Motion
 - Re-Evaluate or proceed to review.
- Review
 - The agreed upon changes will be implemented to the course.

Logic Model for LTEC 6020

When applying the CA model, the microanalytic concept is intertwined with microanalytic analysis of the learning process and outcomes or goals. Therefore, our logic model takes our theory of change and specifies the parameters needed to be successful in a course redesign. This model helps to reflect what we are doing, hope to achieve, and need to accomplish

to reach our goal. The logic model (Table 1) shows the overall picture and the logical sequence of steps and activities that lead to the desired goal.

Table 1

CAM Logic Model

	Activities	Outputs	Outcome	Goal
Learning	Cognitive Apprenticeship Model will be used as the framework for the course.	The groups will learn how to apply the assigned framework.	Improved expertise of instructional design models.	Understand the various learning theories and instructional design models.
Instruction	LTEC 6020 students will redesign the summer 2021 course.	Students have autonomy to apply changes as needed.	Apprentice/Journe yman discuss potential changes.	Assist students in developing problem-solving strategies.
Performance	Each group will answer the assigned question.	Students will present their information to the other groups.	Specific skills relevant to the area of instruction are gained.	Support self-reflection and growth.

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