Advancing Entry-Level OTD Students from Novice to Competent with Foundational Skills Using Cognitive Apprenticeship Constructs

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Abstract

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Keywords

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ABSTRACT

This manuscript describes how one entry-level occupational therapy doctoral (OTD) program used an innovative approach to scaffolding assignments through a cognitive apprenticeship (CA) framework. Cognitive apprenticeship strategies include learning in the context or culture of the profession. This is achieved through observation, coaching, engagement, and discovery of strategies by the instructor. This framework was implemented to facilitate the learning of occupational, activity, and task (OAT) analyses through a four-week module within a first-semester foundations course. Cognitive apprenticeship constructs were used as instructional teaching strategies including active learning, group facilitated assignments, hands on observation, and immediate feedback and modeling of professional reasoning by the instructor. The assessment of findings supporting the effectiveness of the use of CA to implement this module included a mixed methods approach. A quantitative analysis of pre- and post-test surveys measuring confidence levels related to entry-level occupational therapy practice skills demonstrated that each survey item was statistically significant for increased confidence. A qualitative analysis of open-ended questions identified themes related to teaching strategies and the development of a foundational occupational therapy identity. The aim of this project is to expand the use of similar evidence-based applications for CA to progress student professional reasoning and occupational therapy practice skills while also supporting development of an emerging professional identity. This manuscript makes a substantive contribution to the teaching and application of analyses within OT education and the use of professional terminology, particularly the foundational understanding of the Occupational Therapy Practice Framework-IV and how it is applied in practice. The module demonstrated successful scaffolding of concepts built across several weeks. Cognitive apprenticeship constructs facilitated students' progression from novice to competent problem solvers within an OT context, which positively impacted the reported confidence of associated entry-level skills.

Introduction

Occupational therapy (OT) practice is grounded in identifying and addressing the multivariate complexities inherent in clients' lived experiences. The overarching goal of OT education is to graduate students who are "competent ill-structured problem-solvers in the specific context of OT practice," (Mitchell, 2013, p. 3). Ill-structured problems are those that do not yield a specific answer, which indicates that ill-structured problem solvers "must critically assess knowledge claims on the basis of the context, evidence, authoritative sources, and their own experience to arrive at a reasoned solution" (Mitchell, 2014, p. S4). The critical thinking skills required of ill-structured problem solvers are multidimensional and are the keys that unlock the competencies required of entry-level OT practitioners. However, students enter OTD programs at varying points along a continuum from naïve fact and authority driven views of knowledge to sophisticated views of knowledge incorporating context and uncertainty, and these beliefs about knowledge impact learning (Greene et al., 2008; Hofer, 2001; Hofer, 2020; Mitchell, 2013; Mitchell, 2014).

Students with naïve conceptions of knowledge may not have the strategies necessary for integrating sophisticated conceptions of knowledge (Greene et al., 2008). One way to facilitate transitioning students from a naïve conception to a more sophisticated conception of knowledge is through a transparent process of mapping how an expert practitioner approaches problems through modeling, feedback, and hands-on practice. This is referred to as cognitive apprenticeship (CA). Cognitive apprenticeship includes learning in the context and culture of the profession which best prepares learners through observation, engagement, and discovery of strategies (Bates et al., 2012). The CA model is structured on the process through which the expert introduces, scaffolds, provides practice opportunities, develops feedback loops for guidance, and situates new information and concepts within authentic contexts. Learners first observe the expert, receive expert guidance, perform with support, clarify and interpret their knowledge, analyze their own performance, and extend their own knowledge (Bates et al., 2012). The goal of CA is to provide transparency for implicit and explicit approaches an OTP would use to address an ill-structured problem in the context of real-world practice.

Since students are often naïve about "how experts know, think, interpret and reason in various fields" (Hofer, 2020, p. 90), overtly teaching them what it means to think like an OT practitioner and helping them see themselves as cognitive apprentices is one teaching strategy for the journey from novice to expert (Hofer, 2020). This may result in improved clinical thinking and problem-solving skills. The aim of this manuscript is twofold:

1) To describe how one entry-level doctoral program developed a four-week module to teach occupational, activity, and task analysis (OAT Module) using the Occupational Therapy Practice Framework-IV to ensure a strong foundation in students' understanding of OT main concepts using CA constructs.
2) To describe the findings of the evaluation of CA constructs used to support learning within the module based on quantitative and qualitative data in response to increasing students' confidence levels with foundational OT concepts.

Description of the Design and Implementation of the Module

During the first semester of their occupational therapy doctoral (OTD) program, students are enrolled in the Foundations of Occupational Therapy course. The course includes understanding and applying the Occupational Therapy Practice Framework: Domain and Process (OTPF-IV; American Occupational Therapy Association [AOTA], 2020). The OTPF-IV is essential for entering students to implement as it guides OTPs in how to provide therapeutic services and speak cohesively as a profession and within care teams. This current course iteration includes application of the OTPF-IV to clinical scenarios and case studies with a focus on developing observational skills and decision making that supports client-centered and ethical practice.

Benner (1982) first outlined the expert model which defined the stages from novice to expert as: novice, advanced beginner, competent, proficient, and expert. This model has been used in OT education literature (Unsworth, 2001). The OT terminology used to represent naïve to sophisticated conceptions of knowledge (Mitchell, 2013) align with Unsworth's (2001) progression from novice to expert practitioner. It is important to note that expert level is not achieved until after several years of clinical practice and is not expected during the OTD program. Since this manuscript addresses curriculum for OTD students, the definitions for these terms have been adapted from Unsworth (2001) to better describe student rather than practitioner expectations. Additionally, novice to competent stages is the focus as later stages occur further into the curriculum and in clinical practice. This course was designed to facilitate students' development of emerging OT skills and behaviors through their early journey from novice to competent application of the OTPF-IV terminology and analyses, defined as:

- Novice: Rigidly applies knowledge of theories, principles and specific scenarios
- Advanced Beginner: Adapts principles and theories to specific situations
- Competent: Adjusts to specific needs of scenarios and situations

The Foundations of Occupational Therapy course covered aspects of the profession using four overarching modules: 1) OT History, 2) OTPF-IV: Domain, 3) OTPF-IV: Process, and 4) OAT Module. Table 1 below outlines the format for this course.

Table 1

Module Outline for the Foundations Course

Module	Duration	Description
1	4 Weeks	Foundational aspects of OT, the history and paradigms, the founders of the profession, and the concepts that support modern OT practice.
2	3 Weeks	Immersive dive into the OTPF-IV domains and application to case scenarios.
3	3 Weeks	Immersion into the OTPF-IV Process, foundational knowledge about evaluations, treatment planning and implementation, documentation, and goal writing. Introduction to psychometric properties that support assessments.
4	4 Weeks	OAT Module: Application of the above concepts embedded in analyses of occupations while using terminology that supports the OT scope of practice.

The OAT module leveraged several CA methodologies. This module included active learning, observation, in-class analyses, and application of OTPF-IV terminology within a collaborative learning environment. These interrelated approaches provide the entry-level OTD students with opportunities to develop their clinical reasoning skills from novice to advanced beginner to competent.

OAT Module
The OAT module was the culminating experience for the course and required students to apply and integrate their previously learned knowledge and skills through group activities. These activities required each group to simulate the professional observation skills and clinical reasoning processes required to support client-centered practice. Prior to beginning this module, students were given opportunities to observe the expert OT instructor in the application of foundational OT terminology and concepts. During this final module, the students received expert guidance for how to correctly apply OT language to everyday activities and occupations. They were provided ample space and opportunities to perform with support from the instructor.

Applying the CA framework, the assignments were scaffolded to build on each other, providing additional practice for preceding, advanced beginner skills while simultaneously applying novice skills. This structure allowed for sequential repetition to practice skills and guided the journey to competent problem solving. The OAT module provided first-year students the opportunity to reflect and analyze their own knowledge and performance, develop skills and strategies for clinical reasoning, and improve their problem-solving abilities within a supportive classroom environment where peer-to-peer mentoring and immediate instructor feedback reinforce learning and skill transfer.

The module included three group-based assignments that were completed in class across four weeks of two 90-minute class sessions each week. Appendix A outlines each of the three assignments, the duration, and the components for the assignments. During the study, a total of 56 students were enrolled in the course and were divided into two sections of 28 students. The participants remained in assigned groups of 5-6 students for the duration of this module. A synchronous lecture was provided for a portion of each class session to introduce the assignment and to support time management. To facilitate the application of CA constructs and to progress students from novice to advanced beginner to competent with the skills addressed, two main threads related to the design of this module were addressed: the instructor's role in facilitating student growth, and the student progression from novice to competent.

Instructor's Facilitation Role
The assignments were designed to include built-in time for feedback and modeling of problem-solving of an expert instructor during synchronous class time, which enabled students to work with their peers to reflect and analyze their own performance, leading to the ability to immediately apply the feedback and continue building skills. Each assignment was designed to support ill-structured problem solving in an active learning environment. The main constructs applied during this module were expert instructor modeling, feedback loops, and intentional use of classroom contexts to support student development from novice to competent. Table 2 describes the instructor's role to facilitate CA constructs within each assignment of the module.

Table 2

Instructor Facilitation of Cognitive Apprenticeship Constructs

CA Constructs	Expert Instructor Modeling	Feedback Loops	Contexts
Instructor Facilitation: Assignment 1	- Moved between groups to guide problem solving - Provided live feedback to ensure understanding of each type of analysis (decrease errors) - Asked guided, open-ended questions to facilitate professional and group reflection of knowledge	- Provided cues and guidance on resources to reference - Focused primarily on correct application of OTPF-IV terminology - Gave guidance on appropriate breakdown of tasks - Suggested realistic and appropriate considerations for upgrades and downgrades	- Assignment completed in its entirety in class with instructor available - Student groups chose their occupation to analyze based on similarities of each group member. - Groups were allowed to simulate as many times as needed

Instructor Facilitation: Assignment 2	- Provided prompts for time management - Moved between groups during first day of this assignment to guide problem solving, then was available as needed - Provided live feedback to ensure understanding after completion of all three analyses, before moving to next scenario (decrease errors) - Asked guided, open-ended questions to facilitate professional and group reflection of knowledge and performance	- Focused primarily on time management as assignment included two complete OAT analyses in the same amount of time as previous assignment - Suggested realistic and appropriate considerations for upgrades and downgrades	- Assignment completed in its entirety in class with instructor available - Groups observed and analyzed pre-determined scenarios - Groups were allowed to play the video as many times as needed within the time constraints
Instructor Facilitation: Assignment 3	- Provided prompts for time management - Moved between groups 50% of the time and was available as needed - Asked guided, open-ended questions to facilitate professional and group reflection of knowledge and performance - Provided feedback after submission with one opportunity for each group to revise and resubmit	- Focused primarily on selecting effective occupations and tasks to observe - Majority of feedback was provided after first submission to facilitate increased group independence	- Completed in and out of class with instructor available 50% of the allotted time - Observation was completed once, with no ability to rewatch as the observation was completed live, on-campus

The OAT module was a context-appropriate opportunity to apply the didactic materials covered during the preceding three modules of the course. Students were guided through assignments with high levels of instructor support for how to use and choose appropriate terms within the OTPF-IV and for modeling of clinical reasoning skills. The support and modeling were faded out over each assignment as students progressed, and the instructor remained available as needed during class.

Student Development from Novice to Competent
Each of the three assignments within the OAT Module included an occupational, activity, and task analysis. The task analyses required students to identify upgrades and downgrades that were realistic and appropriate for each step. Table 3 describes the progression of skills through each of the three assignments from novice to advanced beginner to competent in relation to OT terminology and analysis skills. Students participated in an active learning environment with expert instructor facilitation of CA constructs. This module guided student development from novice to competent in relation to OT analyses and terminology while exercising professional reasoning in an OT context.

Table 3

Expectations for the Progression from Novice to Competent

Group Assignment	Novice Skills (Rigidly applies)	Advanced Beginner Skills (Adapts)	Competent Skills (Adjusts)
Assignment 1	- Application to a group-shared, familiar occupation, activity, and task - Application of occupational, activity, and task analyses - Application of environmental and task demands - Application of appropriate and realistic upgrades and downgrades	- Application of OTPF-IV terms and process introduced earlier in the didactic portion of the course	
Assignment 2	- Completion of two recorded observations within same timeframe as previous assignment (increased demand) - Application of	- Application of occupational, activity, and task analyses - Application of environmental and task demands	- Application of OTPF-IV terms and process introduced earlier in the didactic portion of the course

	previously applied skills to a task that was completed in an unfamiliar way by someone else	- Application of appropriate and realistic upgrades and downgrades	
Assignment 3	- Generalization of skills to a one-time, live, observation - Reaching consensus on group interpretation of observation	- Increased demand due to inability to repeat observation - Application of upgrades and downgrades of tasks - Application of previously applied skills to a task that was completed in an unfamiliar way	- Application of OTPF-IV terms and process introduced earlier in the didactic portion of the course - Application of occupational, activity, and task analyses - Application of environmental and task demands

Assignment 1 focused on introductory concepts of analyses in the context of the groups' current contexts. Groups collectively determined a shared occupation, activity, and the breakdown of tasks that are familiar to each member. For example, several groups decided on the occupation of activities of daily living, specifically bathing, decided to focus on the activity of washing hair, and then worked together to break the activity down into the tasks that support their collective way of completing this activity and occupation. Additionally, students built on their previously learned knowledge related to OTPF-IV terminology, upgrades, and downgrades through application within this assignment. Students completed this assignment across two 90-minute class sessions.

Assignment 2 was completed across two 90-minute class sessions. Students were exposed to the same tables and prompts as the previous assignment. Rather than choosing a personal occupation, students observed two video recordings of individuals completing the same occupation and activity but in different ways. The first video included an individual without an impairment and the second video demonstrated a stroke survivor with right-sided hemiparesis. While repetition provided consistency, this assignment increased the demand on the students by requiring completion of two scenarios within the same timeframe. Students could view the videos as many times as needed to facilitate increased reflection of individual and group knowledge and performance. This assignment was scaffolded to challenge student teamwork and problem solving with decreased reliance on the instructor.

The third and final two-week component for this module referred to Assignment 3. Building from the repetition of the previous assignments, an increased demand was placed on the students by requiring a one-time, live observation. Working in groups, students were instructed to observe an individual on campus and complete the assignment to the best of their collective memory. Each student completed an individual

free-writing portion of the observation, and the group collectively combined those observations into one cohesive recount. Each group reflected, with instructor coaching, to ensure their written observations were objective and did not include inferences or assumptions. This assignment was completed over three 90-minute class sessions to observe, condense their observational narratives, and complete the occupational, activity, and task analyses. Students received live feedback and demonstrated their improved clinical reasoning before submission of the assignment.

Assessment

Approval was received by the institutional review board (IRB) at the affiliated university to collect and analyze data for this manuscript. Prior to beginning the OAT Module, an author-developed, eight-item quantitative pre-test Qualtrics survey (Qualtrics, Provo, UT) was sent to 56 students enrolled in the Foundations of Occupational Therapy course. The survey was open for one week prior to beginning the module. Participation in the survey was voluntary and participants created a deidentified code to maintain anonymity while allowing the pre- and post-tests to be correlated. The survey asked students to measure their perceived confidence on a 10-point Likert scale from 1 (not confident at all) to 10 (extremely confident) for the following items related to observation, occupational therapy clinical reasoning, and therapeutic techniques:

1. Identify the difference between occupational, activity, and task analyses.
2. Describe the difference between objective and subjective observation.
3. Analyze a task and distinguish specific performance skill components.
4. Develop appropriate upgrades for activities based on individual client needs.
5. Develop appropriate downgrades for activities based on individual.
6. Appraise performance without inferring or without making assumptions.
7. Accurately document observed performance using the OTPF-IV terms
8. Formulate a clinical reasoning rationale for observed performance.

After submitting their final assignment, students were asked to answer the above survey again as a post-test measure along with the following four qualitative questions:

1. In your own words, what elements of instruction in this module contributed to your learning?
2. In your own words, what elements of instruction in this module did you find challenging?
3. Please provide an optional brief reflection (3-4 sentences) related to this module.
4. Please share any other comments.

All students in the cohort completed the OAT Module, as designed with CA constructs, regardless of completion of the surveys. The pre-test included 50 participants who consented and responded, five were incomplete, resulting in a total of 45 responses. The post-test included 30 responses, three incomplete, and seven with inconsistent personal codes which were unable to be linked to the pre-test. A total of 20 responses were matched for both the pre- and post-test responses and data analysis was performed using SPSS (n=20). The Wilcoxon matched pairs signed rank test was used to determine changes between the pre- and post-test confidence levels of the participants. The dependent variable was the ordinal measure of confidence for each survey item, and the independent variables were time (two points): prior to completion

and immediately after completion of the OAT Module. Data results indicate the median increase in confidence levels for each of the eight constructs within the survey was statistically significant where $p<0.05$. Results are outlined below in Table 4.

Table 4

Mean Scale Scores for Confidence Levels Related to OT Constructs Through Pre- and Post-Test Survey

Question	Pre-Test (std dev)	Post-Test (std dev)	Z	p value[a]
Identify the difference between occupational, activity, and task analyses[b]	6.4 (2.6)	8.6 (1.6)	3.064	.002
Describe the difference between objective and subjective observation[b]	6.8 (2.5)	9.1 (1.5)	2.997	.003
Analyze a task and distinguish specific performance skill components[b]	5.2 (2.7)	8.5 (1.4)	3.543	<.001
Develop appropriate upgrades for activities based on individual client needs[b]	4.0 (2.2)	8.0 (1.4)	3.739	<.001
Develop appropriate downgrades for activities based on individual[b]	4.0 (2.3)	8.1 (1.6)	3.838	<.001
Appraise performance without inferring or without making assumptions[b]	5.0 (2.2)	7.3 (1.5)	3.542	<.001
Accurately document observed performance using the OTPF-IV terms[b]	4.4 (2.6)	8.3 (1.4)	3.838	<.001
Formulate a clinical reasoning rationale for observed performance[b]	3.7 (2.1)	7.2 (1.7)	3.734	<.001

[a]Wilcoxon signed ranks test (non-parametric)
[b]A higher score corresponds to a higher level of confidence with each construct

Thematic coding and frequency counts were determined through a five-part process for the qualitative analysis. Each question was analyzed by the authors to (1) identify and tag the themes and (2) track the word counts for words and concepts pulled from the responses to specific questions. The process was repeated to confirm that the theme tags and counts were accurate and that no major concepts were missed. The results from all four questions were compiled into a separate spreadsheet and sorted. Duplicative reported responses related to the same or similar word or concept were combined. The consolidated material was analyzed for emerging themes and tagged for

grouping of similar terms and concepts around occupational therapy practice and teaching strategies/pedagogy. Thematic groups were pulled into separate tables and authors collaborated to determine final overarching themes.

Of the 30 post-test responses, 20 of those included qualitative data in response to the four open-ended questions with a total of 52 responses across the four questions. Two major themes emerged which are outlined below in Table 5 and Table 6: 1) instructional strategies and 2) the development of students' OT identity.

Table 5

Response Concept 1: Instructional Strategy Choices / Teaching and Learning

Instructional Concept	Exemplary Quote	*n*
Collaboration with Group / Discussion	Being taught the material and then getting to practice it with my group really allowed me to learn and understand the material. (Participant 15)	22
Learned / Understood	It was explained well and completing the steps in a way where it became gradually more involved was beneficial. It helped to build an understanding, allowed us to become more comfortable with these new concepts, and ultimately learn the material more effectively. It got easier each time even though it was becoming more involved and advanced. Overall, I think this module was one of the most helpful things in foundations class and I really enjoyed it. (Participant 19)	21
Assignment	I really enjoyed this module. I learned better by applying knowledge to the assignments. It was helpful that they built on one another. I also learned greatly from working in groups. (Participant 5)	16
Scaffolding / Repetition	Repeated exposure with scaffolding for independence [contributed to my learning]. (Participant 6)	8
Chunking (breaking down) of components	The breakdown of each section and completing in groups really helped me understand the assignment and perform well. (Participant 17)	6
Lecture / Lab	In class lectures followed by hands-on activities/assignments [contributed to my learning]. (Participant 16)	6
Examples provided / Scenarios for practice	The more we broke down tasks, the more taxing it got because we tried to break down our tasks into the smallest possible. After hearing more examples and seeing what we could do, by the end, it got so much easier and we go[t] significantly faster at it. (Participant 3)	3
Reflection / Feedback	Feedback and group discussion helped to shape understanding and improve clinical reasoning skills. (Participant 9)	2

Due to the context chosen for each assignment, the group interactions, the methods of providing feedback and modeling from the instructor, the students identified the module practice as a simulated real-world experience with hands-on application. They reported this was beneficial to their learning, skills acquisition, and improved efficacy and efficiency. Moreover, the respondents reported a sense of emerging OT identity, with one respondent stating: "This assignment made me feel like an OT! It also gave me a much better understanding of how OTs think and why it is important" (Participant 19).

Table 6

Response Concept 2: Skills Acquisition for Developing an OT Identity

OT Practice Skill	*Exemplary Quote*	*n*
Developed skills in analysis: task, activity, occupation	Occupational, activity, and tasks analysis are very important in planning interventions for clients. I feel much more prepared to do this in the future and I'm more comfortable using the OTPF-IV. (Participant 12)	11
Developed skills in observation	This module and the assignments furthered my understanding of how important observations are as OTs. (Participant 12)	11
Developed skills in OT Assessment / OT Evaluation	This module helped me understand the base of OT evaluation and practice to be able to better understand the curriculum. (Participant 18)	2
Developed skills in clinical reasoning and application of upgrades/downgrades	I thought this module was EXTREMELY beneficial in exposing me to utilizing OTPF-IV terms, learning how to observe, learning how to create a profile, distinguishing objective vs. subjective observations, and creating upgrades and downgrades after dividing an occupation into tasks. (Participant 10)	15
Developed skills in Utilizing OTPF-IV	Also, it gave me great practice working with the OTPF-IV terms and applying them to specific tasks. (Participant 18)	11

Discussion

Models of development of epistemic belief, about the nature of knowledge and knowing, generally map a transition from naïve conception of knowledge and knowing to one that begins to incorporate multiple points of view and contextual uncertainties while assessing the relative strength of sources of evidence (Hofer, 2001). The instructor's role is to model expert skill for professional reasoning including recognizing that new information is not a threat but, rather, is an opportunity. The CA framework provides feedback loops to "effectively use the best available evidence for solving complex, multidimensional, and ill-structured occupational performance problems" (Mitchell, 2013, p. 8). This allows students to compare, contrast, and reflect on their own skills in a supportive environment which builds self-efficacy and tolerance for ambiguity.

It is important to connect active learning and critical thinking strategies to learning objectives to best support students and increase their ownership of learning (Dozier et al., 2021). Equally as important is exposing the internal and implicit thinking processes of the expert (Bates et al., 2012). Choosing teaching strategies that align scaffolding of CA structures alongside application of active didactic learning allows students to think deeper, solve problems, and make life-saving decisions independently (Dozier et al., 2021). Additionally, fading of instructor support allows students the opportunity to develop their own problem-solving abilities and sense of self-confidence. The framework applied in this module clearly supported the student's learning, as evidenced by the survey findings and analysis of student feedback. The study results bolster evidence for the efficacy of implementing CA structures combined with active learning within an OT context. The combination of iterative assignments, scaffolding, and feedback facilitated engagement among students in authentic application of professional skills and explicit conversations addressing the types of "task definition, selection of strategies and metacognition" (Greene et al., 2008) required for solving ill-structured OT practice problems.

Frequency analysis uncovered themes supporting skills acquisition, upon completion of the module, in the following areas: analysis, observation, applying the OTPF-IV, and upgrading and downgrading. This provides evidence that the CA structures and pedagogical choices made in the development of the module had an impact on the students' perception of confidence related to pre-determined entry-level OT skills. Students also positively reported about the group format, assignments, and teaching strategies in the qualitative data.

Other themes regarding the design and implementation of the OAT module showed a perception of creating a challenging but collaborative, hands-on learning environment. Responses demonstrated increased confidence in both their skills and professional identity from novice to competent, or adaptive, ways of thinking as first semester OTD students. Though some adjustments to the prework materials might be desired for future course iterations, these considerations were reflected in singular instances within the student responses. The existing literature related to CA supports students' learning progression from novice to expert professional reasoning (Mitchell, 2013; Mitchell, 2014; Unsworth, 2001) and the current evidence gathered supports the CA framework applied in the OAT module, specifically the module's effectiveness for applying the OTPF-IV terminology to support the development of OT professional skills. Additionally, the module effectively impacted the students' perception and confidence related to adaptability and adjustability and instructors observed students being more comfortable and open to clinical ambiguity.

This study had some limitations. Limitations included a small sample size (N=20) which limits the generalizability of the results of this study. Qualitative research coding for the thematic analysis was subjective to the reviewers and could result in different dominating themes. Instructor interactions were also subjective and may be

implemented differently based on teaching philosophies by other course instructors. Additionally, individual group dynamics of the student learners may impact their experience and understanding of the course content.

Implications for Occupational Therapy Education

For OT educators, it would be beneficial to assess current curricular frameworks and design learning activities that progress novice professional reasoning to emerging expert via the CA model. After implementing the constructs of the CA model, it is evident that students were provided an environment to begin exercising their clinical reasoning and clinical identities as future OTPs. OT educators are already availing the benefits of active learning approaches including group work, self-reflection, and video components. However, purposeful inclusion of CA constructs such as hands-on practice with immediate feedback and overt demonstration of expert problem solving could expand active learning to purposely guide students toward higher levels of reasoning.

Further research is needed to define each stage of the student learning continuum from novice to entry-level clinician in professional OT programs. It would be beneficial to collect data on the progression through student learning stages for various curricular outcomes and objects, for example, the ability to apply upgrades and downgrades to a case scenario might progress more quickly than students designing effective intervention plans. Aligning instructor strategies and CA constructs to each stage would provide more guidance and structure for OT educators.

The OAT module provides contextualized scenarios that elicit student decision making (Dozier et al., 2021) while providing low-fidelity, non-interactive simulation that encourages the development of professional identity, self-confidence, and professional skills (Grant et al., 2021). It could be beneficial to further explore simulation embedded in the constructs of the CA model. Active learning strategies were intentionally combined with CA principles for strategic, systematic scaffolding and coaching—making unobservable expert processes explicit. This resulted in an activity that stimulated student motivation, facilitated deeper learning, and supported critical and clinical thinking skills to solve ill-structured problems.

A profession's way of applying theoretical approaches in practice influences its production, acceptance, and use of knowledge (Mitchell, 2013). Consequently, another consideration for the use of CA might be to explore strategies to improve scaffolding of expert skills and professional reasoning across an entire OTD curriculum. This could be guided by breaking down the continuum that lies between novice and expert for essential OT skills. Clearer definitions could guide the identification of proficiency skills required to progress through curricular phases within specific programs. For example, the steps from novice to expert could be a framework to explore in alignment with the Accreditation Council of Occupational Therapy Education (ACOTE) fieldwork performance evaluation to best support students' professional development.

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Appendix A

Outline of the OAT Module Assignments

Assignment 1: Module Week 1		
Part	Descriptors	Prompts
A: Occupational Analysis	Defined as how a specific individual engages in a specific occupational context.	• Occupation being analyzed • Purpose of the occupation • Relevance and importance of the occupation • Specific meaning of the occupation • Contexts and environments • Performance patterns
B: Activity Analysis	Defined as how an activity is typically or generally completed.	• Identify three activities that are performed within the occupation identified in Part A • Choose one of those three activities to analyze in this section • Relevance and importance of the activity • Objects used and their properties • Space, social, sequencing/timing demands • Safety concerns • Break this activity down into at least 10 steps • Identify how this activity can be adapted to promote participation
C: Task Analysis	Defined as how a specific person completes the identified activity.	• Using the table provided on the assignment, break the activity down into 15 task steps and identify the performance skill related to each step • Italicize the performance skill stated for each step
D: Task Analysis with Upgrades and Downgrades	Applies grading techniques to the task analysis completed in Part C.	• Copy and paste the 15 task steps and the italicized performance skill identified into the new table provided • Identify one upgrade and one downgrade for each of the identified italicized performance skills • Label each upgrade and downgrade as either an accommodation, adaptation, or compensation

Assignment 2: Module Week 2		
Parts	Descriptors	Prompts
A: Activity Analysis	Defined as how an activity (folding a shirt) is typically or generally completed.	• Identify three activities that are performed within the occupation identified in Part A • Choose one of those three activities to analyze in this section • Relevance and importance of the activity • Objects used and their properties • Space, social, sequencing/timing demands • Safety concerns • Break this activity down into at least 10 steps • Identify how this activity can be adapted to promote participation
B: Task Analysis Video 1	Defined as how a specific person completes the identified activity (folding a shirt). This section also included the application of grading techniques to the task analysis.	• Using the table provided on the assignment, break the activity down into 15 task steps and identify the performance skill related to each step • Italicize the performance skill stated for each step • Copy and paste the 15 task steps and the italicized performance skill identified into the new table provided • Identify one upgrade and one downgrade for each of the identified italicized performance skills • Label each upgrade and downgrade as either an accommodation, adaptation, or compensation
C: Task Analysis Video 2	Defined as how a specific person completes the identified activity (folding a shirt). This section also included the application of grading techniques to the task analysis.	• Using the table provided on the assignment, break the activity down into 15 task steps and identify the performance skill related to each step • Italicize the performance skill stated for each step • Copy and paste the 15 task steps and the italicized performance skill identified into the new table provided • Identify one upgrade and one downgrade for each of the identified italicized performance skills • Label each upgrade and downgrade as either an accommodation, adaptation, or compensation

Assignment 3: Module Weeks 3-4		
Parts	Descriptors	Prompts
A: Observation	Observe an individual completing an activity on campus.	• Enter the start and end times for the team observation • Identify the location of the observation • How many subjects were observed and objectively describe them • Complete individual free-writes of the observation • Combine the individual free-writes into a collective observation • Revise your observation to ensure objectivity and remove any inferences and/or assumptions
B: Occupational and Activity Analysis	Defined as the specific occupational context and the activity demands.	• Identify the occupation being observed • Identify the specific activity within the occupation being observed • Relevance and importance of the activity • Spatial, social, sequencing/timing demands • Safety considerations • Context and environments • Divide the observation into 25 distinct steps
C: Task Analysis	Defined as how a specific person completes the identified activity (folding a shirt). This section also included the application of grading techniques to the task analysis.	• Using the table provided on the assignment, choose 15 of the identified 25 steps to focus on in this table • For each step identify the performance skill required • Italicize the performance skill stated for each step • Copy and paste the 15 task steps and the italicized performance skill identified into the new table provided • Identify one upgrade and one downgrade for each of the identified italicized performance skills • Label each upgrade and downgrade as either an accommodation, adaptation, or compensation