# Differences Between Perceived and Assessed Fundamental Knowledge and Clinical Skills in Occupational Therapy Assistant Students: A Pilot Study

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**Abstract**

The purpose of this study was to determine differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at Radford University Carilion (RUC) versus those assessed by fieldwork educators during level II fieldwork. Two theories were used to guide this study: metacognition and The Novice to Expert Model. Retrospective data sets from the National Board for Certification in Occupational Therapy's COTA (Certified Occupational Therapy Assistant) Entry-Level Self-Assessment Tool and the American Occupational Therapy's Fieldwork Performance Evaluation were analyzed using a repeated measures analysis of variance. Results of this study will be used to assist the RUC occupational therapy assistant (OTA) program director and faculty in identifying areas of instruction amenable to modification for improved instruction and student performance.

*Keywords:* occupational therapy assistant, fieldwork, perception of knowledge, perception of clinical skills

## Dedication

It is with my utmost gratitude and respect that I dedicate this capstone project to my colleague, mentor, and friend, Ave Mitta. Ave, your master's thesis was the brainchild of this project. To be able to carry your work forward is an honor. You have provided me such insight into the profession of occupational therapy, teaching, learning, and living. You have dedicated over half your career nurturing the faculty, staff, and students of the occupational therapy assistant program. Your devotedness to the profession is obvious in your commitment to your work, your unbiased nature, and your generosity to others. The outcome of this research is evidence of the impact of your leadership. I am fortunate to have had the opportunity to learn under your guidance as both a student and colleague. Thank you, dear friend.

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## List of Abbreviations

ACOTE……. Accreditation Council for Occupational Therapy Education

AFWC……Academic Fieldwork Coordinator

AOTA…….American Occupational Therapy Association

ANOVA……. Analysis of Variance

CDC……Centers for Disease Control and Prevention

COTA…….Certified Occupational Therapy Assistant

COVID-19……. Coronavirus Disease 2019

FWPE…….Fieldwork Performance Evaluation

IBM……International Business Machines

IRB…….Institutional Review Board

NBCOT……. National Board for Certification of Occupational Therapy

PHE……Public Health Emergency

OTA……Occupational Therapy Assistant

OT……. Occupational Therapy

RUC……Radford University Carilion

SPSS……Statistical Package for Social Sciences

# Chapter One

## Introduction

A strong academic curriculum is fluid in nature. This enables program directors and faculty to continually improve the program of study and facilitate student success (Stabback, 2016). Outcome measures are frequently used to assess student performance and identify both strengths and weaknesses of the academic program. This is especially critical for health care education including occupational therapy assistant (OTA) programs.

In the profession of occupational therapy (OT), new graduates must begin their career with a complete set of entry-level skills to ensure safe client care. Subsequently, the effectiveness of didactic and clinical education is directly linked to the quality of care new graduates provide. To ensure program integrity, OTA programs routinely complete self-study reports and assessments (Accreditation Council for Occupational Therapy Education [ACOTE], 2019). Results of these assessments enable OTA programs to adjust and adapt the curriculum to promote exceptional learning, student performance, and ultimately client care.

Given the importance of quality health care education and the value of outcome measures for program improvement, a variety of assessment methods are necessary for comprehensive evaluation. This study proposed a method for investigating program effectiveness through student self-assessment and clinical evaluations. Subsequently, the purpose of this study was to determine differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at Radford University Carilion (RUC) versus those assessed by fieldwork educators during level II fieldwork.

## Background

### *Standards for Occupational Therapy Assistant Programs*

Occupational therapy assistant programs accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) are required to meet educational standards that prepare students for professional practice (ACOTE, 2020). Academic institutions have flexibility in the delivery of educational content as long as standards are met and approved by ACOTE accreditors. This flexibility allows program directors and faculty to adjust their curriculum to respond to the needs of both students and the academic institution. ACOTE standards apply to all domains of the OTA curriculum, including fieldwork education.

Fieldwork education supports academic content and provides students the opportunity to develop professional behaviors, build clinical reasoning skills, and exercise professional responsibilities with a diversity of clients (ACOTE, 2019). Fieldwork is divided into two tiers: level I and level II.

Level I fieldwork is typically completed in the middle of the didactic coursework to enrich learning opportunities through observation and participation in specific aspects of occupational therapy practice. Level I fieldwork requirements can be met through various means such as a clinical environment, simulated environment, or faculty-led site visit (ACOTE, 2019).

Level II fieldwork is typically completed at the end of didactic coursework and comprises 16 weeks of supervised practice, often divided into two, 8-week sessions, in a traditional occupational therapy setting. OTA students are expected to perform as entry-level practitioners in their respective setting by the end of their level II fieldwork.

### *Program Assessment*

OTA programs frequently use multiple methods for program assessment. At RUC, the program director and faculty use student performance measures to assess program effectiveness. Two common assessments that can assist in such measures are the National Board for Certification in Occupational Therapy's (NBCOT) COTA [Certified Occupational Therapy Assistant] Entry-Level Self-Assessment Tool, herein referred to as "self-assessment" and the Fieldwork Performance Evaluation (FWPE) for the Occupational Therapy Assistant Student from the American Occupational Therapy Association (AOTA), herein referred to as "fieldwork evaluation" (AOTA, 2020c; NBCOT, n.d.-a).

Student perception of knowledge and clinical skills (i.e., self-assessment) and analysis of their performance (i.e., fieldwork evaluation) can assist OTA programs in assessing curricular effectiveness and quality. Results of these two assessments can be used to identify content areas in the curriculum where discrepancies exist between self-assessment and performance. This information assists program directors and faculty with program development and improvement.

Students complete NBCOT's online self-assessment independently at the conclusion of the OTA program. When completing the self-assessment, students rate their knowledge and clinical skill competence using a pictorial scale: "  no knowledge or skills,  general knowledge through observation and academic learning,  general clinical skills under supervision, and  entry-level competence" (NBCOT, n.d.-a). This assessment provides the OTA student with a self-analysis of their acquired knowledge and clinical skill practice competency and generates a study guide in preparation for the national certification examination. Additionally, the OTA program at RUC uses this data for program assessment.

Fieldwork evaluations are completed by the fieldwork educator at the midpoint (midterm) and conclusion of the level II fieldwork experience. This assessment provides a direct measure of student performance and clinical skill competency in a practice setting. Fieldwork educators are instructed to rate the students' fundamental knowledge and clinical skills on a scale of 1-4 with "1" being "unsatisfactory performance," "2" being "emerging performance," "3" being "proficient performance," and "4" being "exemplary performance" (AOTA, 2020c).

Both assessment instruments cover similar content areas. For example, the self-assessment describes the skill of gathering pertinent information about a client as "recognize the influence of development; body functions and body structures; and values, beliefs, and spirituality on a client's occupational performance" while the fieldwork evaluation describes the same skill as "obtains sufficient and necessary information about factors that support and hinder occupational performance from relevant sources throughout the evaluation process" (AOTA, 2020c; NBCOT, n.d.-a). Understanding differences in competency levels across shared themes can assist OTA programs in improving student success through enhanced curricular content, program effectiveness, and quality design.

### *Use of Assessment Tools at Radford University Carilion*

OTA students at RUC complete the self-assessment prior to the beginning and at the conclusion of level II fieldwork. For the purpose of this study, only scores from the initial self-assessment (prior to level II fieldwork) were used as this most accurately describes self-perception at the conclusion of didactic coursework. Once fieldwork has begun, the students' perception of knowledge and clinical skills will likely be altered by their experience.

Discrepancies between student self-assessment and fieldwork educator evaluation provide a wealth of information on clinical skill areas in which perception clashes with practice.

The causes of such discrepancies are varied and will be explored throughout the course of this study. With this information, the OTA program at RUC may gain valuable insight into aspects of the curriculum in need of modification for improved student outcomes.

**Statement of the Problem**

Academic programs are required to instruct OTA students on the domain and process of OT services and to have students demonstrate professional skills prior to embarking on level II fieldwork (ACOTE, 2019). Prior to level II fieldwork, clinical skills are practiced with peers, instructors, and standardized patients in a controlled setting. The students' first practical experience and real client interaction often occurs during level II fieldwork.

Faculty do not have the same active role in fieldwork as they do during classroom and lab encounters. Instead, fieldwork educators supervise students in the clinical setting, provide feedback, and assess competency as the OTA student works towards achieving entry level proficiency.

During midterm fieldwork meetings, the Academic Fieldwork Coordinator (AFWC) at RUC routinely finds a disconnect between students' self-perception and fieldwork educators' assessment of fundamental knowledge and clinical skills (S.M. Johnson, personal communication, March 11, 2022). Despite the frequency of this discrepancy, to date this information has not been thoroughly studied nor has it been used to guide curriculum development. Comprehensive investigation of this data may prove valuable for the OTA program at RUC.

**Significance**

ACOTE education standards require OTA students to successfully complete fieldwork, graduate from an accredited program, and pass an entry-level national certification examination

(AOTA, 2015). This ensures new graduates have obtained the knowledge and clinical skills necessary to provide safe and effective care.

As with any health care profession, providing therapeutic care involves a measure of risk and liability thereby necessitating competence and skill. The ability to provide safe and effective client care begins in the classroom and develops through fieldwork. Students with inadequate knowledge and/or clinical skills risk the safety and effectiveness of patient care (Mason et al., 2020).

Understanding potential differences in student perceptions of readiness and fieldwork performance can assist OTA programs in adjusting curriculum to strengthen knowledge and clinical skill development. Alternatively, congruency between student perception and fieldwork performance would validate the curriculum and methods of instruction currently in practice.

Differences between perceived and assessed fundamental knowledge and clinical skills may indicate content within the OTA program in need of enhancement. This study is significant as it may assist the OTA Program at RUC in identifying areas within the curriculum in which OTA students misperceive their competency. This provides an opportunity to strengthen program content and improve student success. Ultimately, improved curriculum and student success leads to enhanced client care.

**Purpose of the Research**

The purpose of this study was to determine differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at RUC versus those assessed by fieldwork educators during level II fieldwork.

**Research Questions and Hypotheses**

Table 1 outlines the four research questions used to guide this study and their hypotheses. These questions were investigated through quantitative analyses using data from the NBCOT self-assessment and the AOTA fieldwork evaluation.

**Table 1**

*Research Questions*

| | Research Question (RQ) | Null Hypothesis | Alternative Hypothesis |
|---|---|---|---|
| RQ #1 | Is there a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating of the students' fundamental knowledge on midterm fieldwork evaluations? | There is not a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating on midterm fieldwork evaluations. | There is a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating on midterm fieldwork evaluations. |
| RQ #2 | Is there a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating of the students' clinical skill competence on midterm fieldwork evaluations? | There is not a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating on midterm fieldwork evaluations. | There is a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating on midterm fieldwork evaluations. |
| RQ #3 | How do OTA students' overall performance at midterm evaluation compare to their overall performance at final evaluation of fieldwork experiences as rated by the fieldwork educator? | OTA students' performance at midterm evaluation is not different than at final evaluation of fieldwork. | OTA students' performance at midterm evaluation is different than at final evaluation of fieldwork. |

| | Research Question (RQ) | Null Hypothesis | Alternative Hypothesis |
|---|---|---|---|
| RQ #4 | What clinical skills do OTA students self-rate as having "Entry-level competence" before fieldwork but are rated as demonstrating less than "Proficient performance" by the fieldwork educator on their final fieldwork evaluations? | There are no clinical skills that OTA students self-rate as having "Entry-level competence" before fieldwork but are rated as demonstrating less than "Proficient performance" by the fieldwork educator on their final fieldwork evaluations. | There is at least one clinical skill that OTA students self-rate as "Entry-level competence" before fieldwork but are rated as demonstrating less than "Proficient performance" by the fieldwork educator on their final fieldwork evaluations. |

# Chapter Two

# Review of the Literature

## Overview of the Profession of Occupational Therapy

The profession of occupational therapy in the United States dates to War World I with the first meeting of the National Society for the Promotion of Occupational Therapy occurring in 1917 (Quiroga, 1995, p. 174). The organization's name was changed to the American Occupational Therapy Association in 1921 (AOTA, n.d.-b.; Schwartz, 2003, p. 5). The philosophy of the profession of occupational therapy is rooted in holistic, client-centered care with a broad scope of practice encompassing meaningful occupations and activities people have to, need to, and want to do on a daily basis (Law et al., 2019).

AOTA defines occupations as "personalized and meaningful engagement in daily life events" and activities as "actions" that facilitate performance in occupations (AOTA, 2020d, p. 7). OT is holistic and client centered in that it addresses the physical, mental, and spiritual aspects of a client's life and includes the client in intervention planning and implementation, respectively. Additionally, OT encompasses values of advocacy, self-advocacy, and social justice. OT practice interventions vary broadly from teaching a young child with attention deficits to tie their shoe, to advocating for an ex-offender to gain meaningful employment, to facilitating neuromuscular function in an older adult recovering from a stroke who hopes to care for their pet.

The centennial anniversary of the profession was celebrated in 2017. AOTA reflected on the journey of the profession and forecasted future endeavors through interviews with the top 100 influential people in OT. Many interviewees discussed the importance of support and mentorship during their academic journey (AOTA, n.d.-a). This is especially notable given the

small amount of time an OT practitioner spends in school compared to the years devoted to their career and demonstrates the importance of the academic period.

**Occupational Therapy Practitioner**

The profession of OT consists of two levels of practice: occupational therapists and occupational therapy assistants (AOTA, 2021c). The occupational therapist has either an entry-level master's or doctoral degree in occupational therapy whereas the occupational therapy assistant has either an associate or bachelor's degree in occupational therapy (ACOTE, 2019). Both practitioner levels work with clients across the lifespan facing a range of diagnoses and dysfunctions in various settings.

The major difference between the two levels of practitioners is that the OTA works under the supervision of an occupational therapist who is ultimately responsible for the client's plan of care (AOTA, 2021c). The occupational therapist may delegate aspects of the evaluation and plan of care to the OTA. Delegation is based on several factors, including competency level. Competent OT practitioners are knowledgeable, demonstrate effective clinical skills, have the ability to self-reflect, and know when to seek additional resources, education, and training. Therefore, it is critical that OTA students gain optimal knowledge and clinical skill ability in the academic and fieldwork settings for a successful transition to entry-level practice.

The Occupational Therapy Code of Ethics enforces a minimum standard of care for occupational therapy practitioners. However, the public deserves more than the minimum when it comes to their health. While the description of minimum care is subjective and open to debate, there are factors that indicate an occupational therapy practitioner is providing more than the minimum. Continued education hours beyond the required minimum (36 hours every 3 years), specialty certifications, participation in research, collaboration with interdisciplinary teams,

demonstration of leadership, public education, and professional contribution distinguish exemplary occupational therapy practitioners (AOTA, 2018). Finally, demonstration of superior knowledge and skills is the hallmark of an exemplary OTA.

## Occupational Therapy Education

### *Accreditation Council for Occupational Therapy Education*

The American Medical Association originally oversaw educational accreditation for occupational therapy. Following several changes, the Accreditation Council for Occupational Therapy Education (ACOTE) was formed and is the current accrediting body for OT academic programs at both levels of practice (AOTA, n.d.-b.). ACOTE specifies the content required for academic programs to attain and maintain accreditation status. Five steps are involved in the initial accreditation process: (1) a letter of intent including an application fee deposit, (2) an eligibility application, (3) a candidacy application, (4) a pre-accreditation review in which the program must complete a self-study, and (5) an on-site evaluation with a two-member accrediting team (ACOTE, n.d.). Once accredited, programs must maintain status by following education standards, updating changes and information, and complying with reaccreditation requirements.

ACOTE has 61 educational standards that OTA programs must cover. These standards include content from the domains of human anatomy, development, behavior, OT theory, basic principles, the OT process, management, leadership, scholarship, and ethics in addition to fieldwork requirements (ACOTE, 2019). The OTA Program at RUC, for example, presents this content through lectures, labs, and fieldwork experiences. RUC's plan of study is listed in Table 2.

**Table 2**

*Radford University Carilion's OTA Program Plan of Study*

| Course | Course Title | Credits |
|---|---|---|
| | Fall Semester I | |
| UNIV 100 | Introduction to Higher Education | 1 |
| HLTH 215 | Medical Terminology | 3 |
| PSYC 120 | Introductory and Developmental Psychology | 4 |
| BIOL 310/310L | Anatomy & Physiology I/Lab | 4 |
| OTAS 111 | Human Movement for Occupation I | 2 |
| OTAS 121 | Foundations of the Profession I | 2 |
| | *Total* | *16* |
| | Spring Semester I | |
| PSYC 240 | Abnormal Psychology for Health Sciences | 3 |
| BIOL 311/311L | Anatomy & Physiology II/Lab | 4 |
| OTAS 130/130L | Human Movement for Occupation II/Lab | 3 |
| OTAS 140 | Foundations of the Profession II | 3 |
| OTAS 170/170L | Behavioral Health – Principles & Techniques/Lab | 3 |
| | *Total* | *17* |
| | Summer Semester (10 weeks) | |
| ENGL 111 | Principles of College Composition | 3 |
| PHIL 112 | Introduction: Ethics and Society | 3 |
| SOCY 213 | Social Issues in Healthcare Delivery (A total of 20 volunteer hours is required for this course.) | 3 |
| OTAS 201L | Therapeutic Media Lab | 1 |
| OTAS 203 | Pathologic Conditions – Effects on Occupation | 2 |
| | *Total* | *12* |
| | Fall Semester II | |
| OTAS 220/220L | Pediatrics – Principles & Techniques/Lab | 4 |
| OTAS 220C | Pediatric Fieldwork – Level I | 1 |
| OTAS 235/235L | Physical Dysfunction – Principles & Techniques/Lab | 5 |
| OTAS 235C | Adult/Geriatric Fieldwork – Level I | 1 |
| OTAS 255/255L | Assistive Technology/Lab | 2 |
| | *Total* | *13* |
| | Spring Semester II | |
| OTAS 270C | Fieldwork – Level II-A | 6 |
| OTAS 271C | Fieldwork – Level II-B | 6 |
| | *Total* | *12* |
| | **Overall Total** | **71** |

*Note:* From "Program of Study" by the Occupational Therapy Assistant Program at Radford University Carilion, 2020, *Program of Study*. Copyright 2020 by the Occupational Therapy Assistant Program at RUC.

The RUC program of study begins with general education and foundational OT courses. Each semester builds upon the previous in a stepwise fashion to sequentially develop knowledge and skill. Labs present opportunities for students to learn and practice hands-on clinical skills and apply the concepts presented during didactic instruction. Labs allow students to work with peers, instructors, standardized patients (trained actors), and even volunteers from the community. The fieldwork experiences are offered in a similar sequential fashion.

Just as faculty are essential to educating students in the classroom and lab environments, the fieldwork educator is vital in the education of the OTA student during fieldwork. The occupational therapy practitioner who supervises the student on fieldwork is known as the "fieldwork educator". This practitioner is responsible for the student's education in the fieldwork setting and may consult with the academic fieldwork coordinator at the OTA program should problems arise.

The level II fieldwork educator is an OT practitioner (at either level) with at least 1 year of clinical experience who works with clients in an occupational therapy setting (AOTA, 2013). This individual receives training (as necessary) and support from the academic fieldwork coordinator of the OTA program. The fieldwork educator completes the fieldwork evaluation on the OTA student at midpoint and conclusion of the level II fieldwork experience.

**Fieldwork Experiences**

Most OTA programs include approximately 2 years of full-time coursework, which equates to five semesters including fieldwork. Students complete two to three level I fieldworks

and two level II fieldwork experiences. According to ACOTE standards, level I fieldwork can be completed in simulated environments, with standardized patients, in which students are able to practice techniques and skills, by accompanying faculty to site visits, or under the supervision of a fieldwork educator in a practice environment. Not all level I fieldwork experiences include direct client care since the goal of level I fieldwork is to introduce students to the concepts of fieldwork (ACOTE, 2019). For this reason, some students do not begin working with actual clients or within a setting that offers OT services until their level II fieldwork experience.

Level II fieldwork experiences must be 16 weeks in length (often split into two 8-week experiences), on a full-time basis, in a setting that delivers OT services, and supervised by an occupational therapy practitioner with more than 1 year of work experience (ACOTE, 2019). The goal of level II fieldwork is to develop entry-level skills specific to the site of the fieldwork experience (ACOTE, 2019).

As specified in Table 2, RUC's OTA program fieldwork is presented in three level I fieldworks and two level II fieldwork experiences. All OTA students must complete a behavioral health and a pediatric fieldwork experience. The OTA Program at RUC uses two of the three level I fieldwork experiences to include these required settings as well as a third level I fieldwork in an adult/geriatric setting. At RUC, level I fieldwork begins during the second semester of the program and coordinates with courses taught during the respective semesters (i.e., behavioral health fieldwork complements the behavioral health course and lab).

During the final semester of the program, students complete two full-time level II fieldwork experiences in two different practice settings. Students are then eligible to take the NBCOT National Certification Exam after the successful completion of level II fieldwork and graduation. With a passing score on the national exam, graduates are awarded a national

certificate in occupational therapy. They can then apply for state licensure. Once licensed, they may begin work as an entry-level OT practitioner.

***Dynamics of the Fieldwork Experience and Student Self-Efficacy***

The AFWC is responsible for supporting the needs of OTA students and fieldwork educators as well as ensuring that ACOTE fieldwork education standards are met (ACOTE, 2019). The AFWC works closely with OTA faculty and fieldwork educators at various clinical sites to match the student with a preferred setting in which they demonstrate skill during lab experiences. At times, students may request a specialty practice area in which they have not demonstrated sufficient readiness.

Students with poor insight may not be able to recognize when their lack of competency could result in failure and repeat of fieldwork. Less competent students tend to inaccurately judge their capabilities leading to unsafe client care practices and decreased learning opportunities (Kruger & Dunning, 1999). The fieldwork educator does, however, have the capability to foster a student's ability to produce the behavior required in a fieldwork setting. By modeling optimal professional behaviors and practices, the fieldwork educator can promote student performance and self-efficacy thereby increasing the likelihood of a successful fieldwork experience (Andonian, 2017; Bandura, 1977, p. 79).

Andonian (2017) used a survey tool to measure occupational therapy students' perception of self-efficacy during level II fieldwork at the master's and doctoral level. Students with prior professional experience reported higher self-efficacy. Practice setting and client demographics did not significantly correlate with self-efficacy. This suggests academic programs have the ability to increase students' self-efficacy prior to level II fieldwork by exposing them to various

levels of professional role development including standardized patients during lab, role playing, mock interviews, and low-stakes opportunities with client interaction to build confidence.

Another method for enhancing professional role development in the academic setting is through implementation of professional development plans. These plans may be continued through level II fieldwork to provide an opportunity for students to create and monitor professional goals. Finally, Andonian (2017) recommended prior professional experience be included in admissions criteria when choosing program applicants. Studies such as these support the need for continued research at the OTA level into methods of assessing and improving student fieldwork performance.

Dupre et al. (2020) identified a gap in evaluating physical therapy student readiness to transition from academia to clinical experiences. Similar to ACOTE requirements, physical therapy education and clinics must follow accreditation standards. The physical therapy accrediting body states that schools must ensure students are prepared to enter the clinical portion of their education; however, they do not specify the criteria for determining readiness. Using a Delphi study strategy, Dupre et al. (2020) developed 22 readiness objectives for uniform identification of clinical skill preparedness. Physical therapy program directors and are able to use these objectives to better ensure clinical readiness.

### *Required Skills*

Occupational therapy practitioners must possess a variety of skills and qualities to facilitate change, help motivate clients, and work with colleagues and caregivers. These skills are identified and developed in the classroom, then polished during fieldwork. Fieldwork educators' expertise provides insight into required skills for optimal client care.

**Professional Skills.** According to research by Mason et al. (2020), essential professional skills fieldwork educators find deficient in OT students include communication, personal responsibility, problem-solving, use of sound judgement and safety, initiative, time management, adherence to ethics, empathy, creativity, and self-awareness. Of these professional skills, the top five professional skills typically inadequate at the beginning of level II fieldwork include communication, problem-solving, initiative, time management, and creativity.

**Technical Skills.** Fieldwork educators report the following technical skills as essential when beginning level II fieldwork: intervention management, clinical reasoning, documentation, assessment information accrual, intervention selection, client performance factor identification, discharge planning, policy abiding, use of evidence-based service, theoretical knowledge, and use of occupation-based approach. The top five that are typically inadequate at the beginning of level II fieldwork include intervention management, clinical reasoning, assessment information accrual, discharge planning, and use of evidence-based service. When surveyed with an open-ended question, fieldwork educators reported assessments, intervention, medical knowledge, positioning/mobility, and traits/characteristics as necessary skills for a successful level II fieldwork (Mason et al., 2020).

While Mason et al.'s (2020) research was based on level II fieldwork for occupational therapist students (at entry-level master's and doctorate degree levels), OTAs need these same skills. Enhancing content of fundamentals of practice, screening and evaluation for services, intervention processes, and management of OT services in the classroom supports development of these skills in fieldwork (AOTA, 2020c).

**National Board for Certification in Occupational Therapy**

The National Board for Certification in Occupational Therapy is a not-for-profit organization that oversees certification of occupational therapy practitioners. This includes the initial national certification exam graduates take for eligibility for state licensure and employment in the United States (NBCOT, 2018). The NBCOT Certified Occupational Therapy Assistant (COTA) exam contains 200 questions on entry-level practice areas (NBCOT, n.d.-b). The content of the exam closely follows the NBCOT Entry-level COTA Self-Assessment Tool domains and task statements.

The NBCOT self-assessment instrument includes 14 task statements for OTA students to review and rate their knowledge, skills, and experience within three domains of OT practice. The three domains are weighted within the assessment according to emphasis placed on the NBCOT national certification exam and in practice: (1) collaborating and gathering information (28%); (2) selecting and implementing interventions (55%); and (3) upholding professional standards and responsibilities (17%). The series of 14 tasks are those that OTAs frequently perform for safe and effective practice. Students are instructed to rate their abilities on a pictorial scale: "  no knowledge or skills,  general knowledge through observation and academic learning,  general clinical skills under supervision, and  entry-level competence" (NBCOT, n.d.-a). After submitting the self-assessment, a copy of the assessment and a personalized study guide is emailed to the student. This aids students in prioritizing content to review for the national board exam (NBCOT, 2018). Many OTA programs (RUC included) request a copy of the results from the student for additional program self-study data.

**Job Outlook**

Finding a job is a top priority for students as they near completion of OTA school. The job outlook for health care fields is better than that of other professions, an attractive attribute to students (Bureau of Labor Statistics, n.d.). The Bureau of Labor Statistic's 2021 Occupational Outlook Handbook predicts the job outlook for OTAs will increase 32% between 2019 and 2029. This prediction is 700% greater than the average job growth rate, which was forecast prior to the coronavirus (COVID-19) pandemic (Bureau of Labor Statistics, 2021). Ramifications of the pandemic on the job market have yet to be fully understood. The World Federation for Occupational Therapists released results of their global COVID-19 survey, which included 2,750 occupational therapy practitioners and students in 100 countries. Reports of personal illness, poor safety guidelines, limited resources, and decreased morale highlight the realities of working in health care during a pandemic (Hoel et al., 2021). Significant job loss in the health care industry in the United States has been reported because of COVID-19 (McDermott & Cox, 2020). While the job loss in the health care industry during the pandemic has been less significant than in other industries, the decrease in discretionary health care spending impacted the field of occupational therapy in that elective surgeries (and consequent rehabilitation) were delayed or cancelled. Making up just over 12% of the job loss in health care, health care aide jobs (which includes OTAs) were downsized during the pandemic (Bhandari et al., 2021).

Physiological effects of clients with COVID present in some as long-term complications to multiple organs and as an autoimmune response—termed "long-COVID" (Centers for Disease Control and Prevention, 2021). Clients with long-COVID will most likely require follow-up or maintenance health care services, which will generate a new practice area and job opportunities for OT practitioners.

In addition to the potential increase in need for OT services because of the coronavirus, the pandemic job market has opened other opportunities in the profession. The Department of the Treasury provided small businesses impacted by COVID-19 with loans to maintain operations, which could positively benefit small, private therapy practices in sustaining OT practitioner jobs (Parsons, 2020). Previously not covered in the state of Virginia, OT providers have been allowed temporary access to telehealth as a delivery model for occupational therapy services with the national association of OT advocating for permanent access (AOTA, 2021a). AOTA reports an increase in telehealth use by OT practitioners between the years 2020 and 2021 (AOTA 2022b). The declaration of the coronavirus as a public health emergency (PHE) provided occupational therapists with the opportunity to initiate home health cases. This allowed OT practitioners to begin client treatments sooner and not have to rely on nursing or physical therapy disciplines to begin the client's home health case. The PHE declaration also granted OTAs the ability to perform maintenance therapy in outpatient settings (AOTA, 2021b). Lastly, the PHE allows occupational therapy students' documentation to be reviewed and accepted instead of re-written, previously a time barrier to supervising occupational therapy students (AOTA, 2020b). These opportunities expand the job outlook for OTAs during the pandemic by necessitating skilled, knowledgeable, and clinic-ready OTAs and supporting the significance of this research. Students who complete successful internship-type experiences such as level II fieldwork obtain employment faster with higher salaries and better job satisfaction (Bugeja & Garrett, 2019).

**Practice Settings**

Practice settings OT practitioners are qualified to work in are varied. The most common practice settings for OTAs include skilled nursing facilities, school systems, hospital, outpatient rehabilitation, and home health (AOTA, 2020a). Table 3 contains the full list of settings OTAs

work in and the percentage of OTAs who work in those settings according to the AOTA's 2019 Workforce and Salary Survey (AOTA, 2020a).

**Table 2**

*AOTA 2019 Workforce and Salary Survey*

| Practice Setting | Percentage of OTAs Employed |
|---|---|
| Skilled Nursing Facility | 43.1 |
| School | 15.4 |
| Hospital | 11.3 |
| Outpatient | 8.3 |
| Home Health | 7.8 |
| Early Intervention | 3.9 |
| Community | 3.2 |
| Academia | 3.1 |
| Mental Health | 2.1 |
| Other | 1.6 |

*Note:* Data for Practice Setting and Percentage of OTAs Employed are from AOTA 2019 Workforce and Salary Survey, by the American Occupational Therapy Association, 2020 (https://library.aota.org/AOTA-Workforce-Salary-Survey-2019-members/1).

Some settings require a higher-level skill set than entry-level OTAs have with their generalist training. A more specialized skill set is developed through formal and informal education, mentorships, peer observation and training, fellowships, systematic literature review, and advanced specialty certifications (The American Journal of Occupational Therapy, 2017). The practice settings of acute hospital, outpatient, and home health therapy typically require specialized skills due to the complexity of client conditions or the autonomy required in the setting (Thomas et al., 2017). Having adequate entry-level skills is a necessary pre-requisite to gaining advance skills for a specialty setting.

The wide scope of practice makes the field of OT unique, challenging, and complex. An OT practitioner can choose to begin their career working in the school system and make a change to a behavioral health clinic later without the need for an additional degree (informal training and education is suggested, however). This variety and flexibility require OTA programs to cover a broad range of topics at a relatively surface level to prepare students for the different settings, populations, and client diagnoses they will encounter in practice post-graduation.

## Common Theories and Methodologies

### *Metacognition*

The conceptual framework of metacognition was used in this research to provide an understanding of students' perception and awareness of their process of thinking and learning within a fieldwork setting (Ambrose et al., 2010; Chauhan & Singh, 2014). A student's ability to be cognizant of their thinking process and associated behavior is a necessary step in order for them to make changes for improved performance (Moritz & Lysaker, 2018). Metacognition has been correlated with professional competency, a critical skill for safe client care (Millanzi & Kibusi, 2020). In OTA curricula, each semester of learning builds upon the prior semester. Students are required to retain concepts learned in previous courses and apply that knowledge for successful performance during fieldwork. This involves making a connection between curricular content and clinical skills. This also requires students to demonstrate critical thinking: to be aware of their thought process, to analyze their educational journey by reflecting on the learning process, and to monitor their professional development to achieve optimal success (Hempel et al., 2020; Medina et al., 2017). If students are aware of what they do not know yet need to know, they can seek out an opportunity to acquire that information (Medina et al., 2017).

OTA students must be able to adjust their actions according to what they know about a client situation. They must analyze their own behaviors and make changes as needed for successful fieldwork performance. Since each client the students will encounter during fieldwork is unique and has varied needs, students must intentionally plan, monitor, and evaluate their approach to facilitate individualized client care. OTA students must be realistic in what they know or are not yet confident in to be able to gain the most skill from the fieldwork experience. Students who are overly confident may not take the opportunity to research a diagnosis or adequately learn a treatment technique thus creating a safety risk to the client. Medical errors are dangerous and can be attributed to overconfidence of skills and ability, which often occurs in lower performing students (Medina et al., 2017; Nevid et al., 2015). Conversely, students who are underconfident may not take full advantage of fieldwork as a learning opportunity. Lack of confidence also affects a student's capacity to engage in the learning process and they may present as uninterested (Delany & Bragge, 2009; Payne, 2016). Self-directed learners have the ability to understand what information is missing, seek out the correct solution, and reflect on the process coupled with the outcome (Medina et al., 2017). The just-right balance of a student being able to understand what they know and do not know is important for a positive and effective fieldwork experience.

### *Novice to Expert Model*

Nearly 40 years of research by Patricia Benner led to The Novice to Expert Model, which describes the stages of professional development in nursing practitioners (Davis & Maisano, 2016). While the nursing profession is different than that of occupational therapy, the two professions are similar in their care for client health and wellness. Similar clinical skills and soft skills are required of both nursing and occupational therapy practitioners. Benner's Novice to

Expert Model offers a method of assessing nursing knowledge and skill through five stages of professional development. The first stage, novice, describes characteristics similar to those seen in entry-level students; budding knowledge and skills that aren't flexible and generalizable enough to independently problem solve unfamiliar situations or conflicts. Jette et al. (2007) referred to this stage in physical therapist student professional development as the "adolescence of physical therapy." In the next stage, advanced beginner, the individual uses prior experiences to address similar situations but still requires mentoring to ensure proper protocols are used. In the third stage, competent, the individual can organize and plan their work for improved efficiency based on experience. The next stage, proficient, describes an individual as having "improved decision-making" skills and the ability to discern important factors within a situation. In the final stage, expert, the individual unconsciously makes safe and effective intuitive decisions to solve problems and conflicts (Davis & Maisano, 2016; Ozdemir, 2019).

The Novice to Expert Model can aid in understanding stages of professional development for OTA students (Ozdemir, 2019). This model may also provide insight into why OTA students may possibly rate their knowledge and clinical skill at a higher rate than their fieldwork educators—the student presents in the early stages of professional development. A critical element of the recommendations made by Davis and Maisano (2016) regarding Benner's work is providing appropriate education and training of nursing staff dependent on the stage of professional development in which they present. This directly correlates to the purpose of this research—to determine differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at RUC versus those assessed by fieldwork educators during level II fieldwork. Awareness of any differences and their specific nature can assist the faculty in providing education and skills training in areas students are lacking.

**Gaps in the Literature**

One of the most obvious gaps in the literature includes research on OTA students and practitioners. No research has been published on the OTA student. A thorough literature search failed to identify a single study published that addresses the OTA level of education and practice. Another gap in the literature is limited research on health care education and learning, specifically student preparedness or readiness for an allied health clinical experience. More research is available on medical education and learning; however, the breadth and depth of learning that occurs at the medical practitioner level is very different than at the level of allied health fields. Search terms such as student perception, student perspective or student view, performance (actual and perceived), knowledge or skills or competency, clinical practice, and health care or medical education were all used in various combinations with limited relevant articles located.

# Chapter Three

## Methodology

The purpose of this study was to determine differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at RUC versus those assessed by fieldwork educators during level II fieldwork. Knowledge of the differences between students' perception of their fundamental knowledge and clinical skill performance and their actual knowledge and clinical skill performance will offer opportunities to enhance the OTA curriculum at RUC. The RUC OTA program director and faculty can use this information to enrich those concepts and practice themes identified as best enhancing student success and readiness for fieldwork.

Using a quantitative approach with retrospective data sets from OTA program assessments resulted in knowledge of areas that the program director and faculty at RUC could consider revising in the OTA program curriculum for improved student performance. This understanding can assist to complete the curricular feedback cycle to suggest modifications or adjustments in the program curriculum.

This chapter presents the research design, the participants and sampling methods, instruments, and procedure. The method was used to answer the four research questions as provided in Table 1, originally provided in chapter one. The research questions were explored using quantitative methodologies.

**Table 1**

*Research Questions*

| | Research Question (RQ) | Null Hypothesis | Alternative Hypothesis |
|---|---|---|---|
| RQ #1 | Is there a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating of the students' fundamental knowledge on midterm fieldwork evaluations? | There is not a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating on midterm fieldwork evaluations. | There is a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating on midterm fieldwork evaluations. |
| RQ #2 | Is there a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating of the students' clinical skill competence on midterm fieldwork evaluations? | There is not a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating on midterm fieldwork evaluations. | There is a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating on midterm fieldwork evaluations. |
| RQ #3 | How do OTA students' overall performance at midterm evaluation compare to their overall performance at final evaluation of fieldwork experiences as rated by the fieldwork educator? | OTA students' performance at midterm evaluation is not different than at final evaluation of fieldwork. | OTA students' performance at midterm evaluation is different than at final evaluation of fieldwork. |
| RQ #4 | What clinical skills do OTA students self-rate as having "Entry-level competence" before fieldwork but are rated as demonstrating less than "Proficient performance" by the fieldwork educator on their final fieldwork evaluations? | There are no clinical skills that OTA students self-rate as having "Entry-level competence" before fieldwork but are rated as demonstrating less than "Proficient performance" by the fieldwork educator on their final fieldwork evaluations. | There is at least one clinical skill that OTA students self-rate as "Entry-level competence" before fieldwork but are rated as demonstrating less than "Proficient performance" by the fieldwork educator on their final fieldwork evaluations. |

## Study Design

This research was a retrospective quantitative data collection and analysis. Quantitative data sources were data sets from year 2022 at RUC in Roanoke, Virginia that included two instruments: NBCOT's COTA Entry-Level Self-Assessment Tool and AOTA's Fieldwork Performance Evaluation for the Occupational Therapy Assistant Student. These data were obtained for 2022 graduates and were used to test the four research questions.

## Target Population

In their most recent available report, AOTA details 218 accredited OTA Programs in the United States, of which 27% are in the Southern geographical area (of which Virginia is included) (AOTA, 2022a). In 2021, there were 7,313 OTA students preparing for entry-level practice (AOTA, 2022a). Typical class sizes of OTA programs are approximately 21 students per year. In Virginia, there are seven accredited OTA programs with an average class size of 21 students (according to available data on each program's webpage). Data for college websites for the year 2022 were not yet available. The target population for this study was OTA students from RUC's OTA Program in Roanoke, Virginia. Instrument data sets from RUC OTA program graduates of year 2022 was used. Seventeen participants were included in this study. This number represents the graduating class of 2022 from RUC's OTA Program.

### *Sampling*

The primary data source was a convenience sample based on the criteria being studied: OTA students who completed level II fieldwork experiences in 2022 at RUC in Roanoke, Virginia. The researcher is one of the faculty at Radford University, at the RUC campus location, which provides the basis for this convenience sample.

### *Inclusion*

Participants were included if they graduated from the OTA Program at RUC in 2022. Graduation in year 2022 was an inclusion criterion for the research since the AOTA FWPE instrument was updated in 2020 and OTA programs were required to begin using the 2020 version in January 2021. Use of data from both versions of this instrument would add a layer of complexity to the data interpretation and would add a confounding variable that is otherwise controllable in this research.

### *Exclusion*

Exclusion criteria included incomplete assessments (with which there were none). As well, students who graduated from the OTA Program at RUC during any other timeframe were excluded (with which there were none). Even though OTA programs were required to begin using AOTA's updated Fieldwork Performance Evaluation for the Occupational Therapy Assistant Student in January of 2021, data from 2021 OTA program graduates was not used as the 2019 Coronavirus interrupted many fieldwork experiences during this timeframe, introducing uncontrolled factors that may skew the students' performance and therefore data.

### *Sample Size*

Quantitative data sets included instrument scores on 17 participants from the RUC OTA program in 2022. This sample size was based on available and recent data within the OTA Program at RUC. A sample size of 17 is adequate for this study as it is exploratory in nature and reliant on available data. Quantitative data was de-identified; therefore, it was not known to the researcher how participants scored on the instruments used in this research.

## Design Methods

### *Instrumentation*

The data sets were comprised of results from the NBCOT COTA Entry-Level Self-Assessment Tool "self-assessment" and the AOTA Fieldwork Performance Evaluation for the Occupational Therapy Assistant Student "fieldwork evaluation" (see Appendices A and B respectively). Data from these instruments were retrospective, from year 2022.

OTA students' perception of fundamental knowledge and clinical skill competency prior to fieldwork experience was measured using the COTA Entry-Level Self-assessment Tool "self-assessment" (Appendix A) from the National Board for the Certification of Occupational Therapy (NBCOT, n.d.-a). At RUC, OTA students completed the self-assessment after coursework was complete but prior to embarking on fieldwork experiences as well at the conclusion of level II fieldwork. Only scores from the initial self-assessment (prior to level II fieldwork) were used for this study.

OTA students' actual knowledge and clinical skill competency was assessed by the fieldwork educator using the Fieldwork Performance Evaluation for the Occupational Therapy Assistant Student "fieldwork evaluation" (Appendix B) from the American Occupational Therapy Association (AOTA, 2020c). The fieldwork evaluation was completed at midterm and conclusion (final) of each of the two level-II fieldwork experiences. Data from the two instruments was analyzed to determine differences between student perception ratings and fieldwork educator ratings of fundamental knowledge and clinical skill areas.

**Self-Assessment.** NBCOT developed the self-assessment to assist students in identifying their perceived knowledge and clinical skills in various domains and tasks of OT practice (NBCOT, n.d.-a). It was designed for students to complete independently (e.g., without the direction of their academic instructors) in preparation for the national certification exam required

for credentialing and licensure. Students completed the self-assessment electronically. Upon completion of the self-assessment students were provided with a summary report and an individualized study guide for the national exam from NBCOT based on their responses. Students at RUC were asked to provide a copy of the completed assessment to the AFWC prior to embarking on level II fieldwork placements. Students were permitted to take the self-assessment as often as they desired. It was unknown which attempt at the assessment the school obtained from the student.

The self-assessment consists of 14 task statements within three domains associated with the national certification exam that correlate with content learned in the academic setting and professional expectations in the clinical setting. The first domain, "assist the OTR to acquire information regarding factors that influence occupational performance on an ongoing basis throughout the occupational therapy process," contains five task statements. The second domain, "implement interventions under the supervision of the OTR in accordance with the intervention plan and level of service competence to support client participation in areas of occupation throughout the occupational therapy process," contains six task statements. The third domain, "uphold professional standards and responsibilities by achieving service competence and applying evidence-based interventions to promote quality in practice," contains three task statements. Students were instructed to evaluate each statement using a pictorial rating scale. For the purposes of analyzing data for this research, AOTA's fieldwork evaluation numerical score range of 1-4 replaced NBCOT's self-assessment pictorial scoring range to allow the ratings from the self-assessment and fieldwork evaluation instruments to align. The NBCOT pictorial rating scale and conversion numerical scale is listed in Table 4 with 1 = "no knowledge or skills"; 2 = "general knowledge through observation and academic learning"; 3 = "general clinical skills

under supervision"; and 4 = "entry-level competence" (NBCOT, n.d.-a). Composite scores of the self-assessment were obtained based on the dependent variable that correlated with the instrument statements. For example, the dependent variable of "student perception of knowledge" correlated with five self-assessment statement numbers: Domain 1, Task 1 (D1T1), Domain 1, Task 2 (D1T2), Domain 1, Task 3 (D1T3), Domain 3, Task 1 (D2T1), and Domain 3, Task 3 (D3T3). Therefore, scores on these statement numbers were averaged to reflect a data set for "student perception of knowledge." A similar process was used to obtain an average score for the data set for student perception of clinical skills.

**Table 3**

*Adjusted Scoring for NBCOT's Entry-Level COTA Self-assessment Tool Feedback*

| NBCOT's Self-Assessment<br><br>Existing Scoring | NBCOT's Self-Assessment<br><br>Adjusted Scoring |
|---|---|
| **= No knowledge or skills** – You are unfamiliar with concept or practice of the skill. Additional study is needed in this area to learn the concepts and clinical application related to this skill. | **1 = No knowledge or skills** – You are unfamiliar with concept or practice of the skill. Additional study is needed in this area to learn the concepts and clinical application related to this skill. |
| **= General knowledge through observation and academic learning** – You are familiar with general knowledge related to the skill through academic learning and observation but have had limited opportunities to apply this during fieldwork. You should focus on strategies for gaining more knowledge about this skill and ways to demonstrate this knowledge in clinical situations. | **2 = General knowledge through observation and academic learning** – You are familiar with general knowledge related to the skill through academic learning and observation but have had limited opportunities to apply this during fieldwork. You should focus on strategies for gaining more knowledge about this skill and ways to demonstrate this knowledge in clinical situations. |

| NBCOT's Self-Assessment<br><br>Existing Scoring | NBCOT's Self-Assessment<br><br>Adjusted Scoring |
|---|---|
|  **= General clinical skills under supervision** - You are familiar with the general clinical application of this skill and have occasionally applied the skill under direct supervision. You may want to collaborate with an experienced OTR or service competent COTA clinician to plan independent practice-based learning activities requiring these skills. | **3 = General clinical skills under supervision** - You are familiar with the general clinical application of this skill and have occasionally applied the skill under direct supervision. You may want to collaborate with an experienced OTR or service competent COTA clinician to plan independent practice-based learning activities requiring these skills. |
|  **= Entry-level competence** – You have implemented the skill across routine situations within the guidelines of Level II fieldwork practice setting. Your responses indicate you have experience associated with entry-level competence. | **4 = Entry-level competence** – You have implemented the skill across routine situations within the guidelines of Level II fieldwork practice setting. Your responses indicate you have experience associated with entry-level competence. |

**Fieldwork Evaluation.** AOTA's Fieldwork Performance Evaluation (FWPE) for the Occupational Therapy Assistant Student was developed by AOTA in 2002 (and recently revised in 2020) to provide students and fieldwork educators a basis of performance at midpoint and completion of fieldwork experiences (AOTA, 2020c; Preissner et al., 2020). The data was drawn from the updated version of the tool since updates were made based on changes to ACOTE education standards in 2018 and to reflect practice developments. Changes included a validated rating scale. This instrument was validated in a 2020 study conducted by Preissner et al. Their follow-up study with psychometric properties is currently under review (K. Preissner, personal communication, April 14, 2022). The fieldwork evaluation consists of 31 items within six categories that correlate with practice and professional responsibilities. The fieldwork evaluation contains a rating scale of one to four with 1 = "unsatisfactory performance – fails to demonstrate competence in specific skills; performs in an inappropriate manner; demonstrates inadequate understanding and/or application of fundamental knowledge and skills; (demonstrates significant

gaps and/or inaccuracies)"; 2 = "emerging performance – demonstrates limited competence in specific skills (inconsistencies may be evident); demonstrates limited understanding and/or application of fundamental knowledge and skills (displays some gaps and/or inaccuracies)"; 3 = "proficient performance – demonstrates satisfactory competence in specific skills; demonstrates adequate understanding and/or application of fundamental knowledge and skills"; and 4 = "exemplary performance – demonstrates satisfactory competence in specific skills consistently; demonstrates substantial breadth and depth in understanding and/or skillful application of fundamental knowledge and skills" (AOTA, 2020c).

Composite scores of the fieldwork evaluation were obtained based on the dependent variable that correlated with the instrument items. For example, the dependent variable of "fieldwork educator rating of knowledge at midterm" correlated with the fieldwork evaluation item numbers 7, 8, 10, 12, 13, 14, 20, 21, and 24. Therefore, scores on these item numbers were averaged to reflect a score for "fieldwork educator rating of knowledge at midterm." A similar process was used to obtain an average score for the data set for fieldwork educator rating of knowledge at final and fieldwork educator rating of clinical skills at midterm and final.

NBCOT self-assessment items (n = 14) were matched with corresponding AOTA fieldwork evaluation items (n = 31) to create content areas that overlap between the two assessment instruments. Thirteen knowledge areas and 12 clinical skill areas were found to be common between the two instruments and were content areas assessed that were analyzed in this research. An independent expert reviewed and corroborated the categorization of items into common themes which are listed in Appendix C.

Composite scores for each theme identified from the instruments (the self-assessment and both first and second fieldwork evaluations) were analyzed to answer the four research questions.

For research question one, knowledge area self-assessment (pre-fieldwork) composite scores were analyzed with knowledge area midterm fieldwork evaluation composite scores. Research question two was answered using an analysis of clinical skill area self-assessment (pre-fieldwork) composite scores with clinical skill area midterm fieldwork evaluation composite scores. Research question three analyzed both knowledge and clinical skill area overall performance scores at midterm with knowledge and clinical skill area overall performance at final fieldwork evaluation. Lastly, research question four was used to analyze clinical skill area composite scores from the self-assessment with those from the final fieldwork evaluation.

## Quantitative Measures

### *Variables*

The independent variables for this study were fieldwork placement number (first or second placement), content area assessed (knowledge or clinical skills), assessor (student or FW educator), and timing of evaluation within the fieldwork experience (pre-fieldwork, midterm, or final). The dependent variables for this study were student perception of knowledge, student perception of clinical skills, fieldwork educator rating of knowledge at midterm, fieldwork educator rating of knowledge at final, fieldwork educator rating of clinical skills at midterm, and fieldwork educator rating of clinical skills at final. The variables are outlined in Table 5.

**Table 4**

*Research Variables and Coding*

| Variable | Variable Type | Levels (IV) or Measurement (DV) | Coding | Scales of Measurement | Data Analysis |
|---|---|---|---|---|---|
| | | Demographic Variable | | | |
| Fieldwork Placement Number | IV | 1st<br>2nd | 1=1st<br>2=2nd | Ordinal | ANOVA for RQ 1-3 |
| | | Independent Variables | | | |
| Content Area Assessed | IV | Knowledge<br>Clinical Skills | 1=Knowledge<br>2=Clinical Skills | Nominal | ANOVA for RQ 1-3 |
| Assessor | IV | Student<br>Fieldwork Educator | 1=Student<br>2=Fieldwork Educator | Nominal | ANOVA for RQ 1-3 |
| Timing of Fieldwork Evaluation | IV | Pre-Fieldwork<br>Midterm<br>Final | 1=Pre-Fieldwork<br>2=Midterm<br>3=Final | Ordinal | ANOVA for RQ 1-3 |
| | | Dependent Variables | | | |
| Student Perception of Knowledge | DV | Average of scores on NBCOT Self-Assessment Instrument Statement Numbers D1T1, D1T2, D1T3, D3T1, and D3T3 | Continuous, 1-4 | Interval | ANOVA for RQ 1&3 |
| Student Perception of Clinical Skills | DV | Average of scores on NBCOT Self-Assessment Instrument Statement Numbers | Continuous, 1-4 | Interval | ANOVA for RQ 2-4 |

| Variable | Variable Type | Levels (IV) or Measurement (DV) | Coding | Scales of Measurement | Data Analysis |
|---|---|---|---|---|---|
| | | D1T4, D1T5, D2T1, D2T2, and D3T2 | | | |
| FW Ed. Rating of Knowledge at Midterm | DV | Average of scores on AOTA Fieldwork Evaluation Instrument Item Numbers 7, 8, 10, 12, 13, 20, 21, and 24 | Continuous, 1-4 | Interval | ANOVA for RQ 1&3 |
| FW Ed. Rating of Knowledge at Final | DV | Average of scores on AOTA Fieldwork Evaluation Instrument Item Numbers 7, 8, 10, 12, 13, 20, 21, and 24 | Continuous, 1-4 | Interval | ANOVA for RQ 3 |
| FW Ed. Rating of Clinical Skills at Midterm | DV | Average of scores on AOTA Fieldwork Evaluation Instrument Item Numbers 2, 3, 14, 15, 16, 17, and 30 | Continuous, 1-4 | Interval | ANOVA for RQ 2&3 |
| FW Ed. Rating of Clinical Skills at Final | DV | Average of scores on AOTA Fieldwork Evaluation Instrument Item Numbers 2, 3, 14, 15, 16, 17, and 30 | Continuous, 1-4 | Interval | ANOVA for RQ 3 |

***Data Collection***

Data collection began upon Radford University's Institutional Review Board (IRB) approval of the study. Since this researcher is faculty in the OTA program at RUC, instrument data for RUC was accessed electronically via secure university Microsoft OneDrive. Since

retrospective de-identified data was used, it was not necessary to obtain student consent. All data was de-identified by the AFWC prior to being coded by the researcher for SPSS data input.

***Data Analysis***

Once the data was collected from the NBCOT self-assessment and AOTA fieldwork evaluation instruments, it was entered into a Microsoft Excel spreadsheet by the researcher in preparation for data analysis. Data from the Excel spreadsheet was imported into IBM's Statistical Package for Social Sciences (SPSS) software version 28.0.1.1 for analysis. Another individual associated with RUC was selected to data check the entered data for accuracy.

Quantitative data from this study was obtained using both NBCOT self-assessment and AOTA fieldwork evaluation instruments from 2022. The NBCOT self-assessment contained 14 statements to which students rated their perceived knowledge and skills on a pictorial scale: "  no knowledge or skills,  general knowledge through observation and academic learning,  general clinical skills under supervision, and  entry-level competence" (NBCOT, n.d.-a). The AOTA fieldwork evaluation instrument contained 31 items that the fieldwork educator used to rate the student's demonstration of fundamental knowledge and clinical skill performance on a scale of 1-4 with "1" equal to "unsatisfactory performance," "2" equal to "emerging performance," "3" equal to "proficient performance," and "4" equal to "exemplary performance" (AOTA, 2020c). For the purposes of analyzing data for this research, the NBCOT self-assessment pictorial score range was replaced by AOTA's fieldwork evaluation score range of 1-4 so that the instrument scoring aligned, as outlined in Table 4. Ten of the 14 NBCOT self-instrument tool items corresponded with 15 of the 31 AOTA fieldwork evaluation instrument tool items to form common themes (Appendix C).

The demographic variable was analyzed using descriptive statistics to determine differences among the study participants in relation to their perception of their fieldwork performance and their actual fieldwork performance as rated by fieldwork educators. Certain participant demographics (e.g., gender, age, race, and ethnicity) were unknown since a retrospective dataset with de-identified data was used.

Preliminary analyses explored demographic differences among the dependent variables using Analysis of Variance (ANOVA). These analyses explored differences within student perception of knowledge or clinical skill areas and fieldwork educator ratings of knowledge or clinical skill areas among fieldwork placement number (first or second) and timing of fieldwork evaluation (pre-fieldwork, midterm or final).

Research questions one and two were examined with a repeated measures ANOVA using a two-by-two-by-two factorial design (2 = Fieldwork placement number: first, second x 2 = Assessor: student, fieldwork educator x 2 = Area: knowledge, skill). Research question three was examined with a repeated measures ANOVA using a two-by-two factorial design (2 = Fieldwork placement number: first, second x 2 = Timing: midterm, final). Research question four was examined using descriptive statistics by identifying the number of students who rated themselves a  (entry-level competence or adjusted score of 4) when the fieldwork educator rated the student a two or less (less than proficient performance) in each of the two areas: knowledge and clinical skill.

**Ethical Considerations**

IRB approval was obtained for this study. An IRB application was submitted to Radford University's IRB upon proposal approval. The two assessment instruments were de-identified by the AFWC at RUC and presented to the researcher who then transferred the de-identified

assessment data to a codebook for SPSS input (Appendix D). The AFWC solely maintained the original data as per job protocol while the researcher maintained the de-identified data electronically on a university-owned computer network file storage system. Data was reported without identifying information associated with the participants in the research findings.

**Limitations**

Limitations of this research study included the size and breadth of the study. Because data from the RUC OTA Program in Roanoke, Virginia was used, results of the study are not generalizable to all OTA programs in the United States. A convenience sample of an OTA program familiar to this author was used.

There were several limitations with the use of the NBCOT self-assessment tool. Limitations included the timeframe the tool is utilized, the independent "use" of the tool, and the availability of the tool use. Students completed this tool independently (without guided instruction). It is not uncommon for students to report they have "entry-level competence" prior to the onset of any fieldwork experience. Their report may demonstrate inaccurate interpretations of the assessment tool instructions since the assessment was completed independently (without clarification of the ratings). This challenges the validity of the instrument, the accuracy of the self-assessment scores, and therefore the findings of this study. Additionally, the self-assessment tool at RUC was administered prior to the students commencing level II fieldwork and students are permitted to take it as often as they desire. It was unknown to the researcher which number assessment the school obtained from the student. This issue challenged the validity of the self-assessment scores, and therefore study findings as well.

A limitation with the AOTA fieldwork evaluation instrument was the subjectivity of the fieldwork educators' ratings. Fieldwork educators have varying levels of proficiency, training,

and specialization within the practice of occupational therapy. A fieldwork educator's background and prior experience or lack of experience with occupational therapy assistant students may have imparted an unintended bias towards a student's performance and therefore rating.

A further limitation of this study was the limited number of years available for data analysis because comprehensive NBCOT and AOTA assessment tool data was only available beginning in 2021. The AOTA fieldwork evaluation was revised in 2021 with changes made that would create complexity in using both former and updated versions of the instrument. The COVID-19 pandemic facilitated a halt to many health care organizations providing clinical fieldwork availability to students in 2021; therefore, there was inconsistent data available for 2021 graduates. Additional years would have further validated the data.

One final limitation for consideration was the substantial variations in the clinical learning experience for the school year 2021-2022. COVID-19 was unpredictable and necessitated impromptu instruction changes to maintain optimal student and client safety. At RUC, instructional changes included students completing case studies, video case scenarios, and peer discussions in lieu of face-to-face client interaction. The impact of this situation on student learning was unknown, however, highly likely in the academic and clinical learning experience.

**Delimitations**

A delimitation of this study was two frequently used instruments, one of which (AOTA) has been validated (Preissner et al., 2020), were employed.

# Chapter 4

## Results

The purpose of this study was to determine differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at RUC versus those assessed by fieldwork educators during level II fieldwork. This chapter presents the results and analyses of the two instruments used in this study: NBCOT's COTA Entry-Level Self-Assessment Tool and AOTA's Fieldwork Evaluation for the Occupational Therapy Assistant Student. Results are presented through investigation of each research question including relevant data and statistical analysis.

### Participant Data

A convenience sample of retrospective data from 17 RUC OTA Program students who graduated in 2022 were used in this study to determine differences in student perceived versus fieldwork educator assessed fundamental knowledge and clinical skill competency. The data sets were obtained from two instruments commonly used in OTA programs. Instrument scores from 100% of the graduating class of 2022 (n = 17) were utilized since both instruments from all participants were completed in full.

### Demographics

The 17 participants were students in the OTA Program at Radford University Carilion located in Roanoke, Virginia. Participants completed two level II fieldwork experiences and graduated from the OTA Program at RUC in May 2022. De-identified data were used; therefore, additional demographic characteristics of the participants were unknown (age, gender, race, and ethnicity).

**Results of the Study**

Findings of the study will be presented by research question through a description of statistical analyses, results, and discussion of any issues that might have impacted interpretation of the results.

RQ1: Is there a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating of the students' fundamental knowledge on midterm?

A repeated measures ANOVA was used to compare students' perception of their fundamental knowledge prior to fieldwork with the fieldwork educator's rating of the students' knowledge at midterm. The results found no statistically significant difference in instrument score means between student perception prior to fieldwork ($M = 2.38$, $SD = 0.73$) and fieldwork educator assessment ($M = 2.52$, $SD = 0.32$) of knowledge at midterm ($F$ (1,16) = .423, $p > .001$) with a small effect size ($\eta_p^2 = .026$). Therefore, the null hypothesis was accepted. There was no statistically significant difference in OTA students' perception of their fundamental knowledge prior to fieldwork and the fieldwork educator's rating of the students' fundamental knowledge at midterm.

RQ2: Is there a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating of the students' clinical skill competence on midterm fieldwork evaluations?

A repeated measures ANOVA was used to compare students' perception of their clinical skills prior to fieldwork with the fieldwork educators' rating of the students' clinical skills at midterm. The result found no statistically significant difference in instrument score means between student perception ($M = 2.49$, $SD = 0.88$) prior to fieldwork and fieldwork educator assessment ($M = 2.69$, $SD = 0.38$) of clinical skills at midterm ($F$ (1,16) = 1.119, $p > .001$) with a

small effect size ($\eta_p^2 = .065$). Therefore, the null hypothesis was accepted. There was no statistically significant difference between OTA students' perception of their clinical skill competence prior to fieldwork and the fieldwork educators' rating of the students' clinical skill competence at midterm.

RQ3: How do OTA students' overall performance at midterm evaluation compare to their overall performance at final evaluation of fieldwork experiences as rated by the fieldwork educator?

A repeated measures ANOVA was used to compare students' overall performance in knowledge and clinical skill assessment at midterm with performance at the end of the fieldwork experience as rated by fieldwork educators. The results found a statistically significant difference in instrument score means between overall midterm rating ($M = 2.61$, $SD = 0.32$) and overall final rating ($M = 3.36$, $SD = 0.29$) of knowledge and clinical skill performance ($F$ (1,16) = 103.59, $p < .001$) with a large effect size ($\eta_p^2 = .866$).

The final fieldwork evaluation ratings were higher than the midterm evaluations for all students. Therefore, the null hypothesis was rejected. A statistically significant difference exists between OTA students' overall performance at midterm and their overall performance at the final evaluation as rated by the fieldwork educators.

RQ4: What clinical skills do OTA students self-rate as having "entry-level competence" (self-assessment adjusted score of 4) before fieldwork but are rated as demonstrating less than "proficient performance" (fieldwork evaluation score of 2 or less) by the fieldwork educator on their final fieldwork evaluations?

One student self-rated as having "entry-level competence" in the clinical skill area of "incorporate risk management techniques at an individual and practice-setting level..." (NBCOT

self-assessment item D3T2) before fieldwork, yet was rated as demonstrating less than "proficient performance" in this area on the final fieldwork evaluation. Therefore, the null hypothesis was rejected. There was one clinical skill that an OTA student self-rated as "entry-level competence" (self-assessment adjusted score of 4) before fieldwork but was rated as demonstrating less than "proficient performance" (fieldwork evaluation score of 2 or less) by the fieldwork educator on the final fieldwork evaluation. Table 6 summarizes the results of study.

**Table 5**

*Summary of Results*

| Null Hypotheses and Variables | Test | Results |
|---|---|---|
| **#1:** There is not a difference in OTA students' perception of their fundamental knowledge and the fieldwork educator's rating on midterm fieldwork evaluations.<br><br>IVs: Content Area Assessed, Assessor, & Timing of FW Evaluation<br><br>DVs: Student Perception of Knowledge & FW Ed. Rating of Knowledge at Midterm | Repeated measures ANOVA 2x2x2 Factorial Design | The differences among mean knowledge scores were not significant, $F$ (1,16) = .423, $p$ > .001, $\eta_p^2$ = .026. The null hypothesis was accepted since the computed $F$ was less than the critical value (4.49) at the .05 level. |
| **#2:** There is not a difference in OTA students' perception of their clinical skill competence and the fieldwork educator's rating on midterm fieldwork evaluations.<br><br>IVs: Content Area Assessed, Assessor, & Timing of FW evaluation<br><br>DVs: Student Perception of Clinical Skills & FW Ed. Rating of Clinical Skills at Midterm | Repeated measures ANOVA 2x2x2 Factorial Design | The differences among mean clinical skills scores were not significant, $F$ (1,16) = 1.119 $p$ > .001, $\eta_p^2$ = .065. The null hypothesis was accepted since the computed $F$ was less than the critical value (4.49) at the .05 level. |

| Null Hypotheses and Variables | Test | Results |
|---|---|---|
| **#3:** OTA students' performance at midterm evaluation is not different than at final evaluation of fieldwork.<br><br>IVs: Content Area Assessed, Assessor, & Timing of FW evaluation<br><br>DVs: FW Ed. Rating of Knowledge at Midterm, FW Ed. Rating of Clinical Skills at Midterm, FW Ed. Rating of Knowledge at Final, & FW Ed. Rating of Clinical Skills at Final | Repeated measures ANOVA 2x2 Factorial Design | The differences among mean student overall performance scores were significant, $F(1,16) = 103.59$, $p < .001$, $\eta_p^2 = .866$. The null hypothesis was rejected since the computed $F$ was greater than the critical value (4.49) at the .05 level. |
| **#4:** There are no clinical skills that OTA students' self-rate as having "entry-level competence" (self-assessment score of 4) before fieldwork but are rated as demonstrating less than "proficient performance" (fieldwork evaluation adjusted score of 2 or less) by the fieldwork educator on their final fieldwork evaluations.<br><br>IVs: Content Area Assessed, Assessor, & Timing of FW evaluation<br><br>DVs: Student Perception of Clinical Skills & FW Ed. Rating of Clinical Skills at Final | Descriptive Statistics | Rejected (not statistically significant) since only one clinical skill an OTA student self-rated as having "entry-level competence" before fieldwork but was rated as demonstrating less than "proficient performance" by the fieldwork educator on their final fieldwork evaluation. |

**Summary of Results**

In summary, the null hypotheses for research questions one and two were accepted, indicating no statistically significant difference between student perception of fundamental knowledge and clinical skill competence prior to fieldwork and fieldwork educator rating of those same concepts at midterm evaluation. The null hypothesis for research question three was rejected, indicating a statistically significant difference between overall student performance at

midterm and final evaluation as rated by fieldwork educators. Finally, the null hypothesis for research question four was rejected (not significantly significant) since only one clinical skill an OTA student self-rated as having "entry-level competence" before fieldwork was rated as demonstrating less than "proficient performance" by the fieldwork educator on their final fieldwork evaluation. This was in the clinical skill area of "incorporate risk management techniques at an individual and practice-setting level…" (NBCOT self-assessment item D3T2).

# Chapter 5

## Discussion

The purpose of this study was to determine differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at RUC versus fundamental knowledge and clinical skill competency as assessed by fieldwork educators during level II fieldwork. Exploring discrepancies between students' self-perception of competency and their actual performance may provide useful information for OTA program development. Specifically, these results may assist the RUC OTA program director and faculty in identifying areas of instruction amenable to modification for improved instruction and student performance.

### Discussion of the Results

Results of this study found no statistically significant difference between the OTA students' perception of knowledge and clinical skill competency prior to fieldwork and their rating on midterm evaluations. A statistically significant difference did exist between OTA students' overall performance at midterm and final evaluation. Finally, the results identified one clinical skill area in which a single OTA student self-rated as having "entry-level performance" prior to level II fieldwork experience but was rated as demonstrating less than "proficient performance" upon final evaluation.

#### *Student Perception and Fieldwork Educator Rating*

The first two research questions considered a difference between the OTA students' perception of their fundamental knowledge and clinical skill competence and their fieldwork educators' rating of their performance at the midterm of their level II fieldwork. The null hypothesis was accepted for research questions one and two. There are several circumstances that may have impacted these ideas.

**Fieldwork Experience.** Prior to level II fieldwork, students had minimal direct client contact, which primarily consisted of controlled client interactions and simulations supervised by faculty. This was unique since the pandemic mandated alternative level I fieldwork experiences for the class of 2022. The alternative experiences resulted in close supervision and critical feedback from faculty. Personalized instruction and feedback during level I fieldwork may have provided students with more polished skills and more accurate clinical skill perception for level II fieldwork (S.M. Johnson, personal communication, January 17, 2023).

Additionally, a new academic fieldwork coordinator began working in the fall of 2021 and implemented novel fieldwork assignments. One of the assignments focused on self-reflection. The students completed written self-reflection exercises throughout level II fieldwork. These exercises may have provided students with the opportunity to reflect on, consider, and improve clinical skills prior to an evaluation of the skill, resulting in a better alignment of their perception and actual clinical skills.

**Selective Admissions Process.** Another possible explanation for this result is the OTA program at RUC's selective admissions process. This process was implemented in 2015 and involves detailed application and interview methods. Of note, the cohort of participants involved in this study were admitted through this selective admissions process.

The application process consists of a standard university application and includes a portfolio comprised of health care employment experience, volunteer experience (health care or non-health care related), community service work, leadership experience, honors, awards, recognitions, and certifications. Additionally, the university recommends submitting a resume, personal statement, sample works, and letters of recommendation. The interview process consists

of a structured group interview followed by a written portion in which students must respond to a predetermined prompt (Sowers, 2019).

Having a selective admissions process enables RUC to admit students who are well prepared for an OTA program. In a 2017 research study, Andonian found that prior professional experience correlated with increased self-efficacy among graduate level occupational therapy students. By including criteria for prior professional experience, OTA programs may better select candidates who are more likely to demonstrate the self-efficacy and professional behaviors necessary for both accurate self-perception and enhanced skill development during the fieldwork experience. Thus, results of the first two research questions in this study may speak to the success and continued importance of the selective admissions process used by the OTA program at RUC.

### *Midterm and Final Fieldwork Evaluation Comparison*

Typically, each of the two level II fieldwork experiences last 8 weeks with a midterm evaluation completed at 4 weeks. The midterm evaluation allows fieldwork educators to assess students' progress and address or recommend changes in practice prior to the final evaluation. The statistically significant difference between the two reporting periods in this study indicates students were making the progress during level II fieldwork. This advancement of professional behaviors through experience is illustrated in Patricia Benner's Novice to Expert Model and accurately reflects the aims of an OTA program (Davis & Maisano, 2016).

### *Clinical Skill Competency*

There was only one clinical skill an OTA student self-rated as having "entry-level performance" prior to level II fieldwork but was rated as having less than "proficient performance" upon final evaluation. The clinical skill area in question was self-assessment item

D3T2: “incorporate risk management techniques at an individual and practice-setting level by using standard operating procedures, safety principles, best practice guidelines, and relevant compliance trainings to protect clients, self, and staff from injury or harm during interventions” (NBCOT, n.d.-a). As many components of this skill are dependent on a specific facility’s policies, procedure protocols, and training modules, it is highly unlikely a student would be competent in this area prior to level II fieldwork; however, there are several explanations as to why a student may improperly rate their skill and ability.

As previously discussed, students complete the NBCOT self-assessment independently at the end of their didactic coursework. Students are not provided assistance interpreting the self-assessment statements nor do they have an opportunity to clarify questions on the instrument. As a result, students may not thoughtfully or thoroughly consider the statements, resulting in misrepresentation of their actual skill level. Additionally, decreased self-awareness of clinical skill competence may contribute to students improperly self-rating their skills.

With respect to the self-assessment skill overrated in this study, the nature of facility-specific risk management protocols presents a challenge to didactic simulation and study. The faculty of the OTA Program at RUC emphasize general safety procedures and risk management techniques; however, generalizing the specific safety procedures required of various facilities prior to actual fieldwork is difficult. As presented in Andonian (2017), academic programs can increase a student’s self-efficacy through roleplaying and professional development activities. Nevertheless, this clinical skill remains challenging to effectively simulate in a general academic setting.

Finally, a student may improperly rate his or her skill and ability due to being at the novice stage of professional development. Benner described the novice stage as knowledge and

skills that are not yet generalizable (Davis & Maisano, 2016). Students train in a variety of safety skills throughout the OTA program at RUC and an inability to generalize those same skills to a level II fieldwork may indicate a degree of professional immaturity. Increased emphasis on roleplaying or mock scenario discussions during class instruction may improve students' ability to discern a similar scenario during level II fieldwork.

**Implications for Future Research**

This research study explored the differences in fundamental knowledge and clinical skill competency as perceived by occupational therapy assistant students at RUC versus those assessed by fieldwork educators during level II fieldwork. The implications of this research are manifold. First, this study adds to the body of knowledge for research in occupational therapy at the associate or undergraduate level. No research on this subject was found at the associate or undergraduate level in the profession of occupational therapy during the course of this study. While this research is specific to Radford University Carilion in Roanoke, Virginia, it may provide a starting point for other OTA programs seeking to evaluate and enhance their curriculum and student performance. Subsequently, continued research in this area is strongly recommended.

Since some clinic settings require higher levels of skill, analysis at the practice setting level may help determine the degree of clinical skill preparedness and whether the use of a readiness objective tool is indicated (Dupre et al., 2020). Recommendations for future research include categorizing the data according to the clinical fieldwork setting as this may deepen awareness of clinical readiness and the generalization of skill development as noted in Dupre et al. (2020).

Comparison of the results of the NBCOT self-assessment completed before and after level II fieldwork provides an additional avenue for future research. Given the results of this study, measurable professional growth should be anticipated from such an analysis when comparing student progress at midterm and final evaluation. The growth and development of professional clinical skills over time may then be viewed within the framework of Benner's Novice to Expert Model.

**Implications for Future Practice at RUC**

Results of this study support the diligence of the OTA program at RUC in selecting appropriate candidates and adequately preparing students for fieldwork. This would suggest that the selective admissions process at RUC aids in choosing candidates who are prepared for success and skill development. Additionally, results indicate the plan of study and progression of the OTA program at RUC promotes learning objectives that adequately prepare students for fieldwork. Results of this study also support continued use of the selective admissions process and current program of study in RUC's OTA Program.

Finally, while most students accurately self-assessed clinical skill competence prior to beginning level II fieldwork, one student overrated performance in a clinical skill area not typically addressed throughout the OTA program at RUC. This highlights an area of potential development when considering improvements to the curriculum and pre-fieldwork training. A comprehensive review of the effectiveness of an OTA program, supported through this type of research, provides justification for continued practice and elucidates areas for improved operations to prepare successful and competent occupational therapy assistants.

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## Appendix A

NBCOT COTA Entry-Level Self-assessment


# COTA

Content Outline for the COTA Examination

The content outline is based on the results of the 2017 Practice Analysis.



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Content Outline for the COTA Examination

| | COTA DOMAIN DESCRIPTIONS | % OF EXAM |
|---|---|---|
| DOMAIN 01 | COLLABORATING AND GATHERING INFORMATION<br>Assist the OTR to acquire information regarding factors that influence occupational performance on an ongoing basis throughout the occupational therapy process. | 28% |
| DOMAIN 02 | SELECTING AND IMPLEMENTING INTERVENTIONS<br>Implement interventions under the supervision of the OTR in accordance with the intervention plan and level of service competence to support client participation in areas of occupation throughout the occupational therapy process. | 55% |
| DOMAIN 03 | UPHOLDING PROFESSIONAL STANDARDS AND RESPONSIBILITIES<br>Uphold professional standards and responsibilities by achieving service competence and applying evidence-based interventions to promote quality in practice. | 17% |

Validated Domain, Task, Knowledge Statements for the COTA Examination

| DOMAIN 01 | COLLABORATING AND GATHERING INFORMATION<br>Assist the OTR to acquire information regarding factors that influence occupational performance on an ongoing basis throughout the occupational therapy process. | |
|---|---|---|
| Task 0101 | Recognize the influence of development; body functions and body structures; and values, beliefs, and spirituality on a client's occupational performance. | |
| | KNOWLEDGE OF: | |
| | 010101 | Impact of typical development and aging on occupational performance, health, and wellness across the life span |
| | 010102 | Expected patterns, progressions, and prognoses associated with conditions that limit occupational performance |
| | 010103 | Impact of body functions, body structures, and values, beliefs, and spirituality on occupational performance |
| Task 0102 | Acquire information by using available resources about a client's functional skills, roles, culture, performance context, and prioritized needs in order to contribute to the development and update of an occupational profile. | |
| | KNOWLEDGE OF: | |
| | 010201 | Resources for acquiring information about the client's current condition and occupational performance |
| | 010202 | Purpose, advantages, limitations, and service competency needs related to the administration of commonly used standardized assessments and non-standardized screening as a means of acquiring client information |
| | 010203 | Internal and external factors influencing a client's meaningful engagement in occupation related to typical habits, roles, routines, and rituals, and the level and type of assistance required |
| Task 0103 | Provide information regarding the influence of current conditions, contexts, and task demands on occupational performance in order to assist the OTR in planning interventions and monitoring progress as guided by the practice setting and theoretical construct. | |
| | KNOWLEDGE OF: | |
| | 010301 | Influence of theoretical approaches, models of practice, and frames of reference on information-gathering and the intervention process |
| | 010302 | Task analysis in relation to a client's performance skills, the occupational profile, practice setting, stage of occupational therapy process, areas of occupation, and activity demands |

| | | |
|---|---|---|
| Task 0104 | Collaborate with the client, the client's relevant others, occupational therapy colleagues, and other professionals and staff by using a culturally sensitive, client-centered approach and therapeutic use of self to provide quality services guided by evidence, scope of practice, service competence, and principles of best practice. | |
| | KNOWLEDGE OF: | |
| | 010401 | Characteristics and functions of interprofessional teams for coordinating client care and providing efficient and effective services consistent with specific core competencies, expertise, unique contributions, team roles, and context of the organization |
| | 010402 | Coordination of occupational therapy services related to collaborative client-centered intervention plans, Individualized Education Program plans, and transition plans based on client skills, abilities, and expected outcomes in relation to available resources, level of service delivery, and frequency and duration of intervention |
| | 010403 | Collaborative processes and procedures for prioritizing intervention goals and activities based on client needs, wants, developmental skills, abilities, progress, and expected outcomes in relation to level of service delivery as well as frequency and duration of intervention |
| | 010404 | Fundamental strategies used for addressing health literacy to enhance non-verbal and verbal interactions with a client and relevant others in order to promote positive health behaviors, enable informed decisions, maximize safety of care, and promote carry-over of the intervention to support positive outcomes |

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| Task 0105 | Monitor the intervention plan and progress toward goals in collaboration with the OTR by using clinical reasoning, therapeutic use of self, and cultural sensitivity to make decisions about the intervention approach, context, or goals based on client needs, priorities, response to intervention, status changes, reevaluation results, and targeted outcomes. | |
| | KNOWLEDGE OF: | |
| | 010501 | Factors related to determining the context and type of individual and group activities for effectively supporting intervention goals and objectives |
| | 010502 | Methods for monitoring the effectiveness of individual and group intervention in order to keep the OTR informed about continuation of skilled services or opportunities to modify the intervention, intervention approach, context, or goals based on client needs, responses to intervention, and progress toward goals |
| | 010503 | Clinical decision-making for implementing modifications to the intervention plan and prioritization of goals under the supervision of the OTR in response to physiological changes, behavioral reaction, emotion regulation, and developmental needs of the client |

| DOMAIN | SELECTING AND IMPLEMENTING INTERVENTIONS | |
|---|---|---|
| 02 | Implement interventions under the supervision of the OTR in accordance with the intervention plan and level of service competence to support client participation in areas of occupation throughout the occupational therapy process. | |
| Task 0201 | Incorporate methods and techniques as an adjunct to interventions in order to facilitate healing and enhance engagement in occupation-based activities. | |
| | KNOWLEDGE OF: | |
| | 020101 | Methods for selecting, preparing, and adapting the intervention technique and environment to support optimal engagement in the intervention and promote goal achievement |
| | 020102 | Technical level indications, contraindications, and precautions associated with wound management, considering the characteristics of a wound, the stage of wound healing, and the influence of the wound on engagement in occupation as guided by evidence, best practice standards, scope of practice, and state licensure practice acts in order to support functional outcomes |
| | 020103 | Technical level indications, contraindications, precautions, and appropriate clinical application of superficial thermal agents as guided by evidence, best practice standards, scope of practice, and state licensure practice acts |
| | 020104 | Technical level indications, contraindications, precautions, and appropriate clinical application of deep thermal, mechanical, and electrotherapeutic physical agent modalities as guided by evidence, best practice standards, scope of practice, and state licensure practice acts |

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| Task 0202 | Implement developmental, remedial, and adaptive occupation-based strategies to support participation in activities of daily living (ADL), instrumental activities of daily living (IADL), rest and sleep, education, work, play, leisure, and social participation across the life span. | |
| | KNOWLEDGE OF: | |
| | 020201 | Intervention methods for supporting leisure and play-based exploration and participation consistent with client interests, needs, goals, and context |
| | 020202 | Methods for grading an activity, task, or technique based on level of development, client status, response to intervention, and client needs |
| | 020203 | Methods for facilitating individual and group participation in shared tasks or activities consistent with the type, function, format, context, goals, and stage of the group |
| | 020204 | Intervention methods and activities to support optimal sensory arousal and visual motor, cognitive, or perceptual processing for supporting engagement in occupations based on current level of development, abilities, task characteristics, and environmental demands |
| | 020205 | Compensatory and remedial interventions for managing cognitive and perceptual deficits or intellectual disabilities |
| | 020206 | Adaptive and preventive interventions for optimal engagement in occupation consistent with developmental level, neuromotor status, and condition |
| | 020207 | Technical level intervention strategies and techniques used to facilitate oral motor skills for drinking, eating, and swallowing consistent with developmental level, client condition, caregiver interaction, and mealtime environment and context |
| | 020208 | Prevocational, vocational, and transitional services, options, and resources for supporting strengths, interests, employment, and lifestyle goals of the adolescent, middle-aged, and older adult client |

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| Task 0203 | Implement interventions for improving range of motion, strength, activity tolerance, sensation, postural control, and balance based on neuromotor status, cardiopulmonary response, and current stage of recovery or condition in order to support occupational performance. | |
| | KNOWLEDGE OF: | |
| | 020301 | Methods for grading various types of therapeutic exercise and conditioning programs consistent with indications and precautions for strengthening muscles, increasing endurance, improving range of motion and coordination, and increasing joint flexibility in relation to task demands |
| | 020302 | Technical level techniques for implementing sensory and motor reeducation, desensitization, pain management, edema reduction, and scar management programs |
| | 020303 | Technical level techniques and activities for promoting or improving postural stability, facilitating dynamic balance, and teaching proper body mechanics and efficient breathing patterns during functional tasks to support engagement in occupation |
| Task 0204 | Apply anatomical, physiological, biomechanical, and healing principles to select or fabricate orthotic devices, and provide training in the use of orthotic and prosthetic devices by using critical thinking and problem-solving as related to a specific congenital anomaly or type of injury, current condition, or disease process in order to support functional outcomes. | |
| | KNOWLEDGE OF: | |
| | 020401 | Types and functions of immobilization, mobilization, restriction, and non-articular orthoses for managing specific conditions |
| | 020402 | Influence of general anatomical, physiological, biomechanical, and healing principles on orthotic selection, design, fabrication, and modification |
| | 020403 | Training methods regarding the safe and effective use of orthotic and prosthetic devices consistent with the client's prioritized needs, goals, and task demands in order to optimize or enhance function |

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| Task 0205 | Integrate assistive technology options, adaptive devices, mobility aids, and other durable medical equipment into the intervention, considering the client's developmental, physical, functional, cognitive, and mental health status; prioritized needs; task demands; and context to enable participation in meaningful occupation. | |
| | KNOWLEDGE OF: | |
| | 020501 | Factors related to measuring, selecting, monitoring fit of, and recommending modifications to seating systems, positioning devices, and mobility aids |
| | 020502 | Characteristics and features of commonly used high- and low-tech assistive technology for supporting engagement in meaningful occupation |
| | 020503 | Types of commonly used mobility options, vehicle adaptations, and alternative devices for supporting participation in community mobility |
| | 020504 | Training methods and other factors influencing successful use and maintenance of commonly used assistive technology options, adaptive devices, and durable medical equipment |
| Task 0206 | Implement environmental modifications guided by an occupation-based model, disability discrimination legislation, and accessibility guidelines and standards to support participation in occupation consistent with a client's physical needs; cognitive, mental health, and developmental status; context; and task demands. | |
| | KNOWLEDGE OF: | |
| | 020601 | Fundamental principles of ergonomics and universal design for identifying, recommending, and implementing reasonable accommodations and features in the workplace, home, and public spaces in order to optimize accessibility and usability |
| | 020602 | Processes and procedures for identifying, recommending, and implementing modifications in the workplace, home, and public spaces, considering the interaction among client factors, contexts, roles, task demands, and resources |

| DOMAIN | UPHOLDING PROFESSIONAL STANDARDS AND RESPONSIBILITIES |
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| 03 | Uphold professional standards and responsibilities by achieving service competence and applying evidence-based interventions to promote quality in practice. |
| Task 0301 | Engage in professional development and competency assessment activities by using evidence-based strategies and approaches to provide safe, effective, and efficient services relevant to the job role, practice setting, scope of practice, and professional certification standards. |

| KNOWLEDGE OF: | |
|---|---|
| 030101 | Methods for locating, reviewing, and interpreting scholarly research in occupational therapy to guide and support professional competence and practice-relevant decision-making |
| 030102 | Methods for contributing to continuous quality improvement processes and procedures related to occupational therapy service delivery |
| 030103 | Methods for identifying, documenting, and monitoring service competency and professional development needs based on scope of practice and certification standards for occupational therapy |
| 030104 | Types of evidence-based programming for advancing positive population health outcomes |
| 030105 | Application of ethical decision-making and professional behaviors guided by the NBCOT standards of practice and Code of Conduct |

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| Task 0302 | Incorporate risk management techniques at an individual and practice-setting level by using standard operating procedures, safety principles, best practice guidelines, and relevant compliance trainings to protect clients, self, and staff from injury or harm during interventions. | |
| | KNOWLEDGE OF: | |
| | 030201 | Precautions or contraindications associated with a client condition or stage of recovery |
| | 030202 | Standard infection control procedures and universal precautions for reducing transmission of contaminants |
| | 030203 | Basic first aid in response to minor injuries and adverse reactions |
| | 030204 | Essential safety procedures to integrate into the intervention activities |
| | 030205 | Preventive measures for minimizing risk in the intervention environment |
| Task 0303 | Provide occupational therapy service in accordance with laws, regulations, state occupational therapy practice acts, and accreditation guidelines<br>in order to protect consumers and meet applicable reimbursement requirements in relation to the service delivery setting. | |
| | KNOWLEDGE OF: | |
| | 030301 | Methods for identifying, locating, and integrating federal regulations, facility policies, and accreditation guidelines related to service delivery across occupational therapy practice settings |
| | 030302 | Influence of reimbursement policies and guidelines related to skilled and medically necessary occupational therapy service delivery |
| | 030303 | Accountability processes and procedures using relevant practice terminology, abbreviations, and information technology for justifying, tracking, and monitoring outcomes related to occupational therapy service delivery |

Using this resource alone or with other resources does not guarantee a passing score on the certification examination.

**Appendix B**

AOTA Fieldwork Performance Evaluation


# Fieldwork Performance Evaluation (FWPE) for the Occupational Therapy Assistant Student (Revised in 2020)

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|---|---|
| FUNDAMENTALS OF PRACTICE | |
| 1 | Adheres to the American Occupational Therapy Association's Code of Ethics and all federal, state, and facility regulations.<br>Examples: Medicare, Medicaid, client privacy, social media, human subject research |
| 2 | Adheres to safety regulations and reports/documents incidents appropriately.<br>Examples: fire safety, OSHA regulations, body substance precautions, emergency procedures |
| 3 | Ensures the safety of self and others during all fieldwork related activities by anticipating potentially unsafe situations and taking steps to prevent accidents.<br>Examples: body mechanics, medical safety, equipment safety, client specific precautions, contraindications, community safety |
| BASIC TENETS | |
| 4 | Articulates the values, beliefs, and distinct perspective of the occupational therapy profession to clients and other relevant parties clearly, confidently, and accurately.<br>Examples: families, caregivers, colleagues, service providers, administration, the public |
| 5 | Articulates the value of occupation as a method and desired outcome of occupational therapy to clients and other relevant parties clearly, confidently, and accurately.<br>Examples: families, caregivers, colleagues, service providers, administration, the public |
| 6 | Articulates the role of occupational therapy practitioners to clients and other relevant parties clearly, confidently, and accurately.<br>Examples: families, caregivers, colleagues, service providers, administration, the public |
| SCREENING AND EVALUATION | |
| 7 | Obtains sufficient and necessary information about factors that support and hinder occupational performance from relevant sources throughout the evaluation process.<br>Examples: record or chart reviews, client, family, caregivers, service providers |

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| 8 | Establishes service competency in assessment methods, in accordance with setting procedures and applicable laws, by administering assessments accurately and efficiently to ensure findings are valid, reliable, and timely.<br>Examples: record or chart reviews, observations, interviews, standardized and non- standardized assessments |
| 9 | Administers delegated assessments using appropriate procedures and protocols.<br>Examples: standardized and non-standardized assessments, interviews, and observations |
| 10 | Assists with interpreting information in relation to the client's needs, factors, and performance.<br>Examples: record or chart reviews, observations, interviews, standardized and non- standardized assessments<br><br>Client factors: Specific capacities, characteristics, or beliefs that reside within the person and that influence performance in occupations. Client factors include values, beliefs, and spirituality; body functions (includes psychological functions); and body structures).<br><br>Includes the consideration of psychosocial factors |
| 11 | Reports results clearly, accurately, and concisely, reflecting the client's occupational performance. |
| INTERVENTION | |
| 12 | Articulates a clear and logical rationale for the intervention process based on the evaluation results and other relevant considerations.<br>Examples: contexts, theories, frames of reference, practice models, and evidence |
| 13 | Under the supervision of and in cooperation with an occupational therapy practitioner, uses professional literature to make informed intervention decisions.<br>Examples: textbooks, journal articles, other relevant and reliable informational resources |
| 14 | Selects client-centered and occupation-based interventions that motivate and challenge the client to achieve established goals.<br><br>Includes the consideration of all client centered components including psychosocial factors |
| 15 | Implements client-centered and occupation-based intervention plans.<br><br>Includes the consideration of all client centered components including psychosocial factors |
| 16 | Modifies the task and/or environment to maximize the client's performance.<br>Examples: upgrades/downgrades task; arranges client's workspace for optimal performance |
| 17 | Recommends modification or termination of intervention plan based on the client's status. |
| 18 | Documents the client's response to services in a manner that demonstrates the effectiveness of interventions. |
| MANAGEMENT OF OCCUPATIONAL THERAPY SERVICES | |

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| 19 | Demonstrates through practice or discussion the ability to collaborate with and assign appropriate tasks to, as indicated, the occupational therapy aide or others to whom responsibilities might be assigned.<br>Examples: paraprofessionals, nurses' aides, volunteers |
| 20 | Demonstrates through practice or discussion an understanding of costs and funding systems related to occupational therapy services, such as federal, state, third party, and private payers.<br>Examples: billing for OT services, inventory and ordering of supplies for OT services, and options for client procurement of adaptive equipment |
| 21 | Demonstrates knowledge about the organization.<br>Examples: mission and vision, accreditation status, licensing, specialty certifications |
| 22 | Meets productivity standards or volume of work expected of occupational therapy assistant students. |
| COMMUNICATION AND PROFESSIONAL BEHAVIORS | |
| 23 | Communicates clearly and effectively, both verbally and nonverbally.<br>Examples: clients, families, caregivers, colleagues, service providers, administration, the public |
| 24 | Produces clear and accurate documentation.<br>Examples: legibility, spelling, punctuation, grammar, adherence to electronic health documentation requirements |
| 25 | Collaborates with fieldwork educator(s) to maximize the learning experience. Examples: initiates communication, asks for feedback about performance, identifies own strengths and challenges |
| 26 | Takes responsibility for attaining professional competence by seeking out learning opportunities and interactions with fieldwork educator(s) and others. |
| 27 | Responds constructively to feedback in a timely manner. |
| 28 | Demonstrates consistent and acceptable work behaviors. Examples: punctuality, initiative, preparedness, flexibility, dependability, professional appearance |
| 29 | Demonstrates effective time management.<br>Examples: plans ahead, adheres to schedules, completes work in expected timeframe |
| 30 | Manages relationships effectively through therapeutic use of self and adjusts approach to meet the needs of clients and others. |
| 31 | Demonstrates respect for diversity factors of others. Examples: culture, socioeconomic status, beliefs, identity |

## Appendix C

Common Themes: Knowledge and Clinical Skill Areas Assessed

| NBCOT Self-assessment | AOTA Fieldwork Performance Evaluation | Common Theme |
|---|---|---|
| | Knowledge Areas | |
| **Domain 1, Task 1:** Recognize the influence of development; body functions and body structures; and values, beliefs, and spirituality on a client's occupational performance. | **Item 7:** Obtains sufficient and necessary information about factors that support and hinder occupational performance from relevant sources throughout the evaluation process. | Pertinent information gathering |
| **Domain 1, Task 2:** Acquire information by using available resources about a client's functional skills, roles, culture, performance context, and prioritized needs in order to contribute to the development and update of an occupational profile. | **Item 7:** Obtains sufficient and necessary information about factors that support and hinder occupational performance from relevant sources throughout the evaluation process. | Pertinent information gathering |
| | **Item 8:** Establishes service competency in assessment methods, in accordance with setting procedures and applicable laws, by administering assessments accurately and efficiently to ensure findings are valid, reliable, and timely. | Service competency with assessments |

| NBCOT Self-assessment | AOTA Fieldwork Performance Evaluation | Common Theme |
|---|---|---|
| **Domain 1, Task 3:** Provide information regarding the influence of current conditions, contexts, and task demands on occupational performance in order to assist the OTR in planning interventions and monitoring progress as guided by the practice setting and theoretical construct. | **Item 10:** Assists with interpreting information in relation to the client's needs, factors, and performance. | Appropriate intervention planning |
| | **Item 12:** Articulates a clear and logical rationale for the intervention process based on the evaluation results and other relevant considerations. | Appropriate intervention rationale |
| **Domain 3, Task1:** Engage in professional development and competency assessment activities by using evidence-based strategies and approaches to provide safe, effective, and efficient services relevant to the job role, practice setting, scope of practice, and professional certification standards. | **Item 13:** Under the supervision of and in cooperation with an occupational therapy practitioner, uses professional literature to make informed intervention decisions. | Implementation of evidence-based practice |

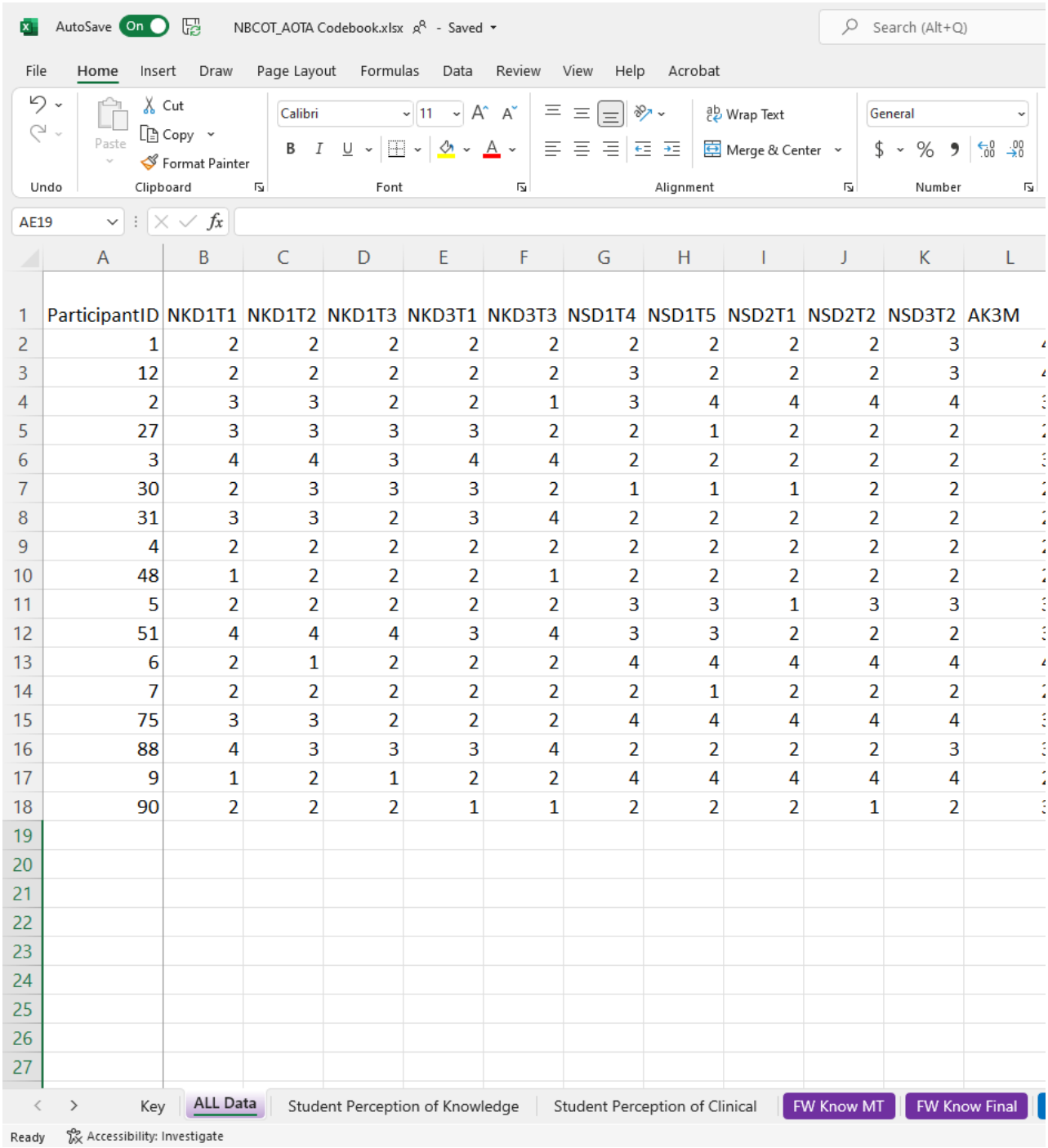
| NBCOT Self-assessment | AOTA Fieldwork Performance Evaluation | Common Theme |
|---|---|---|
| **Domain 3, Task 3:** Provide occupational therapy service in accordance with laws, regulations, state occupational therapy practice acts, and accreditation guidelines in order to protect consumers and meet applicable reimbursement requirements in relation to the service delivery setting. | **Item 20:** Demonstrates through practice or discussion an understanding of costs and funding systems related to occupational therapy services, such as federal, state, third party, and private payers. | Knowledge of funding and reimbursement |
| | **Item 21:** Demonstrates knowledge about the organization. | Knowledge of use facility policies |
| | **Item 24:** Produces clear and accurate documentation. | Documentation skills |

| NBCOT Self-assessment | AOTA Fieldwork Performance Evaluation | Common Theme |
|---|---|---|
| | Clinical Skill Areas | |
| **Domain 1, Task 4:** Collaborate with the client, the client's relevant others, occupational therapy colleagues, and other professionals and staff by using a culturally sensitive, client- centered approach and therapeutic use of self to provide quality services guided by evidence, scope of practice, service competence, and principles of best practice. | **Item 14:** Selects client-centered and occupation-based interventions that motivate and challenge the client to achieve established goals. | Collaboration for appropriate intervention |
| | **Item 30:** Manages relationships effectively through therapeutic use of self and adjusts approach to meet the needs of clients and others. | Professional communication |
| **Domain 1, Task 5:** Monitor the intervention plan and progress toward goals in collaboration with the OTR by using clinical reasoning, therapeutic use of self, and cultural sensitivity to make decisions about the intervention approach, context, or goals based on client needs, priorities, response to intervention, status changes, reevaluation results, and targeted outcomes. | **Item 14:** Selects client-centered and occupation-based interventions that motivate and challenge the client to achieve established goals. | Collaboration for appropriate intervention |
| | **Item 17:** Recommends modification or termination of intervention plan based on the client's status. | Methods for monitoring the intervention plan |

| NBCOT Self-assessment | AOTA Fieldwork Performance Evaluation | Common Theme |
|---|---|---|
| **Domain 2, Task 1:** Incorporate methods and techniques as an adjunct to interventions in order to facilitate healing and enhance engagement in occupation-based activities. | **Item 15:** Implements client-centered and occupation-based intervention plans. | Client collaboration |
| | **Item 16:** Modifies the task and/or environment to maximize the client's performance. | Environmental/task modifications |
| **Domain 2, Task 2:** Implement developmental, remedial, and adaptive occupation-based strategies to support participation in activities of daily living (ADL), instrumental activities of daily living (IADL), rest and sleep, education, work, play, leisure, and social participation across the life span. | **Item 14:** Selects client-centered and occupation-based interventions that motivate and challenge the client to achieve established goals. | Therapeutic use of self |
| | **Item 15:** Implements client-centered and occupation-based intervention plans. | Client collaboration |
| | **Item 16:** Modifies the task and/or environment to maximize the client's performance. | Environmental/task modifications |
| **Domain 3, Task 2:** Incorporate risk management techniques at an individual and practice-setting level by using standard operating procedures, safety principles, best practice guidelines, and relevant compliance trainings to protect clients, self, and staff from injury or harm during interventions. | **Item 2:** Adheres to safety regulations and reports/documents incidents appropriately. | Client safety |
| | **Item 3:** Ensures the safety of self and others during all fieldwork related activities by anticipating potentially unsafe situations and taking steps to prevent accidents. | Workplace safety |

# Appendix D

Assessment Code Book




| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ParticipantID | NKD1T1 | NKD1T2 | NKD1T3 | NKD3T1 | NKD3T3 | NSD1T4 | NSD1T5 | NSD2T1 | NSD2T2 | NSD3T2 | AK3M |
| 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | |
| 3 | 12 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | |
| 4 | 2 | 3 | 3 | 2 | 2 | 1 | 3 | 4 | 4 | 4 | 4 | |
| 5 | 27 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 2 | 2 | |
| 6 | 3 | 4 | 4 | 3 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | |
| 7 | 30 | 2 | 3 | 3 | 3 | 2 | 1 | 1 | 1 | 2 | 2 | |
| 8 | 31 | 3 | 3 | 2 | 3 | 4 | 2 | 2 | 2 | 2 | 2 | |
| 9 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| 10 | 48 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | |
| 11 | 5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | |
| 12 | 51 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 2 | 2 | 2 | |
| 13 | 6 | 2 | 1 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | |
| 14 | 7 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | |
| 15 | 75 | 3 | 3 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | |
| 16 | 88 | 4 | 3 | 3 | 3 | 4 | 2 | 2 | 2 | 2 | 3 | |
| 17 | 9 | 1 | 2 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | |
| 18 | 90 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | |
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*Note:* Appendix D is a sample of a portion of the codebook used.