

2022

## Evaluating Course Design for Significant Learning Among a Blended Cohort of Occupational Therapy Students

Diana R. Feldhacker  
*Des Moines University*

Bobbi S. Greiner  
*Creighton University*

Follow this and additional works at: <https://encompass.eku.edu/jote>



Part of the [Occupational Therapy Commons](#)

### Recommended Citation

Feldhacker, D. R., & Greiner, B. S. (2022). Evaluating Course Design for Significant Learning Among a Blended Cohort of Occupational Therapy Students. *Journal of Occupational Therapy Education*, 6 (1). <https://doi.org/10.26681/jote.2022.060101>

This Original Research is brought to you for free and open access by the Journals at Encompass. It has been accepted for inclusion in Journal of Occupational Therapy Education by an authorized editor of Encompass. For more information, please contact [Linda.Sizemore@eku.edu](mailto:Linda.Sizemore@eku.edu).

---

# Evaluating Course Design for Significant Learning Among a Blended Cohort of Occupational Therapy Students

## Abstract

Occupational therapy (OT) school is where learning begins as students prepare to become future professionals. Thus, effective course design is imperative in professional formation. This study examined the effectiveness of a course designed around andragogical and active learning principles in combination with Fink's (2013) taxonomy of learning for a blended cohort of face-to-face and hybrid OT students. The study used a mixed methods explanatory sequential design with pre/post surveys, end-of-course evaluations, and focus groups to explore student perceptions and preferences toward learning to create significant learning experiences. One hundred six students completed pre and post testing of the redesigned course, 67 completed end-of-course evaluations from 2018 (pre-redesign), and 90 from 2019 (post-redesign). Nineteen students participated in the focus groups, nine from the campus pathway and 10 from the hybrid pathway. Results suggest the course was effective at helping students achieve a deeper level of understanding and develop self-directed learning habits significantly more so than a traditional lecture format. Students, regardless of the method of course delivery, benefited from active learning strategies and showed a strong preference for assignments and learning activities linked to real-life experiences. Instructors should invite adult OT students to participate as capable and equal partners in the learning process and consider how to best orient students to course content to help them understand the relevance to personal motivations and goals. Results of this study can help instructors create significant learning opportunities that have a distinct value in developing OT practitioners who are lifelong learners for a blended cohort of students.

## Keywords

Course design, significant learning, face-to-face, hybrid

## Creative Commons License



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 4.0 License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

## Acknowledgements

We wish to thank our paid student research assistant from Creighton University, Alexis Johnson, OTDS.

# JOTE

Journal of Occupational  
Therapy Education

Volume 6, Issue 1

---

## Evaluating Course Design for Significant Learning Among a Blended Cohort of Occupational Therapy Students

---

Diana Feldhacker, OTD, OTR/L, BCPR<sup>1</sup>

Bobbi Greiner, OTD, OTR/L<sup>2</sup>

Des Moines University<sup>1</sup>

Creighton University<sup>2</sup>

United States

---

### ABSTRACT

Occupational therapy (OT) school is where learning begins as students prepare to become future professionals. Thus, effective course design is imperative in professional formation. This study examined the effectiveness of a course designed around andragogical and active learning principles in combination with Fink's (2013) taxonomy of learning for a blended cohort of face-to-face and hybrid OT students. The study used a mixed methods explanatory sequential design with pre/post surveys, end-of-course evaluations, and focus groups to explore student perceptions and preferences toward learning to create significant learning experiences. One hundred six students completed pre and post testing of the redesigned course, 67 completed end-of-course evaluations from 2018 (pre-redesign), and 90 from 2019 (post-redesign). Nineteen students participated in the focus groups, nine from the campus pathway and 10 from the hybrid pathway. Results suggest the course was effective at helping students achieve a deeper level of understanding and develop self-directed learning habits significantly more so than a traditional lecture format. Students, regardless of the method of course delivery, benefited from active learning strategies and showed a strong preference for assignments and learning activities linked to real-life experiences. Instructors should invite adult OT students to participate as capable and equal partners in the learning process and consider how to best orient students to course content to help them understand the relevance to personal motivations and goals. Results of this study can help instructors create significant learning opportunities that have a distinct value in developing OT practitioners who are lifelong learners for a blended cohort of students.

---

## **Introduction**

Occupational therapy (OT) school is the beginning of learning for students as they prepare to become future practitioners. Practice standards, reimbursement trends, and research evidence are constantly changing and evolving. It is the responsibility of each student to remain informed to continue to provide appropriate and evidence-based OT services. As such, one of the most important roles of an OT instructor is to develop students who are lifelong learners. These students, as lifelong learners, engage in ongoing personal and professional development, can successfully link education to practice and have learned to care about the content beyond individual coursework (Fink, 2013; Liddiard et al., 2017). However, researched approaches to creating lifelong learners in OT are lacking.

The purpose of this project was two-fold: (1) To determine the effectiveness of a course designed using Fink's (2013) taxonomy of learning and founded in andragogical and active learning principles through comparison of course evaluations and course objectives, and (2) to better understand student perceptions of and preferences toward learning in order to create significant learning experiences for students within a blended cohort of face-to-face and hybrid learners. The results of this project will inform faculty in creating learning opportunities with a distinct value to develop students as professionals who are lifelong learners. Such an understanding can improve students' foundational knowledge, ability to apply and integrate learning, interaction with others, feelings toward the content, and ability to engage in self-directed and ongoing learning (Fink, 2013). In addition, OT programs have an increasing hybrid and distance learning format. Sixty-four percent of OT doctoral (OTD) programs report at least some usage of distance education in their curriculum, with 11% of programs reporting 50-74% usage (American Occupational Therapy Association [AOTA], 2020). This is an increase from AOTA data reported in 2015 where the highest percentage of a program offered by distance education was 25-49%. Mu et al. (2014) found there were no differences in student outcomes related to grade point average (GPA), fieldwork performance, and board certification exam pass rates when comparing on-campus and hybrid learners. However, there are challenges to develop active learning opportunities in an online or hybrid environment, and educators and students often resist incorporating interactive online technologies into course activities (Gee et al., 2017; Kahn et al., 2017). Thus, this project has the potential to inform faculty in various departments and institutions on student perceptions and best practices for teaching adult learners in a hybrid format. This project will advance pedagogical (andragogical) efforts to improve adult OT student learning.

## **Literature Review**

### **Andragogy**

Adult learning, andragogy, is unique when compared to learning in childhood and adolescence. The fundamental assumptions and core principles of andragogy allow for designing effective learning that is unique to the adult learner: "(1) The learner's need to know, (2) self-concept of the learner, (3) prior experience of the learner, (4) readiness to learn, (5) orientation to learning, and (6) motivation to learn" (Knowles et al., 2015, pp.

4-5). In following these principles, instructors evolve as facilitators of learning, instead of organizers and deliverers, in order to bridge the gap between education and practice (Merriam & Bierema, 2014). Establishing appropriate theoretical approaches to account for differences in learning is critical in order to tailor instruction and content to meet learner needs. However, approaches to instruction in professional education, such as OT, do not always utilize adult educational theory and are instead often didactic and pedagogical in nature. These traditional approaches transfer content from a central instructor but may be lacking in creation of rich learning experiences required for a professional student (Knowles et al., 2015). Adjusting approaches to better reflect learner needs and preferences promotes effective, life-long learning and develops students who are ready and motivated to learn and who care about the content beyond the classroom (Fink, 2013; Knowles et al., 2015; Merriam & Bierema, 2014).

Graduate-level OT students are adult learners. Professional programs require students to critically think, clinically reason, and problem solve to provide appropriate services to their future clients; however, approaches to teaching these skills are varied. Often, OT graduates report feeling unprepared and “lack confidence in their knowledge and skills” (Liddiard et al., 2017, p.1), especially as they transition to professional clinical practice. Occupational therapy educators must consider andragogical principles to best meet the needs of these learners. First, OT students have a need to know. When providing instruction, explaining the content, why it is important, and how it will apply to future practice is imperative, especially in courses which are theoretical in nature. Often, students have difficulty making connections between theory and practice and require explicit and intentional guidance (Ikiugu & Smallfield, 2015; Towns & Ashby, 2014). Because much of OT practice seems intuitive, instructors may neglect overtly addressing the “need to know” (Knowles et al., 2015, p. 4) among adult OT students (Ikiugu & Smallfield, 2015).

Understanding an individual learner’s self-concept, readiness to learn, and motivation is important to engage them appropriately in course content. Occupational therapy students are innately motivated to engage in courses when they understand that it will directly apply to their future practice as a therapist. However, each student is unique in their specific areas of interest. For example, some students are interested in pediatric practice while others prefer geriatrics. Additionally, some wish to learn about targeted practice areas such as trauma-informed care, cognitive behavioral therapy, or hand therapy, while others are motivated to learn about management and develop their own practice niches. While the goal of OT education is to prepare students as entry-level general practitioners, understanding these motivations and allowing students to contribute to course content can enhance student engagement and learning (Knowles et al., 2015; Merriam & Bierema, 2014).

In OT education, instructors may find it difficult to allow students an active role in contributing to course planning as there are specialty accreditation standards which dictate what content must be taught within the curriculum (Accreditation Council for Occupational Therapy Education [ACOTE], 2018). However, it is possible to utilize a blended approach: outlining accreditation standards to be addressed in the course while

gathering and integrating student interests and motivations. Henderson et al. (2020) compared such a collaborative approach with a flipped classroom model where students were participants only. They found that while both groups improved in active learning and clinical reasoning, the collaborative group also developed relationships, increased accountability, and improved metacognitive learning. Each adult student brings a unique background and varied experience which can be valuable to their learning of OT practice (Merriam & Bierema, 2014). Utilizing these motivations and experiences throughout coursework can enhance students' abilities to apply course content, make meaningful connections for themselves and others, and improve learning and memory (Howard, 2014; Knowles et al., 2015).

### **Active Learning and Fink's Taxonomy**

Active learning is the process of engaging learners with the topic and each other through collaboratively talking, doing, and creating (Bierema, 2020). This is in contrast to passive learning such as lectures or demonstrations where students listen and watch but do not actively participate (Saunders & Wong, 2020). Lumpkin et al. (2015) found that students value participating in active and engaging activities, reporting that it positively impacts their learning.

Active learning approaches align with andragogical principles as students are not simply asked to recall or repeat but to interact, engage, and reflect by drawing from their experiences, motivations, and prior knowledge. Active learning approaches focus more on skills and concepts and learning how to learn rather than rote content memorization (Saunders & Wong, 2020). In a systematic review by Harris and Welch Bacon (2019), investigators sought to determine whether active learning was more successful than passive learning at producing cognitive skills in health care professions students. They found that active learning produced gains to both lower and higher-order cognitive skills equal to or more than passive learning methods. Despite this, educators tend to be hesitant to use active learning strategies, including technology-based instructional tools, within a hybrid or distance format (Gee et al., 2017; Khan et al., 2017). Faculty report a concern of time to develop active learning activities and a high comfort level with traditional lectures (Miller & Metz, 2014). Sharoff (2019) argued that facilitating an online course requires innovation and creativity in order to keep students thoughtfully engaged. "The educator must exhibit an educator-facilitated active, student-centered learning process, whereby students are held accountable for their active participation and self-directed learning" (Sharoff, 2019, p. 1).

Designing courses which are built on andragogical and active learning principles requires an intentional framework. Fink's (2013) taxonomy of significant learning progresses students from foundational knowledge of understanding and remembering to application, integration, the human dimension, caring, and learning how to learn. Designing courses for significant learning promotes essential OT skills including critical thinking, reflection, empathy, and self-directed learning (Branzetti et al., 2019).

To our knowledge, no studies have explored an OT course founded in andragogical and active learning principles and designed for significant learning for a blended cohort of face-to-face and hybrid learners. However, Benaroya et al. (2021) explored active learning strategies for online delivery among a small number of OT assistant students. Students viewed active learning strategies for online instruction as moderately effective. Important take-aways from this study were that learning activities should ask students to go beyond the content provided rather than to simply regurgitate or repeat it.

This study utilized mixed methods and was comprised of two main parts. The first was to explore overall learning from a course designed around Fink's (2013) model and to compare campus and hybrid OT students' learning. The second was to conduct separate focus groups with both face-to-face and hybrid student learners within the OT program. These focus groups sought to better understand professional student preferences for learning and perceptions of active learning strategies within the classroom which are focused on the six taxa of significant learning as outlined by Fink (2013). In this study, the hybrid approach was defined as a blend of face-to-face and online learning, in accordance with the Online Learning Consortium (2015). This is further described in the course design below.

## **Methods**

### **Research Design and Ethics**

This research study utilized a mixed methods explanatory sequential design. Quantitative experimental-type research consisted of a pre/post survey to explore overall learning and compare campus to hybrid OT students for a course designed around Fink's (2013) taxonomy of learning as well as comparison of end-of-course evaluations between pre and post course redesign. Qualitative data gathered from focus groups of both face-to-face and hybrid students were used to further explain quantitative findings. The Institutional Review Board at the investigators' university approved this study and granted a waiver of informed consent. In the quantitative portion, students consented through completion of the survey. In the qualitative portion, the students provided consent by agreeing to participate via email prior to interviews.

### **Course Design**

Within the OT Department, all courses are delivered in a blended format, with a mix of face-to-face campus-based students and hybrid students. The campus pathway attends all labs and lectures on campus, while the hybrid pathway only attends labs and experiential learning components on campus at their respective location. Hybrid students watch recorded lectures and class sessions either synchronously or asynchronously dependent upon individual preference.

Both of the investigators were co-instructors of this course. One of the instructors redesigned an entry-level doctorate OT course guided by Fink's (2013) taxonomy of significant learning and grounded in theoretical principles of andragogy and active learning. This re-design was prompted by student feedback in end of course evaluation

from 2018 which rated the course as a 3.60 on a scale of 1-5, with 1 being poor and 5 being excellent. Prior to the redesign, the course used a traditional lecture format with some live discussion. While assignments were related to OT practice, students reported they struggled to connect them to the course content.

Goals of the redesign were for students to not only build foundational knowledge but also to apply and integrate that knowledge in a way that was personally motivating and meaningful. The instructor drafted course objectives for each level of Fink's (2013) taxonomy and mapped each to accreditation standards met in the course. Because half of the students in this course were face-to-face and half were hybrid (online), instructors integrated Poll and Weller's (2014) best practices for developing courses in an online environment. This included (1) building a community, (2) clearly outlining course expectations, (3) utilizing online tools for interaction, (4) promoting the exchange of ideas, (5) providing timely and relevant feedback, and (6) creating an environment that is student-centered. Additionally, this course did not have a lab component, thus hybrid students were at a distance for all class sessions except one that had a hands-on experiential component at each respective location. This was facilitated by faculty on-site and course instructors via Zoom.

In the course design, active learning strategies were integrated into each class session including small and large group discussions, think-pair-share, polling, quizzes, reciprocal questioning, and others. Weekly participation assignments, which typically took fewer than 10 minutes to complete, were used to promote student engagement and application of the content as well as to check for student understanding. These typically occurred at the end of the class session and often utilized a case study. Students participated through online technology to allow campus and hybrid students equitable access; these included Flipgrid, Padlet, online quizzes, and discussion posts, among others. For all class sessions, hybrid students were encouraged to be self-directed in active learning components and to view the recorded class session with a peer if watching asynchronously. They were able to view and hear the campus-based students during active learning components. To build a community of learning and promote idea sharing, the course instructor created and managed a FaceBook page where students, alumni, and other faculty were encouraged to follow and share content. Students facilitated discussion of FaceBook posts as it related to course content.

The course also included redesigned assignments for intentional practice application, such as building an occupational profile, plan of care, intervention plans, and a discharge plan. For each assignment, the instructors provided a description which outlined its practical purpose to a future OT, the "need to know" (Knowles et al., 2015, p. 4). Students were encouraged to reflect on their own motivations and experiences to orient themselves to course content and assignments. For example, students identified an area of interest and an individual who could benefit from related OT services which they then integrated into course assignments.

## **Participants**

Investigators recruited OT students in their second year at an entry-level OTD program in the United States for both parts of the study. Students were recruited by means of convenience sampling through enrollment in an OTD course in Fall 2019. This included 65 face-to-face campus-based students and 51 hybrid students. Qualitative focus groups took place in Spring 2020 after completion of the OTD course. Investigators sent an email invitation to participate in focus groups to all second-year students who completed and passed the Fall 2019 OTD course. Students were selected on a voluntary first-come, first-served basis to fill 12 spots for a face-to-face campus student focus group and 12 spots for a hybrid student focus group. Guest et al. (2006) suggests that in purposive sampling, 12 participants are adequate to ensure saturation of qualitative data when the study purpose is to understand common perceptions or experiences.

## **Data Collection**

### ***Instruments/Measures***

**Quantitative.** The investigators developed a quantitative survey to assess student perceived learning. Questions followed the course objectives which were aligned with each of Fink's (2013) taxa. Each question was rated on a 5-point Likert type scale from always to never. See Table 1 for the list of survey questions.

An end-of-course evaluation designed by the University for use in all occupational therapy courses was used to compare course instruction of prior instructional strategies (from 2018) to those of the redesign (2019). These surveys are administered anonymously by University administration; individual responses are compiled and returned to instructors. For this study, the question related to the overall course rating was used: "Overall, I rate this course as excellent." Participants rate this item using a 5-point, Likert-type scale: 1=false to 5=definitely true.

**Table 1***Quantitative Survey Questions*

<b>Survey Question</b>
Q1: I understand the meaning and dynamics of occupation and activity, including the interaction of areas of occupation, performance skills, performance patterns, activity demands, contexts and environments, and client factors. <i>Foundational Knowledge</i> (Fink, 2013)
Q2: I can use theories, models of practice, and frames of reference to guide and inform evaluation and intervention. <i>Application</i> (Fink, 2013)
Q3: I am able to articulate (written and verbal) my use of theories, models of practice, and frames of reference to others to support my therapy services. <i>Application</i> (Fink, 2013)
Q4: I am able to critique neuro-occupation research evidence and use it to inform evaluation and intervention. <i>Application</i> (Fink, 2013)
Q5: I am able to articulate (verbal and written) my use of research evidence to others to support my therapy services. <i>Application</i> (Fink, 2013)
Q6: I am able to identify and integrate the interaction between neuroscience and occupation to guide and inform evaluation and intervention. <i>Integration</i> (Fink, 2013)
Q7: I am able to inform and educate others about the importance of neuro-occupation and the unique role of occupational therapy. <i>Human Dimension</i> (Fink, 2013)
Q8: I am aware of how an individual's unique experiences (culture, environment, history, habits, etc.) impact the brain, learning, and provision of occupational therapy services. <i>Human Dimension</i> (Fink, 2013)
Q9: I am excited about neuro-occupation and searching out neuroscience and occupation-based evidence for incorporation into future practice. <i>Caring</i> (Fink, 2013)
Q10: I have a concrete plan for how I will continue to learn about neuroscience and occupational therapy (from a variety of sources) for fieldwork and future practice. <i>Learning How to Learn</i> (Fink, 2013)

**Qualitative.** For the qualitative portion of the study, investigators developed a semi-structured interview to better understand OT student perceptions and preferences related to andragogy and active learning. A thorough literature review regarding andragogy and active learning informed development of the questions. Subject matter experts reviewed the questions and provided feedback; questions were vetted and revised to further refine content and flow. The final focus group interview consisted of eight open-ended questions, a few with planned follow-up questions (see Table 2).

**Table 2***Focus Group Interview Questions*

<p>1. The purpose of this study is to explore occupational therapy student perceptions of adult learning strategies and occupational therapy education. As we discuss the questions, we would ask that you consider the lecture courses or the lecture component of a lecture/lab course. What is your preferred type of course delivery and why?</p>
<p>2. Andragogy is the study of adult education and how teaching is delivered and what methods are used. Your professional program in occupational therapy uses many principles of adult education to deliver content and ensure your understanding and application of knowledge and skills.</p> <p>Adult learning concepts include (<i>provide a visual or written reference</i>)</p> <ol style="list-style-type: none"> <li>A need to know (adults want to know why the content is valuable—why do they need to know it?)</li> <li>The self-concept of the learner (Adults believe they are responsible for their lives and need to be treated as capable and self-directed.)</li> <li>Prior experience (Adults come with their own backgrounds, learning styles, motivations, and interests that are beneficial for applying content.)</li> <li>Readiness to learn (Adults want to know that they can apply what they are learning to real-life situations now [not in the future].)</li> <li>Orientation to learning (Adults are life-centered; they want to learn what will help them perform tasks in the context of real-life.)</li> <li>Motivation to learn (Adults are internally motivated to engage in learning.) (Knowles et al., 2015, pp. 4-5)</li> </ol> <p>In thinking about these adult learning concepts and your occupational therapy education, what comes to mind? Do you feel that these qualities of andragogy align with your preferences as a learner?</p>
<p>3. In adult learning, instructors are often viewed as facilitators of self-directed learning, rather than being the center of (or holding) all the knowledge. When you think about your courses, how do you view your instructors related to this concept of “facilitators of self-directed learning”?</p>
<p>4. Describe a classroom delivery method in the OT program that you felt resulted in a deeper understanding of the material or occupational therapy concepts. What were the key elements of that course activity?</p>
<p>5. Active learning can have many meanings in education. Generally, this refers to having students actively doing things and thinking about the things they are doing (debates, simulations, small group problem solving, case studies, discussions, etc.). Listening to a lecture, in contrast, is relatively passive. What</p>

does active learning mean to you? What type of course activities have you experienced that you feel best facilitate active learning in the occupational therapy program?
6. In (your Fall 2019 OTD course), instructors used a variety of approaches to help you understand and apply learning concepts. These included interactive lecture, the Brain Architecture Game, Facebook site for shared posting of articles and information, Padlets, Flipgrids, group discussions during class, think-pair-share during class, video reflections, self-assessments, etc. What did you think about these approaches in helping you learn as an adult learner?
7. In (your Fall 2019 OTD course), your instructors used a variety of assignments including the occupational profile, plan of care and intervention plan of a self-identified client; discharge plan, final video and learning plan. What did you think about these approaches in helping you learn as an adult learner?
8. In general, what motivates you to learn and care about occupational therapy education in and beyond the classroom?

### Procedures

Second year OT students enrolled in an OTD course in Fall 2019 were recruited to participate in this study. Students accessed the survey through the university learning management system on the first day of the course as a pre-test of course objectives and student knowledge. Students consented through completion of the survey. No identifying information was collected, and data were downloaded by pathway (campus or hybrid). Following pre-testing, students engaged in the semester-long (15-week) course which was redesigned using Fink's (2013) taxonomy for significant learning and principles of andragogy and active learning (see above for further details related to course design). On the final day of the course, students completed the same survey as a posttest of course objectives and student learning.

In Spring 2020, the same group of students were recruited to participate in the qualitative focus groups. Interested students provided consent by agreeing to participate via email prior to the focus group. Separate focus groups were held via Zoom for campus and hybrid pathways. Student names were changed to random numbers upon logging on to the Zoom interview, and each was referred to as their randomly assigned number throughout the interview to maintain confidentiality. One of the study investigators led the focus groups while the other took notes and asked follow-up questions as needed. A trained student research assistant was also present to record notes during the meeting. Focus groups were audio-recorded and transcribed verbatim; any identifying information accidentally shared by students during the focus groups was not included in the transcript. All data for this study were stored on a secured server using password protected folders.

In addition, end-of-course evaluations were collected in 2018, prior to the course redesign, and in 2019, following the course redesign per typical University procedures. Students were requested to voluntarily complete the evaluation, which was anonymous. Results were compiled by University administration and sent to course faculty following course completion.

### **Data Analysis**

Pre and posttest survey data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 26 (IBM Corporation, 2019). Descriptive statistics and frequencies were computed for each question of the survey at pre and posttest in order to evaluate sample characteristics. The data were split to assess differences between delivery models (campus-based or hybrid). Investigators performed the Wilcoxon signed ranks test for statistical evaluation of changes between pre and posttest results within groups. Nonparametric analyses were chosen due to the ordinal nature of the data. Mann-Whitney U was used to analyze differences in pretest and posttest results between delivery model groups. Again, due to the ordinal nature and analysis by question, non-parametric analyses were chosen. For all analyses, Likert responses were given a numerical value: 0= never, 1= sometimes, 2= about half the time, 3= most of the time, and 4= always. Alpha was set at .05 with a 95% confidence interval; thus, a *p*-value at 5% level was considered statistically significant.

End-of-course evaluations were analyzed for overall course ratings for 2018 (pre-redesign) and 2019 (post-redesign). Likert-type responses were given a numerical value with 1=poor and 5=excellent. Nonparametric analyses were chosen due to the ordinal nature of the data. A Wilcoxon Signed Ranks test was used to analyze differences between pre and post course redesign.

In the qualitative portion of the study, focus group interviews were audio recorded and transcribed using a transcription service and then checked for accuracy by the student research assistant. One researcher and the student research assistant openly coded the data using Saldana's (2016) methodology. Next, the coding was categorized according to repeated and emerging ideas to draw connective themes. Investigators then independently reviewed the data for a second time before debriefing together once again to determine further connections, categories, and themes. The investigators recorded the themes, subthemes, and interview statements in a secure document.

After separate analysis of quantitative and qualitative data, the data were integrated using the triangulation protocol developed by Farmer et al. (2006). Triangulation provided a clearer and broader interpretation of the data. Steps of this protocol include (1) sorting the findings, (2) comparing findings to determine the degree and type of convergence, (3) comparing all segments through a global assessment, (4) comparing the nature and scope of data for completeness, and (5) comparing findings among researchers to determine agreement. For convergence coding, the coding scheme was as follows:

- Agreement: Full agreement between both sets of results for meaning and prominence
- Partial agreement: Agreement on one but not both components of meaning and prominence
- Silence: One set of results covers the theme but the other is silent
- Dissonance: Disagreement between the sets of results on both elements of comparison, meaning and prominence

## Results

### Quantitative Data

All 116 students (65 campus, 51 hybrid) completed pretesting, while 106 completed posttesting (65 campus, 41 hybrid). Quantitative data analysis sought to answer the research questions of effectiveness of a course designed using Fink's (2013) model, andragogical principles, and active learning strategies in improving student learning outcomes as well as to compare effectiveness between face-to-face and hybrid delivery models.

Frequency results indicated a general increased number of students within both groups rating their learning higher from pretest to posttest for each of the course objective questions on the survey. Analysis of within group differences revealed a statistically significant improvement ( $p \leq 0.05$ ) from pretest to posttest means for all questions for the campus group. For the hybrid group of students, a statistically significant improvement ( $p \leq 0.05$ ) was found for all questions except question 9 ( $p = 0.416$ ), where students rated their excitement about neuro-occupation and searching out neuroscience and occupation-based evidence as  $3.57 \pm 0.67$  at pretest and  $3.68 \pm 0.65$  at posttest, which falls between Likert responses of 3 (most of the time) and 4 (always) (see Table 3).

Finally, campus and hybrid groups were compared at pretest and posttest for each of the survey questions and course learning objectives to determine between group differences. There were no statistically significant differences ( $p \leq 0.05$ ) found between groups for any question at pretest or posttest (see Table 4).

End-of-course evaluations were completed by 67 students in 2018 (pre-redesign) and 90 students in 2019 (post-redesign). Average student ratings in 2018 rated the course as "average":  $3.00 \pm 1.24$ . In 2019, students rated the course as "very good":  $4.37 \pm 0.83$ . This proved to be a statistically significant improvement ( $p < .001$ ).

**Table 3***Within Group Differences of Means By Delivery Model for Pretest and Posttest Responses by Survey Question*

Delivery Model		Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9	Question 10
Campus-based	Pretest (Mean±SD)	2.95 ± 0.57	2.23 ± 0.83	1.94 ± 0.77	1.75 ± 0.95	2.15 ± 0.83	2.17 ± 0.88	2.35 ± 0.96	2.91 ± 0.86	3.38 ± 0.84	2.14 ± 0.92
	Posttest (Mean±SD)	3.43 ± 0.53	3.08 ± 0.62	2.91 ± 0.86	3.29 ± 0.68	3.29 ± 0.66	3.31 ± 0.68	3.49 ± 0.62	3.62 ± 0.55	3.63 ± 0.58	3.32 ± 0.69
	p-value	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	0.016*
Hybrid	Pretest (Mean±SD)	2.96 ± 0.56	2.18 ± 0.95	1.94 ± 0.86	1.76 ± 1.07	2.27 ± 0.98	2.35 ± 0.84	2.41 ± 1.08	2.90 ± 0.99	3.57 ± 0.67	2.20 ± 1.02
	Posttest (Mean±SD)	3.49 ± 0.51	3.22 ± 0.53	3.02 ± 0.47	3.32 ± 0.47	3.29 ± 0.51	3.29 ± 0.49	3.49 ± 0.51	3.56 ± 0.50	3.68 ± 0.65	3.51 ± 0.68
	p-value	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	<.001*	0.416

**Note.** Pretesting: campus ( $n=65$ ) and hybrid ( $n=51$ ); posttesting: campus ( $n=65$ ) and hybrid ( $n=41$ ). Likert responses: 0= never, 1= sometimes, 2= about half the time, 3= most of the time, and 4= always. \*Indicates significance at  $p \leq 0.05$

**Table 4***Between Group (Campus and Hybrid) Differences of Means for Pretest and Posttest Responses by Question*

	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9	Question 10
Pretest (p-value)	0.953	0.671	0.927	0.869	0.385	0.233	0.484	0.757	0.244	0.695
Posttest (p-value)	0.622	0.271	0.493	0.889	0.768	0.760	0.734	0.465	0.424	0.114

**Note.** Pretesting: campus ( $n=65$ ) and hybrid ( $n=51$ ); posttesting: campus ( $n=65$ ) and hybrid ( $n=41$ ). Likert responses: 0= never, 1= sometimes, 2= about half the time, 3= most of the time, and 4= always. \*Indicates significance at  $p \leq 0.05$

## Qualitative Data

The qualitative portion of the study sought to better understand OT student preferences for learning and perceptions of active learning strategies within the classroom focused on the six taxa of significant learning as outlined by Fink (2013). Nineteen students volunteered to participate in the focus group portion of the study, nine from the campus pathway and 10 from the hybrid pathway. Campus and hybrid students reported similar perceptions for most topics with a few noticeable differences regarding their examples of active learning and the expectations of instructors. Analysis revealed four main themes: *Effective course design*, *active learning*, *andragogy and me*, and *hindsight is 20/20*. Within the *andragogy and me* theme, there were three subthemes: *Motivation*, *real life is real learning*, and *my learning, my responsibility*. Results from each theme and subtheme are presented below with supporting quotes noted as superscripts which are provided in Table 5.

### **THEME 1: Effective Course Design**

Both student pathways held similar beliefs related to effective course design, assessment methods, and learning activities, with some differences in their course preferences. Students discussed the effectiveness of exams as a method of assessment of their overall learning. Some students remarked that courses with exams pushed them to study more often and more diligently, while other students commented that courses with exams created unnecessary stress. However, students seemed to agree that in the Fall 2019 OTD course, the lack of exams was countered with the robust engagement in meaningful learning activities that enhanced knowledge retention.<sup>1</sup>

Campus students reported effective course design included a variety of learning activities to help them understand, apply, and retain course content. Examples that increased attention and engagement in class included structured note taking, videos, and learning check points using interactive programs such as Kahoot. Hands-on activities, reiterating concepts in multiple ways, and discussions with peers were reported to help enhance understanding and application of course concepts.<sup>2</sup>

Hybrid students reported some differences in the course methods that kept them engaged in class. They felt the asynchronous format of hybrid learning allowed students to focus on the course material when they were physically and mentally ready to learn.<sup>3</sup> The hybrid students also emphasized the intentional integration of evidence-based practice into the Fall 2019 course assignments and the positive impact on their application and understanding of the material. They found this aspect of the assignments challenging but essential for their ability to provide effective client care as well as expanding credibility of the profession. Hybrid students also appreciated assignments with randomly assigned partners as it allowed them the opportunity to practice working with others who thought and acted differently than themselves.<sup>4</sup>

Both hybrid and campus students agreed on other course design elements that enhanced the learning experience. One example mentioned was the development of a learning community via media platforms such as Facebook, Flipgrid or Padlet with a focus on the Fall 2019 course content.<sup>5</sup> These platforms also provided students with multiple avenues for reflection, idea sharing and an opportunity to articulate understanding of course concepts.<sup>6</sup> Additionally, students found the “real-world” assignments, such as writing a discharge plan, helpful because it was an exercise that simulated a routine task for practicing occupational therapists.<sup>7</sup>

Another common thread of effective course design between pathways was the learning activities designed to help them understand and retain information. Students found in-class summary and review opportunities, such as time to share what was learned in the assigned readings and providing a summary of previous class sessions like a “road map” to the course objectives,<sup>8</sup> valuable to their development of professional skills and behaviors.<sup>4</sup> The variety of interactive activities including quizzing or learning checkpoints during class, small group discussion, and less emphasis on note-taking was an additional element of effective course design highlighted by both pathways.<sup>9</sup> Students’ course design preferences seemed to relate to active learning and real-world experiences.<sup>10</sup>

### ***THEME 2: Active Learning***

Campus and hybrid students both preferred active learning strategies and had similar definitions for active learning. Students referred to active learning as anything other than sitting and listening,<sup>11</sup> and that learning felt active when they could participate even if viewing the class session asynchronously.<sup>12</sup> Additionally, students felt active when learning was conversational and more of a group effort.<sup>13</sup>

Campus and hybrid students did differ, however, in their examples and preferences of active learning activities. Campus students’ examples included simulations, practicums, small group discussions, quizzing, repetition, seeing personal progress over time, and cognitive manipulation of material (case studies, practice-based learning, creating individualized resources).<sup>14</sup> Hybrid students reported that active learning took on a more self-directed role<sup>15</sup>, and examples of active learning opportunities included discussion boards, online bulletin boards for idea sharing (Padlet), optional readings and resources, lock-step modules, taking time to reflect, and talking with family members or friends about material in place of in-class discussions with peers.<sup>16</sup> Hybrid students did benefit from listening to campus student discussions when viewed both synchronously and asynchronously and appreciated follow up participation assignments to demonstrate understanding of course content.<sup>17</sup> Student perceptions of active learning lends itself to further discussion of the next theme related to whether their preferences align with andragogy principles.

### **THEME 3: Andragogy and Me**

This theme explores student perceptions of their learning preferences in comparison with Fink's (2013) taxonomy for significant learning and principles of andragogy. Generally, campus and hybrid students reported similar emphasis on learning being one's personal responsibility, the motivation of personal achievement as both a student and future professional, and the necessity for relevance to real life experiences.

**Motivation to Learn.** Students' motivation to learn course material and engage in class sessions fell into two categories related to personal achievement: The desire for academic achievement and to become a competent OT. Academic achievement seemed to fuel the need to know course information, sparking the internal motivation to study and earn the desired grade. Open note quizzes were reported to lessen the pressure while closed-note exams increased the sense of urgency to study and learn.<sup>18</sup> However, the motivation to earn a grade seemed balanced by the motivation to learn the clinical skills needed to attain their end goal of becoming an excellent and effective OT.<sup>19</sup>

Level I fieldwork experiences or a class instructor's intentional note that content was relevant to Level II fieldwork seemed to provide students with confirmation that the content related to their motivation of becoming an OT.<sup>20</sup> When the relevance of course content to the end goal was validated by the anticipation of being prepared for clinical experiences, students' motivation to learn was heightened. The most motivating activities reported seemed to relate to application of material to real life experiences.

**Real Life is Real Learning.** Both student pathways stated that if course concepts did not appear to be relevant to real life, they were less likely to retain it. When instructors applied course concepts to case studies, clinical practice examples, or the routine skills needed to be an OT, students reported better attention in class and more intention to study outside of class.<sup>21-22</sup> This was especially true for courses that focused more on theory and conceptual models of practice where the application to real life was less intuitive without tangible examples.<sup>23</sup> Students in both pathways felt that learning, regardless of the motivation, was a personal responsibility.

**My Learning, My Responsibility.** Self-direction and accountability were characteristics students noted in the didactic coursework in their OT curriculum. Faculty treated students as capable learners by encouraging them to look for answers to their own questions and report back to the class on their discoveries.<sup>24</sup> Students acknowledged faculty efforts to act as facilitators in the classroom when they developed assignments that focused on the process of learning rather than simply organizing and delivering knowledge. Examples included lab preparation worksheets and class participation assignments in which the emphasis was on the fundamentals of learning and application rather than the grade awarded. Students acknowledged that self-direction was an important part of being a professional student and a future

professional. Additionally, they linked the amount of effort with the amount of benefit to their learning.<sup>25</sup> Interestingly, students did not comment about themselves as capable or self-directed learners innately, but almost in a manner of being pushed by instructors to establish their own effective learning styles, habits, and routines.<sup>26</sup>

Student expectations of instructors and how instructors facilitated learning differed between the campus and hybrid students. Campus students preferred that instructors provide additional structure and organization initially and then transition into a facilitator role.<sup>27</sup> Hybrid students referred to instructors as facilitators of self-directed learning with students taking the lead in the learning process from the beginning.<sup>28</sup> However, they also emphasized the importance of receiving instructions and materials in advance of an active-learning lecture to allow for adequate preparation and engagement in the class session.<sup>29</sup> Students in both pathways recalled instances where instructors would guide the student to research answers to their own questions and report what they learned back to the class. Students' preferences for this method were mixed, but many seemed to agree that although frustrating and challenging, the process of finding the answer yourself was a more effective way to retain the information and more beneficial for developing self-directed learning habits.<sup>30</sup> Students acknowledged that "the struggle" is an important motivator for self-directed learning, and it helps them develop problem solving and critical thinking skills.

#### ***THEME 4: Hindsight is 20/20***

Student perceptions of the learning process seemed to come full circle as they reflected on the struggle through and, in hindsight, the benefits of their didactic coursework. They developed an appreciation of their less-preferred learning activities and assignments as they began to understand the link to their motivation to become an OT during their Level II fieldwork experiences.<sup>31</sup> During fieldwork experiences, students reported they now better understood the rationale behind various course design elements.

As students' personalities and learning preferences varied, so did their examples of least favorite assignments and lessons learned. One student reflected on the systematic approach to problem-based learning, and that, in hindsight, it actually did simulate the critical thinking process of an OT in clinical practice.<sup>32</sup> Several students recounted detailed assignment feedback which helped them pinpoint gaps in knowledge or clinical reasoning that were crucial to the development of professional practice skills and professional identity.<sup>33</sup> Another student dreaded personal video assignments, but found the practice not only made them a better speaker, but also revealed additional opportunities for expression and creativity.<sup>34</sup> Other students remarked on the amount of effort required for certain assignments but were grateful for the deeper level of understanding that followed.<sup>35</sup> Students found the evidence-based practice process tedious and challenging but essential to their end goal of becoming an effective OT.

Students developed a realization of all they had learned as well as an appreciation of all they had yet to learn.<sup>36</sup> With additional experience in the clinical setting, students had a renewed desire to look back at instructor resources and to continue seeking information on specific topics of interest or relevance to their current setting.<sup>37</sup> The benefits of the systematic approach to problem-based learning, detailed feedback on treatment plan assignments, videos of oneself articulating and applying course concepts, searching the literature for the right article, and the significant effort it took to deepen the learning experience helped students understand the rationale behind a course design based on Fink's (2013) taxonomy for significant learning and principles of andragogy and active learning.

### **Integration of Mixed Methods**

Three key concepts were identified from the research questions: Effectiveness of course design using andragogical and active learning principles, student learning preferences, and differences between content delivery models (face-to-face or hybrid). Results of the integrated mixed methods analysis are presented in Table 6. When quantitative and qualitative strands were mapped to these main concepts, there were two areas of agreement where data converged and one area of partial agreement. Both sets of data agreed that the course design was effective in supporting student learning. Both sets of data are reflective of student differences in delivery models, especially as it relates to student self-direction and excitement. Finally, while quantitative data did not directly measure student learning preferences, positive results in student learning can imply that teaching approaches in this course did align with student preferences. Collectively, mixed methods were reflective of overall positive results from the course redesign for a blended group of learners.

**Table 5***Supporting student quotes of qualitative themes and subthemes*

Theme	Supporting Quote
Effective Course Design	<ol style="list-style-type: none"> <li data-bbox="443 391 2022 586">1. "One of the nice things about it was that the class didn't have any exams in it, and one participant said earlier, that kind of takes the pressure off, but with those activities, like you know we had one every class, so we still had to be engaged so that we could complete those [active learning] activities... we were learning, but it didn't seem like typical read your textbook, take the exam kind of thing, so it was fun and engaging without being too stressful." (Campus Student 3)</li> <li data-bbox="443 586 2022 716">2. "I liked all those activities because not only did it help us learn what we were actually learning in [Fall 2019 course] a different way, but it helped us to be more flexible and not just come to class and think we're going to learn the exact same way every day." (Campus Student 8)</li> <li data-bbox="443 716 2022 878">3. "I like the lecture, especially the fact that it's asynchronous...and that way I have time to work out and then watch lecture, my body is more ready to learn, so I personally like that aspect of it, so that I kind of get to dictate when I watch..." (Hybrid Student 5)</li> <li data-bbox="443 878 2022 1089">4. "It really helped me to work with someone who I knew I didn't know very well or had a very different style than I did, and it was kind of very much a real life example of working with other people, 'cause I typically choose the same people to work with unfortunately, and so I think it's a great experience because I worked with people who had really great ideas that were different than mine, and different styles of working, but it helped really to grow my professionalism." (Hybrid Student 1)</li> <li data-bbox="443 1089 2022 1235">5. "I loved the Facebook group. I love coming across an article and being like this is [Fall 2019 course content] and being able to share that, I just feel like it provided so much real-world context to what we were learning and such a fun to engage as a class community." (Campus Student 5)</li> <li data-bbox="443 1235 2022 1414">6. "With the Flip Grids...I had to take the time to sit down and figure out what I wanted to say, and that really challenged me in realizing that I didn't actually understand the material as well as I thought I did, and so I had to revisit the materials that I could speak concisely enough, but also in a way that conveyed what I was actually thinking. And in a way that reflected what I actually knew or didn't know." (Hybrid Student 7)</li> </ol>

7. "I like we got to pick our person [as a client for treatment plan assignment] ...This is actually something that OTs can work on. I thought that was really beneficial and the most real-life experience I could have."  
(Hybrid Student 5)
8. "I think classes that had a lot of kind of repetition and then tying it all together at the end really helped... We kind of re-visited that [concept]... Every class period... as tedious as it was, it's still stuck in my brain."  
(Campus Student 3)
9. "I always remember being engaged throughout the entire class, and we used a lot of hands-on activities where we worked in groups and were able to bounce ideas off each other and... I learned a lot in that class and how we talked about the readings every class, it made me really want to do the reading." (Campus Student 9)
10. "I think it was more of a conversation, another reminder of what we learned and then how that affects the world around us because we're OTs, but we're changing the world at the same time, and so I think it's being part of adults, it's like you were opening our eyes, we're contributing to society." (Campus Student 7)
11. "Active learning for me is any opportunity outside of just sitting there and listening to a lecture." (Campus Student 5).
12. "To me, active learning as a distant student were activities that we could still participate in, even if we didn't watch the lecture live." (Hybrid Student 9)
13. "A lecture that really made me think of active learning was when [Guest lecturer]...had us all close our laptops and whatever devices. And it felt like a conversation...he made it feel like we were learning it together." (Campus Student 6)
14. "For me, part of active learning is really being able to see what progress we're making...to see us going from hypothetically failing our first Kines[iology] practicum [but] by the end of it, being very comfortable with our skills." (Campus Student 2)

Active Learning

Andragogy & Me  
*Motivation to  
 Learn*

15. "As a distant student, not being able to be in class, that active learning is a little bit more self-directed, so being able to initiate that and take responsibility for that on our own." (Hybrid Student 10)
16. "I would talk with family members, and just that explaining of information helped me understand it better. So I think active learning too is being able to explain what happened in lecture to friends, family, as roommates." (Hybrid Student 5)
17. "For discussions in class where campus students got in small groups and got to discuss, I would think of things too... And then get to hear what campus students said, but I didn't necessarily get to engage with others... So I really liked when we had to pull in outside sources or go and do a PadLet or something, to where it was more individualized active learning." (Hybrid Student 9)
18. "I do feel that the courses that had more exams and tougher exams or required us to learn more information, I felt more of a need to know it, and then I studied harder and I studied more and therefore, I feel like I retained it more versus some different classes that had fewer exams or open note exams." (Campus Student 7)
19. "It really comes down to our clients. I think we have a responsibility to know how to best serve them." (Hybrid Student 7)
20. "Coming back from fieldwork and feeling a little bit more motivated and having that opportunity to apply and what we've learned, and understanding why we need to learn what we're continuing to learn." (Campus Student 5)
- Real Life is  
 Real Learning*
21. "If it's not relevant to what we need to apply, or how it's going to help us become better practitioners, there's only so much effort that I can use to retain that information." (Hybrid Student 7)
22. "I think those [Fall 2019 course assignments] felt like the most relevant assignments that we've had to do throughout our coursework... That felt like something we would have to do as OTs, and it really motivated me to put the work in." (Hybrid Student 7)

*My Learning,  
My  
Responsibility*

23. "I'm not huge in the models of practice or frames of reference, but when they're put into real life situations, it makes it way easier to understand, and I feel like they're more meaningful then." (Hybrid Student 5)
24. "She [course instructor] really stresses individual learning, because if we would ask a question and she wasn't necessarily sure or she wanted us to learn about it more in-depth, she would say, 'Sounds like a special assignment!' We would then look it up ourselves and then report back the next week." (Campus Student 5)
25. "You might not have the answer for everything. So being willing to take that next step and go, beyond to provide that next level of patient care to find the answer and make that unique to the patient." (Hybrid Student 10)
26. "I feel so much more confident than I did. I think it was just important to honestly embrace the struggle a little bit and just be honest with myself and how I was learning, and the time I was taking. It [study habits] needed to be at a higher standard. It took me a hot second to get there, but we're there." (Hybrid Student 6)
27. "I think in the beginning courses, it was more structured as it would be as like an undergrad structure, just because we needed to kind of know the basics and the fundamentals of what we're doing, but then as we progress through the program, then we saw a lot more facilitation and self-directed learning." (Campus Student 1)
28. "[Instructors] not necessarily having the answers but instilling that self-directive learning for students to take that next step and go and research on their own and how they can apply it to them specifically, and how it can be used in a variety of situations or circumstances." (Hybrid Student 10)
29. "I think it was helpful when the professors would email before and say, this is what we're doing in class, here are the items you need to participate, because that was helpful to plan and just plan to be more active during the lecture as well." (Hybrid Student 2)
30. "I think when learning is more of a struggle, I think that it makes more of an impact than just if answers kind of just handed to you." (Hybrid Student 5)

Hindsight is 20/20

31. "I have started my fieldwork in the past two and a half weeks. I feel like I've been able to learn so much using all that we have learned in the past two years, being able to apply that in real life situations. I feel like I've actually really learned something." (Campus Student 4)
32. "At first, I didn't like it [problem-based learning] so much, but the active learning of figuring out what are the client factors, what are your priorities, and then how are you going to make that into an intervention was really beneficial because I realized that's what we're going to be doing in the future." (Campus Student 3)
33. "It [challenging assignment] highlighted where I was struggling and looking for the why, which helps me now when I justify, talk about treatment plans and priorities that I have for the patient that I have now. So in a sense, I was glad that I failed more then to help me now, as opposed to being super successful then and having a false of the security." (Hybrid Student 8)
34. "And then also with the flip grid, to be honest, I did not like that at first at all, I was kind of dreading it every time that we did it, but actually I think it made me a better speaker too, and able to present things better and kind of overcome a fear as well, and actually, it's motivated me to do something, I'm actually probably going to do a video blog in my capstone project, so kind of helps prepare me for the future as well." (Campus Student 4)
35. "It was a challenge at first. I didn't like it where I had to really dig a lot deeper to find how it connected to [Fall 2019 course], but once I was done with it, I was thankful for being able to dig deeper and understand the connection." (Campus Student 6)
36. "Even though we've learned so much, I feel like there's still so much that we haven't learned." (Campus Student 3)
37. "Treatment sessions [assignment] were probably one of the most challenging assignments that I did in school, just because everything that you wanted to do with your client had to be backed up with evidence. I found that very challenging, and I spent many, many hours on these assignments, but in return, it became the gold standard... We are here to make a difference, and to make a difference, you have to put in the work for it. And so as much as I probably did not like the assignment, it really, really... It did me good." (Hybrid Student 9)

Table 6

*Convergence Coding of Mixed Methods Analysis*

Quantitative Strand	Convergence code	Qualitative Strand
<b>Effectiveness of Course Design</b>		
<ul style="list-style-type: none"> <li>• Campus group demonstrated statistically significant within group improvements for all course objectives.</li> <li>• Hybrid group demonstrated statistically significant within group improvements for all objectives except question 9 where students were nearly equally as excited to learn course content at pretest as posttest.</li> <li>• On end-of-course evaluations students rated the course as “very good”</li> </ul>	Agreement	<ul style="list-style-type: none"> <li>• Robust learning activities supported retention</li> <li>• Evidence-based emphasis supported hybrid learning</li> <li>• Variety of activities supported learning, including discussions, sharing, quizzing, and case studies.</li> <li>• Learning community through sharing platforms enhanced learning</li> </ul>
<b>Student Learning Preferences</b>		
<ul style="list-style-type: none"> <li>• Not directly tested. However, inference can be made that student improvements are indicative that approaches supported their learning preferences.</li> <li>• On end-of-course evaluations students rated the course as “very good”</li> </ul>	Partial Agreement	<ul style="list-style-type: none"> <li>• Students prefer active learning</li> <li>• Students prefer relevance to future practice</li> </ul>
<b>Differences Between Delivery Models</b>		
<ul style="list-style-type: none"> <li>• There were no significant differences between groups for any question at pretest or posttest.</li> <li>• Both groups demonstrated significant improvements for all course objectives except hybrid learners for question 9 related to excitement in learning, with higher initial excitement than campus learners.</li> </ul>	Agreement	<ul style="list-style-type: none"> <li>• Both groups of students prefer active learning. However, to campus students, active learning includes simulations, discussions, and quizzes. Hybrid students felt active learning included online sharing, reflection, and engagement with family and friends.</li> </ul>

- Both groups prefer real life application.
  - Hybrid students view instructors as facilitators and tend to lead their learning process from the beginning.
  - Campus students prefer more instructor structure and organization initially.
- 

### Discussion

Overall, study outcomes indicate that a course designed using Fink's (2013) taxonomy for creating significant learning experiences, active learning principles, and principles of andragogy was effective in improving student outcomes of course objectives for a blended face-to-face and hybrid delivery model. Students within both pathways (face-to-face and hybrid) significantly improved learning of course objectives from the beginning to the end of the course with the exception of question 9 among hybrid students. Hybrid students were nearly equally as excited about neuro-occupation and searching out neuroscience and occupation-based evidence at the beginning of the course as the end of the course (pre:  $3.57 \pm 0.67$ , post:  $3.68 \pm 0.65$ ,  $p=.416$ ). Qualitative findings indicated that hybrid students tended to be more self-directed in their learning, which might explain their initial and continued excitement when compared with the campus students (pre:  $3.38 \pm 0.84$ , post:  $3.63 \pm 0.58$ ,  $p=.016$ ). Campus and hybrid students similarly ranked their learning of course objectives, suggesting that the redesigned course activities that emphasized students' adult learning needs and Fink's taxonomy were effective at enhancing student learning regardless of course delivery method. This is consistent with research by Price et al. (2016) which found that participant interaction, learner control, and course clarity were related to student satisfaction and performance regardless of course delivery method. Thus, educators should shift their focus from delivery method to other course design elements that increase active engagement and consider the need of adult learners to improve student outcomes.

The results of this study further suggest that active learning strategies are effective in a blended cohort of students. In this study, it was necessary for instructors to utilize active learning strategies and activities which could be accessed by both face-to-face and online learners. Therefore, when designing a course for a blended student cohort, technology-based instructional tools for in-class strategies and participation activities that allow equitable access and contribution from all students should be used.

The students in this study expressed preference for specific course design elements like those noted in previous studies: learning in a community (Henderson et al., 2020; Poll & Weller, 2014); facilitating "the struggle" which helped students develop skills in critical thinking, reflection, and active learning (Branzetti et al., 2019); encouraging students to look and search beyond class content (Benaroya, 2021); and use of online tools for idea

exchange and sharing, timely feedback, and an environment that taps into student motivations (Poll & Weller, 2014). In this study, students in the hybrid pathway were instructed to be self-directed during active learning activities. Qualitative feedback indicated that hybrid students benefited from hearing and observing the active learning components as they happened live with face-to-face students; for example, in-class discussions were recorded. Use of these strategies with distance-only learners would require additional considerations as this study revealed that hybrid students benefitted from campus student interactions even when viewed asynchronously. For distance only cohorts, instructors should facilitate meaningful discussion and active learning components to provide formative feedback that is not gained from observing and listening to the campus-based discussion and active learning activities.

Qualitative results of this study indicated that students valued real-world application, variable assignments and learning activities, and Level II fieldwork experiences which confirmed the relevance of course content to their end goal of becoming an OT. These results coincide with other studies that reported similar elements as essential to significant learning experiences. Bonk and colleagues (2002) investigated the effect of a blended delivery format including asynchronous, synchronous, and residential (face-to-face) instruction on student learning. Students responded favorably to the blended format and emphasized the meaningfulness of content, the role of the instructor, flexible and active learning strategies, and convenience of the course format (Bonk et al., 2002). They also noted that the face-to-face, residential components of the course (comparable to Level II fieldwork experiences noted in this study) seemed to bring all the concepts together (Bonk et al., 2002).

Additionally, qualitative results revealed a potential conflict between students' readiness to learn and apply knowledge in real ways now and their self-concept as a learner, including the time and effort it takes to fully engage in the learning process and develop the skills of a self-directed learner. Students acknowledged that previous attitudes about least favorite course elements were detrimental to their motivation and self-concept as a learner. They reported a general lack of understanding of how some course elements related to their end goal but seemed to develop an expanded appreciation of the learning process and their self-concept as a learner after completion of didactic course work and initiation of fieldwork experiences. To fully tap into student motivation, instructors should be explicit in how they orient students to course content and treat students as capable partners in the learning process (Henderson et al., 2020).

### **Limitations**

Some limitations of this study include participant recruitment restriction to one cohort within a single university. Additionally, in the quantitative portion of the study, outcomes focused on student perception of meeting course objectives rather than an objective measure of meeting course objectives, such as through an overall course grade or assignment grade. However, we felt that student perception was an important factor as

it relates to student confidence and likely results from assignment performance. Some of the learning may have resulted from the feedback received on an assignment and thus felt that a grade might not be the best marker of learning. In the qualitative portion, the COVID-19 pandemic altered the intended delivery format of the focus groups from in person to virtual. In addition, students were interviewed directly by faculty from the course; while honest feedback was encouraged, this may have altered students' willingness to be open and direct in their feedback and perceptions. Future research should focus on a larger and more diverse pool of students from multiple programs, a mix of objective and subjective measures of learning, and use of investigators who are not directly faculty and instructors of the students.

### **Implications for Occupational Therapy Education**

This study found that course design using Fink's (2013) taxonomy for significant learning and principles of andragogy and active learning was effective at helping students achieve a deeper level of understanding and develop habits of self-directed learning. Faculty should consider use of this methodology for course design for OT students in order to promote significant and lifelong learning. Active learning strategies were found to be effective for both campus-based (face-to-face) and hybrid learners as they resulted in a deeper understanding of course concepts. Instructors should focus less on delivery method (face-to-face or distance) when they consider course activities and assignments and instead consider ways to actively engage students through real-life opportunities. Finally, instructors should be explicit in describing the practical purpose and rationale for learning activities and assignments.

### **Conclusion**

The results of this study suggest that a course founded on principles of andragogy and active learning and designed using Fink's (2013) taxonomy of learning was effective at helping students achieve a deeper level of understanding and develop self-directed learning habits. This was significantly more effective than a traditionally designed lecture course. Students, regardless of the method of course delivery, benefited from active learning strategies and showed a strong preference for assignments and learning activities linked to real-life experiences. Instructors should invite students to participate as capable partners in the learning process and consider how to best orient students to course content to help them understand the relevance to personal motivations and goals. More research using objective measures of student learning is needed.

---

### **References**

- Accreditation Council for Occupational Therapy Education. (2018). 2018 ACOTE standards and interpretive guide. Retrieved from <https://www.aota.org/~media/Corporate/Files/EducationCareers/Accredit/StandardsReview/2018-ACOTE-Standards-Interpretive-Guide.pdf>
- American Occupational Therapy Association. (2015). *Academic programs annual data report: Academic year 2014-2015*.
- American Occupational Therapy Association. (2020). *Academic programs annual data report: Academic year 2018-2019*.

- Benaroya, T. L., George, J. C., McKernan-Ace, D., & Swarbrick, M. (2021). Application of active learning strategies for online delivery in an occupational therapy assistant program. *Journal of Occupational Therapy Education*, 5(2). <https://doi.org/10.26681/jote.2021.050210>
- Bierema, L. L. (2020). Incorporating active learning into your education repertoire. In M. Fedeli, & L. L. Bierema (Eds.) *Connecting Adult Learning and Knowledge Management: Strategies for Learning and Change in Higher Education and Organizations* (pp. 27-50). Springer. [https://doi.org/10.1007/978-3-030-298722\\_2](https://doi.org/10.1007/978-3-030-298722_2)
- Bonk, C. J., Olson, T. M., Wisher, R. A., & Orvis, K. L. (2002). Learning from focus groups: An examination of blended learning. *International Journal of E-Learning & Distance Education/Revue internationale du e-learning et la formation à distance*, 17(3), 97-118.
- Branzetti, J., Gisondi, M. A., Hopson, L. R., & Regan, L. (2019). Aiming beyond competent: The application of the taxonomy of significant learning to medical education. *Teaching and Learning in Medicine*, 31(4), 466-478. <https://doi.org/10.1080/10401334.2018.1561368>
- Farmer, T., Robinson, K., Elliott, S. J., & Eyles, J. (2006). Developing and implementing a triangulation protocol for qualitative health research. *Qualitative Health Research*, 16, 377-394. <https://doi.org/10.1177/1049732305285708>
- Fink, L. D. (2013). *Creating significant learning experiences*. Wiley.
- Gee, B. M., Salazar, L., Porter, J., Clark, C., & Peterson, T. W. (2017). Overview of instructional technology used in the education of occupational therapy students: A survey study. *Open Journal of Occupational Therapy*, 5(4). <https://doi.org/10.15453/2168-6408.1352>
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82. <https://doi.org/10.1177/1525822X05279903>
- Harris, N., & Welch Bacon, C. E. (2019). Developing cognitive skills through active learning: A systematic review of health care professions. *Athletic Training Education Journal*, 14(2), 135-148. <https://doi.org/10.4085/1402135>
- Henderson, W., Plattner, L., Baucum, B., Casey, T., & Grant, A. (2020). Student involvement in flipped classroom course design. *Journal of Occupational Therapy Education*, 4(3), 1-24. <https://doi.org/10.26681/jote.2020.040311>
- Howard, P. J. (2014). *The owner's manual for the brain* (4<sup>th</sup> ed.). HarperCollins Publishers.
- Ikiugu, M. N., & Smallfield, S. (2015). Instructing occupational therapy students in the use of theory to guide practice. *Occupational Therapy in Health Care*, 29(2), 165-177. <https://doi.org/10.3109/07380577.2015.1017787>
- Khan, A., Egbue, O., Palkie, B., & Madden, J. (2017). Active learning: Engaging students to maximize learning in an online course. *Electronic Journal of e-Learning*, 15(2), 107-115.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner: The definitive classic in adult education and human resource development* (8<sup>th</sup> ed.). Routledge.
- Liddiard, K., Batten, R., Wang, Y., Long, K., Wallis, A., & Brown, C. A. (2017). Job Club: A program to assist occupational therapy students' transition to practice. *Education Sciences*, 7(70), 1-8. <https://doi.org/10.3390/educsci7030070>

- Lumpkin, A., Achen, R. M., & Dodd, R. K. (2015). Student perceptions of active learning. *College Student Journal*, 49(1), 121-133.
- Merriam, S. B. & Bierema, L. L. (2014). *Adult learning: Linking theory and practice*. Jossey-Bass.
- Miller, C. J., & Metz, M. J. (2014). A comparison of professional-level faculty and student perceptions of active learning: Its current use, effectiveness, and barriers. *Advances in Physiology Education*, 38, 246-252.  
<https://doi.org/10.1152/advan.00014.2014>
- Mu, K., Coppard, B. M., Bracciano, A. G., & Bradberry, J. C. (2014). Comparison of on-campus and hybrid student outcomes in occupational therapy doctoral education. *American Journal of Occupational Therapy*, 68, S51-S56.  
<https://doi.org/10.5014/ajot.2014.685S02>
- Online Learning Consortium. (2015). *Updated e-learning definitions*.  
<https://onlinelearningconsortium.org/updated-e-learning-definitions-2/>
- Poll, K., & Weller, S. (2014). Six instructional best practices for online engagement and retention. *Journal of Online Doctoral Education*, 56.
- Price, R. A., Arthur, T. Y., & Pauli, K. P. (2016). A comparison of factors affecting student performance and satisfaction in online, hybrid and traditional courses. *Business Education Innovation Journal*, 8(2), 32-40.
- Saldana, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). SAGE Publications.
- Saunders, L., & Wong, M. A. (2020). *Instruction in libraries and information centers*. Windsor & Downs Press. <https://doi.org/10.21900/wd.12>
- Sharoff, L. (2019). Creative and innovative online teaching strategies: Facilitation for active participation. *Journal of Educators Online*, 16(2), 1-9.  
<https://doi.org/10.9743/JEO.2019.16.2.9>
- Towns, E., & Ashby, S. (2014). The influence of practice educators on occupational therapy students' understanding of the practical applications of theoretical knowledge: A phenomenological study into student experiences of practice education. *Australian Occupational Therapy Journal*, 61(5), 344-352.  
<https://doi.org/10.1111/1440-1630.12134>