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Abstract

Although reasoning, reflective practice, and evidence-based practice are essential professional skills for occupational therapy students, there is not a clear understanding of how these skills are taught. We used Delphi methodology to explore how occupational therapy educators conceptualize best-practices for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. Participants were required to be educators in a master's-level or higher occupational therapy program for at least three years, based in the United States, and available across multiple survey rounds. The nine participants nominated a total of 94 teaching strategies, of which 90.4% (n = 85) reached consensus after Round 3. Consensus strategies were largely experiential, active, and explicit teaching approaches. Consideration of how these teaching strategies used by occupational therapy educators support students in integrating skills with each other and into practice can facilitate increased professional competence within occupational therapy.

Keywords

Professional skills, professionalism, curriculum, faculty perceptions

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ABSTRACT

Although reasoning, reflective practice, and evidence-based practice are essential professional skills for occupational therapy students, there is not a clear understanding of how these skills are taught. We used Delphi methodology to explore how occupational therapy educators conceptualize best-practices for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. Participants were required to be educators in a master's-level or higher occupational therapy program for at least three years, based in the United States, and available across multiple survey rounds. The nine participants nominated a total of 94 teaching strategies, of which 90.4% (n = 85) reached consensus after Round 3. Consensus strategies were largely experiential, active, and explicit teaching approaches. Consideration of how these teaching strategies used by occupational therapy educators support students in integrating skills with each other and into practice can facilitate increased professional competence within occupational therapy.

"Belonging" to occupational therapy as a profession requires embodiment of essential qualities (Benfield & Krueger, 2021). Learning these qualities begins in occupational therapy education programs, where the soft and hard skills of the profession are taught. The principles behind the core attributes of a profession are sometimes referred to as threshold concepts; once acquired, a transformation occurs and the learning cannot be undone (Nicola-Richmond et al., 2016). Occupational therapy educators must support this transformation for students to take on the professional identity of an occupational therapist. Three professional thinking skills that have been identified as threshold concepts in occupational therapy are: reasoning, reflection, and evidence-based practice (American Occupational Therapy Association [AOTA], 2020; Lecours et al., 2021; Nicola-Richmond et al., 2016). These skills have been defined in a variety of

ways; common conceptualizations from occupational therapy literature are summarized in Table 1. Occupational therapy educators acknowledge the importance of clinical and/or professional reasoning, reflection, and evidence-based practice (Marr, 2017). However, poor engagement in these skills by practicing therapists has been blamed on lack of integration of professional thinking skills—notably evidence-based practice and reflection—within occupational therapy education programs (Bannigan & Moores, 2009; Krueger et al., 2020). Further, core competencies that go beyond clinical knowledge—such as the skills to evaluate and reason through evidence from multiple sources—may not be adequately included in educational programs to equip students for practice (Chun et al., 2020). Understanding how professional thinking skills are taught may shed light on the skills entry-level clinicians ultimately bring to practice.

The pedagogy of occupational therapy education is broadly aligned with pragmatism, a "philosophy of mind/body integration" (Breines, 1987, p. 523), which includes both cognitive and bodily-experiential components (Zafran, 2019), as opposed to more didactic education philosophies. Accordingly, experiential and active learning strategies have been identified as relevant to many threshold concepts in the profession and to the overall philosophy of occupational therapy education (AOTA, 2018b; Hooper et al., 2017; Krishnagiri et al., 2019). Perhaps unsurprisingly, these transformational learning approaches have long been identified as valuable for the development of professional thinking skills like reasoning, reflection, and evidence-based practice (Brown et al., 2021; DeAngelis et al., 2013; Henderson et al., 2017; Neistadt, 1996; Royeen, 1995). Designed to support the integration of knowledge and theory in practice, experiential learning is the process of learning through doing in real-world contexts, combining hands-on activities and reflection on these experiences (Kolb, 2015). Active learning techniques are, broadly, methods of instruction that hold students accountable for their own learning; these include problem-based learning, case-based learning, and simulation activities (Harris & Bacon, 2019). Within occupational therapy education, active learning approaches to greater or lesser degrees simulate and scaffold the clinical decision-making process for students, which can involve reasoning, reflection, and/or evidence-based practice activities. Experiential and active learning approaches are therefore well-matched with one another in providing opportunities for students to actively engage with learning clinical/professional reasoning, reflective practice, and evidence-based practice skills.

Despite what is known about education strategies, in their most recent research agenda for occupational therapy education, the AOTA (2018a) acknowledged the need for research on specific instructional methods for supporting required competencies in students that match the pedagogy of the profession. Gaining a clear understanding of how occupational therapy educators view best practice approaches to teaching reasoning, reflective practice, and evidence-based practice would allow for more targeted pedagogy related research. The aim of this study was therefore to understand what occupational therapy educators view as best-practice teaching strategies for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice in students.

Table 1

Summary Conceptualizations of Professional Thinking Skills from Occupational Therapy Literature

Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
In the Occupational Therapy Practice Framework (AOTA, 2020), clinical *and* professional reasoning are defined as "the process that practitioners use to plan, direct, perform, and reflect on client care" (Schell, 2019, p. 482).	Professional reasoning, although sometimes used interchangeably with clinical reasoning, can be parsed out as its own phenomenon and is described as a more encompassing term that is inclusive of non-clinical practice settings (Unsworth & Baker, 2016).	Reflective practice is generally considered a cycle of thinking and doing that involves critiquing one's own practice to increase skilled service delivery (Kinsella, 2001; Nicola-Richmond et al., 2016; Schön, 1983). Reflective practice also incorporates paying attention to assumptions, biases, and the tacit aspects of one's reasoning. In some definitions this includes not only cognitive components of reasoning, but also affective and somatic influences and the influence of personal past experiences (Chaffey et al., 2012; Moon, 2001).	Evidence-based practice is described as the use of current, best available evidence to guide decision-making in practice (Sackett et al., 1996); within occupational therapy, this commonly includes "research evidence, information from clients, and clinicians' experience" (Bennett & Bennett, 2000, p. 179).

Note. AOTA = American Occupational Therapy Association.

Method

We used Delphi methodology following the guidelines of Conducting and REporting DElphi Studies (CREDES; Jünger et al., 2017). The data presented here is part of a larger Delphi study also examining educator definitions of these skills (Burke et al., 2024a) and their relationships to one another (Burke et al., 2024b). Delphi methodology involves iterative survey rounds with the aim of facilitating formation of expert consensus. Delphi methodology was therefore chosen for its constructivist nature to capture the perspective of occupational therapy educators. Ethics approval was obtained from Colorado State University, #3212.

Participants

We used purposive sampling for recruitment, sending invitation emails to occupational therapy educators with publication histories related to reasoning, reflection, and/or evidence-based practice. We also invited educators to participate through posts on professional message boards and social media. Inclusion criteria were: 1) worked as an occupational therapy educator for at least three years at the master's level or higher; 2) currently an occupational therapy educator; 3) based in the United States; and 4) expressed availability to participate over the course of multiple rounds of surveys. We screened potential participants on these criteria using an online form. There are no clear guidelines on how many participants should be included on a Delphi panel, but a small sample size is appropriate for relatively homogeneous groups (Skulmoski et al., 2007). Because our participant qualifications were well-defined (Hallowell & Gambatese, 2010), we aimed for a minimum of 10 participants. Although small, this panel size meets the study's exploratory purpose and is consistent with similar studies (De Villiers et al., 2005; Nicola-Richmond et al., 2016).

Procedure/Data Collection and Analysis

We collected survey responses between June and August of 2022. In a modification of the standard Delphi procedure, we chose in advance to conduct three survey rounds; this increases the likelihood of consistent participation while allowing for nuanced responses and limits the likelihood of forcing consensus amongst participants (Skulmoski et al., 2007). Participants had two weeks to complete each survey, which we distributed through an online platform. Reminder emails were sent if needed. For a visual overview of our Delphi process, see Burke et al. (2024a).

Round 1

The first survey round included a demographic questionnaire to identify professional experience, educational background, relevant courses taught, associated institution, and philosophy of occupational therapy. The Round 1 survey itself was exploratory to collect participant perspectives on educational strategies for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. Participant definitions of these skills were examined in Burke et al. (2024a); a condensed summary of those definitions is presented for reference in Table 2.

Table 2

Condensed Summary of Consensus Definitions from Burke et al. (2024a)

Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
Meta-cognitive activities that go into decision-making (i.e., critical thinking, reflection) in a clinical/healthcare setting. Involves problem-solving incorporating all available data. Has the goal of maximizing occupational engagement and quality of life.	Similar to clinical reasoning, but broader, as it is used by interdisciplinary teams and goes beyond the clinical/ healthcare setting. Has outcomes related to professional decisions and is based on professional scope of practice, demonstrating occupational therapy's unique contribution.	Continuous, intentional activity involving meta-cognitive reflection on the occupational therapy process. Requires applying a critical lens to attitudes, biases, assumptions, beliefs, knowledge, skills, experiences, and quality of thinking/actions. Has the goal of improving performance to improve outcomes.	Using the best available evidence to guide decision-making in practice. Evidence includes peer-reviewed literature, population-based evidence, client preferences, interests, and/or values, and clinician expertise/experience.

Round 2

We analyzed participant responses to the Round 1 survey to develop the Round 2 survey. Using content analysis, a systematic approach to condensing material into discrete items (Hasson et al., 2000; Stemler, 2000), the first author distilled open-ended responses into discrete teaching strategies. These strategies served as the items for Round 2. The second and fifth authors then independently checked all items against the data. We reached resolution of disagreements about the analysis through group discussion. For each item we used participant wording as much as possible.

We asked participants to rate their agreement with the effectiveness of each teaching strategy in relation to the given skill from 1 (strongly disagree) to 4 (strongly agree). We also asked them to rate the importance of each strategy for facilitating the development of the skill from 1 (not at all important) to 4 (extremely important). For both agreement and importance, they could also select “I don’t know.” Participants had the opportunity to share any additional comments in free-response boxes.

For each item, we calculated the median response value and the interquartile range (IQR) along with overall percent agreement. To calculate percent agreement, we counted the number of responses that achieved a rating of 3 (agree) or 4 (strongly agree) and divided that by the total number of responses. We considered items that achieved an IQR value ≤ 1 to have reached consensus amongst participants (Raskin, 1994; von der Gracht, 2012); we considered items with a percent agreement of ≥ 70% to have reached agreement for inclusion, consistent with similar Delphi research in occupational therapy (De Villiers et al., 2005; Nicola-Richmond et al., 2016). We also calculated median importance ratings. Finally, as needed and based on content analysis of participant comments related to the Round 2 survey items, we added items to the survey.

Round 3

For the third and final round, participants rated agreement and importance for the same items (and any additional items added based on data from Round 2). As feedback to the participants, we shared the median and IQR values for agreement and importance of each item along with a brief description of what these values mean. We also gave each participant their own individual response to the Round 2 items for comparison to the group median. Participants were again able to write free-response comments for each section of the survey.

We used Round 3 responses to calculate median, IQR, and percent agreement for agreement ratings and median values for importance ratings. We also calculated the difference between IQR values for agreement ratings from the second round to the third round to investigate stability and/or convergence of responses (Landeta, 2006; von der Gracht, 2012). Last, we conducted a final round of content analysis on all the agreed-upon items across professional thinking skills to identify themes.

Results

Participants

Twenty potential participants completed the screening questionnaire; 14, all from different institutions, were found eligible to participate based on inclusion criteria. Of those eligible, 11 completed Round 1, 10 completed Round 2, and 9 completed Round 3, for a completion rate across rounds of 81.8%. Overall, participants had high levels of experience as occupational therapy educators; 36.4% (*n* = 4) had 15+ years, 9.1% (*n* = 1) had 11-15 years, 27.3% (*n* = 3) had 6-10 years, and 27.3% (*n* = 3) had 3-5 years. Participants each identified multiple focus areas, which spanned occupational therapy contexts, including pediatrics (36.4%, *n* = 4), community-based (36.4%, *n* = 4), mental health (27.3%, *n* = 3), and acute care/acute inpatient rehabilitation (27.3%, *n* = 3). One participant each also endorsed hand therapy, neonatal intensive care, gerontology, and subacute rehabilitation as focus areas.

Round 1

Open-ended responses to Round 1 questions led to the generation of 67 unique teaching strategies across professional thinking skills; 17 applied to clinical reasoning (see Table 3), 23 to professional reasoning (see Table 4), 26 to reflective practice (see Table 5), and 27 to evidence-based practice (see Table 6). One participant (DD12) identified that they do not use the term clinical reasoning, they use the term therapeutic reasoning; however, the participant groups' definition of clinical reasoning aligned with that participant's definition of therapeutic reasoning, so the teaching strategies still applied.

Table 3

Analysis of Educational Strategies Related to Clinical Reasoning

	Round 2				Round 3				
Item	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	Stability[a]
1: Case studies	3.5	1	100	4	3	1	90	4	0
2: Simulations	4	0	100	4	4	0	90	4	0
3: Problem-based learning	3.5	1	100	4	3	1	90	4	0
4: Standardized patients	4	0	90	4	4	0	90	4	0
5: Fieldwork	4	1	90	4	4	0	80	4	1
6: Requiring students to find and give evidence-based support for chosen interventions	4	1	90	3	4	0	90	3	1
7: Cognitive mapping	3	1	50	3	3	0.25	80	3	0.5
8: Practitioner modeling	3	1	80	3	3	0	80	3	1
9: Instructor modeling	3	1	80	3	3	0	70	3	1
10: Peer modeling	2	1	30	3	2	0	20	3	0.25
11: Practicals	2.5	1	50	3	2	1	30	3	0
12: Explicit teaching of clinical reasoning	3	1	80	3	3	1	90	3	-0.75
13: Explicit teaching of critical thinking	3	1	70	3	3	1	90	3	-0.5
14: Providing students explicit feedback on their use of clinical reasoning	3.5	1	90	4	4	1	70	4	0
15: Requiring reflection on experiences	4	1	90	4	4	0	90	4	1
16: Discussions of different approaches to reasoning about the same case	3.5	1	100	3	4	0	90	4	1
17: Breaking down the process of clinical reasoning into concrete steps	3	1	100	4	3	1	90	3	0
18: Identifying for students instances where clinical reasoning is being used [b]	NA	NA	NA	NA	4	1	90	4	NA

Notes. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with "is/are an effective teaching strategy for facilitating the development of clinical reasoning."

[a] Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

[b] Item emerged from Round 2 data and was added for Round 3; it therefore does not have Round 2 data.

Table 4

Analysis of Educational Strategies Related to Professional Reasoning

	Round 2				Round 3				
Item	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	Stability[a]
1: Case studies	3	0	80	3	3	0	80	3	0
2: Simulations	3	1	70	3	3	0	80	3	0.5
3: Problem-based learning	3	2	60	3	3	0	70	3	1.25
4: Standardized patients	3	1.25	60	3	3	0	70	3	1
5: Evidence-based practice activities	3	0.25	70	3	3	0	80	3	0
6: Cognitive mapping	2.5	1.75	30	2	2	0.5	20	2	0.5
7: Explicitly teaching professional reasoning	3	1	80	3	3	0	90	3	0.25
8: Explicitly teaching critical thinking	3	1	80	3	3	0	90	3	0.25
9: Providing explicit examples of what professional reasoning looks like	4	1	70	3	4	1	90	3	0
10: Using content that requires the application of reasoning skills	3	1	90	3.5	3	0	90	3	1
11: Discussing ethics in occupational therapy	3	0.5	60	3	3	0.25	80	3	0.75
12: Teaching about the interconnectedness of knowledge	3	1	90	3	3	0	90	3	1
13: Providing opportunities for students to reflect on their own professional reasoning	4	0	80	4	4	0	90	4	0
14: Providing opportunities for students to reflect on feedback received regarding professional reasoning	4	1	90	4	4	1	90	4	0
15: Having students complete occupational profiles	2.5	1	40	3	2.5	1	40	3	0
16: Program development activities	3	1.5	40	2.5	3	0.25	70	3	0.75
17: Advocacy activities	3	1	70	3	3	0	80	3	0.5
18: Discussion of the roots of occupational therapy as a profession	2	1	30	2	2	0	20	2	0.25
19: Discussion of the Occupational Therapy Practice Framework	3	1.25	60	3	3	0	80	3	1

Item	Round 2				Round 3				Stability[a]
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
20: Discussion of factors that impact the profession's approach to working with clients	3	1.25	60	3	3	0	80	3	1
21: Providing interdisciplinary opportunities	4	0.25	80	4	4	0	90	4	0.5
22: Discharge planning discussions from different disciplines' perspectives	3.5	1	70	4	3	1	80	4	0
23: Debriefs after simulations or standardized patients	3	1	80	3	3	0	90	3	0.5

Notes. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with “is/are an effective teaching strategy for facilitating the development of professional reasoning.”
[a] Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

Table 5

Analysis of Educational Strategies Related to Reflective Practice

Item	Round 2				Round 3				Stability[a]
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
1: Case studies	3	1.75	60	3	3	0	70	3	1
2: Simulations	3.5	1	90	4	3	0	80	3	1
3: Problem-based learning	3	1	70	3	3	0	90	3	0.5
4: Fieldwork	4	0.75	90	4	4	0	80	4	1
5: Evidence-based practice activities	3	0.75	90	3	3	0	80	3	0
6: Cognitive mapping	3	0.5	60	3	3	0	80	3	0
7: Modeling	4	1	70	4	4	1	90	4	0.25
8: Providing opportunities for explicit consideration of what did not go well/areas for improvement	4	0	100	4	4	0	90	4	0
9: Explicit discussion of/reflection on what went well/strengths	4	0.75	100	4	4	0	90	4	1
10: Having students re-do assignments after feedback	3	0	70	3	3	0	90	3	0.25

	Round 2				Round 3				
Item	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	Stability[a]
11: Revisiting material across semesters to show student's their growth	3	0	70	3	3	0	80	3	0.25
12: Having students reflect on others' practice through videos	3	0	80	3	3	0	90	3	0
13: Having students reflect on their own videotaped performance	4	1	100	4	4	1	90	4	0
14: Student journaling	3	0	80	3	3	0	80	3	0
15: Writing treatment notes	3	1	50	3	3	0	70	3	1
16: Writing intervention plans	2	1	40	3	2	0	20	3	1
17: Group reflective discussions	3	1	80	3.5	3	0	90	3	1
18: Discussion boards	2	1	30	2	2	1	30	2	-0.5
19: Providing opportunities to reflect on what students have observed	3	1	90	3	3	1	90	3	-0.75
20: Debriefs following labs/simulations	3	1	100	3	3	0	90	3	1
21: Giving students opportunities to provide feedback to peers	3	0	70	3	3	0	80	3	0.25
22: Reflection assignments	3	0.75	90	3	3	0	80	3	0
23: Asking students reflective questions	3	0.75	90	3	3	0	80	3	0
24: Explicit discussion of "why" to do something differently next time	3	0.75	90	3	3	0	90	3	0
25: Creating brave spaces so students are willing to share	4	1	90	4	4	1	90	4	0
26: Providing experiences that are uncomfortable/ unfamiliar to give students an opportunity for reflection	3.5	1	90	4	4	1	90	4	0

Notes. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with “is/are an effective teaching strategy for facilitating the development of reflective practice.”

[a] Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

Table 6

Analysis of Educational Strategies Related to Evidence-Based Practice

	Round 2				Round 3				
Item	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	Stability[a]
1: Complex case presentations	3	0.75	70	3	3	0	90	3	1
2: Problem-based learning	3	1	80	3	3	0	80	3	0.25
3: Teaching students how to search for/find evidence/research	4	1	100	4	4	0	90	4	1
4: Having students practice finding evidence	3.5	1	100	3	4	1	90	4	0
5: Teaching students how to read research	3.5	1	90	4	4	1	90	4	0
6: Providing opportunities to read research	3	0.75	90	4	3	1	80	4	-1
7: Teaching students how to analyze research	3	1	90	3	3	1	90	3	0
8: Teaching students how to reflect on research	3.5	1	100	4	4	1	90	4	0
9: Having students complete article critiques	3	1	80	3	3	1	80	3	0
10: Teaching students how to apply evidence to clinical practice	4	1	100	4	4	0	90	4	1
11: Teaching students strategies for developing evidenced-based materials for clinical practice	3.5	1	100	4	4	1	90	4	0
12: Demonstrating use of evidence by incorporating it into courses/instruction	4	0.75	100	4	4	0	90	4	1
13: Requiring students to include evidence as support for their decisions in assignments	4	0.75	100	4	4	0	90	4	1
14: Teaching students how to assess their own knowledge/gaps in knowledge	3	1	100	3	3	1	90	3	0
15: Having students make professional development goals related to evidence-based practice	4	1	70	4	4	1	80	4	0
16: Grand rounds	3	1	40	3	3	1	60	3	0
17: Journal clubs	3	0	70	3	3	0	90	3	0.25
18: Teaching principles of translational health science	3	0.25	80	3	3	0	80	3	0
19: Explicitly teaching what evidence-based practice is	3	0	90	3	3	0	90	3	0
20: Explicitly discussing why evidence-based practice is	3	0	80	3	3	0	90	3	0

Item	Round 2				Round 3				Stability[a]
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
important									
21: Having students participate in systematic/scoping reviews	3	0.75	80	3	3	0	80	3	0
22: Being honest about what we know/don't know in the profession	3	1	100	3	3	0	90	3	1
23: Having discussions of how to make objective decisions in practice	3	1	100	3	3	0	90	3	1
24: Teaching about AOTA's Choosing Wisely resources	3	0.75	90	3	3	0	80	3	0
25: Teaching an eclectic method of using theory to support decision-making	3	1	60	3	3	0	70	3	1
26: Guiding the development of strategies/habits to support curiosity and information seeking	3.5	1	100	4	4	1	90	4	0
27: Research courses	2.5	1	50	3	3	1	60	3	0

Notes. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with “is/are an effective teaching strategy for facilitating the development of evidence-based practice.”

[a] Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

Round 2

Of the 17 strategies for teaching clinical reasoning that participants generated, 14 reached agreement in Round 2, with five reaching 100% agreement. Despite some statements not reaching the agreement threshold, all strategies had median importance ratings ≥ 3.0. We added one item (Item 18) in response to feedback from one participant (DD03) who clarified that they think "to learn clinical reasoning, it is important to provide students with examples of when it is used." Three other participants provided additional nuance to strategies in this section, with one noting strategies were too broad and that "it is critical to teach the thinking – not the patient match" (DD06) and another noting that clinical reasoning can often be too abstract for students (DD07). In relation to Item 8, one participant (DD11) also specified that modeling clinical reasoning can be detrimental if the clinician doing this modeling is not skilled.

Of the 23 strategies for teaching professional reasoning, 14 reached agreement in Round 2; none reached 100% agreement. All but three items (Items 6, 16, and 18) had importance ratings ≥ 3.0. One participant (DD05) noted that if Items 1-5 had specified "interdisciplinary" then they would have agreed with the listed strategies. Additionally, one participant (DD07) commented that discussion is only helpful as a complement to doing an activity and that discussion "is maybe not the most effective approach to the development of professional reasoning."

Of the 26 strategies for teaching reflective practice, 21 reached agreement in Round 2, with four reaching 100% agreement. All but one item (Item 18) had importance ratings ≥ 3.0. One participant (DD06) highlighted that reflection is impossible without insight, and another (DD11) clarified that the quality of reflection prompts contributes to the learning outcome.

Of the 27 strategies for teaching evidence-based practice, 24 reached agreement in Round 2, with 11 reaching 100% agreement. All items had importance ratings ≥ 3.0. One participant (DD06) noted they thought the "AOTA Choosing Wisely lacked the teeth that other professions are doing," suggesting guidelines were considered potentially not strong or clear enough to be useful. Relatedly, regarding education strategies for teaching all of these skills, one participant (DD05) commented they were not sure if there were Accreditation Council for Occupational Therapy (ACOTE®) standards related to these professional skills, stating "we need to rethink the standards!"

Round 3

In Round 3, none of the items reached 100% agreement. All but one item had the same importance ratings of ≥ 3.0 from Round 2 to Round 3. The one exception was Professional Reasoning Item 16, which newly achieved an importance rating of 3.0 in Round 3 (up from 2.5 in Round 2). Nonetheless, this item did not meet the agreement threshold in this round.

One additional strategy for teaching clinical reasoning reached the agreement threshold in Round 3 (Item 7); the newly added item (Item 18) also reached the agreement threshold, for a total of 16 (out of 18) agreed-upon strategies. There was moderate stability of responses; seven items had no change in IQR, eight changed by one point or less towards agreement, and two showed change representing increasing disagreement. Regarding Item 15, one participant (DD06) identified that it is not just reflection but *critical* reflection that facilitates the development of clinical reasoning.

Six additional strategies for teaching professional reasoning (Items 3, 4, 11, 16, 19, and 20) reached the agreement threshold in Round 3, for a total of 20 (out of 23) agreed-upon strategies. There was again moderate stability of responses. Seven items had no change in IQR and the remaining 17 items had a change of one point or less.

Three additional strategies for teaching reflective practice (Items 1, 6, and 15) reached the agreement threshold in Round 3, for a total of 24 (out of 26) agreed-upon strategies. One participant (DD06) noted that “reflective assignments” (Item 22) is too broad of a designation, and that “specific components are required in the assignments.” Eleven items had good stability of responses, with no change in IQR values. Thirteen items had a change in IQR of one or less, and two had changes in IQR suggesting increasing disagreement.

One additional strategy for teaching evidence-based practice (Item 25) reached the agreement threshold in Round 3, for a total of 25 (out of 27) agreed-upon strategies. Evidence-based practice items had the highest stability, with 16 items having no change in IQR value, 10 with a change of one point or less, and only one with a change in IQR representing increasing disagreement.

Qualitative Findings

Teaching strategies that met the consensus threshold after Round 3 for more than one professional thinking skill fell into two main categories: 1) experiential and active learning opportunities and 2) explicit teaching of skills (see Table 7). The remaining strategies, some of which also fell within these two categories, were related to only one professional thinking skill each (see Table 8). For teaching clinical reasoning, participants endorsed primarily *explicit teaching* approaches. For the other three professional thinking skills, participants identified active, explicit, and other teaching strategies; for professional reasoning they endorsed strategies related to *scope of practice*, for reflective practice they endorsed *reflective learning activities*, and for evidence-based practice they endorsed *evidence-based practice activities*.

Table 7

Summary of Overarching Teaching Strategies Endorsed by Participants

Teaching Strategy	Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
Experiential and Active Learning				
Problem-based learning	X	X	X	X
Case studies/complex case presentations	X	X	X	X
Simulations	X	X	X	
Standardized patients	X	X		
Debriefs after simulations, labs, or standardized patients		X	X	
Fieldwork	X		X	
Modeling	X		X	
Explicit Teaching				
Explicit teaching of the skill	X	X		X
Explicit teaching of critical thinking	X	X		
Cognitive mapping	X		X	
Evidence-based practice activities		X	X	
Requiring students to find and give evidence-based support for their decisions	X			X
Requiring reflection on experiences	X		X	

Table 8

Summary of Skill-Specific Teaching Strategies Endorsed by Participants

Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
Identifying for students instances where the skill is being used	Providing opportunities to reflect on feedback regarding use of professional reasoning	Reflection on own performance (videotaped) or others (video or observation)	Teaching/practicing searching for, finding, reading, analyzing, critiquing, reflecting on, and applying research
Breaking down the process of the skill into concrete steps	Providing opportunities for students to reflect on their use of professional reasoning	Reflection assignments	Teaching strategies for developing evidenced-based materials for clinical practice
Providing students explicit feedback on their use of the skill	Discussion of the Occupational Therapy Practice Framework (AOTA, 2020)	Asking students reflective questions	Demonstrating use of evidence by incorporating it into courses/instruction
Discussions of different approaches to using the skill with the same case	Discussion of factors that impact the profession's approach to working with clients	Explicit discussion of "why" to do something differently next time	Having students participate in systematic/scoping reviews
	Providing interdisciplinary opportunities	Student journaling	Journal clubs
	Discharge planning discussions from different disciplines' perspectives	Group reflective discussions	Having students make professional development goals related to the evidence-based practice
	Teaching about the interconnectedness of knowledge	Providing experiences that are uncomfortable/unfamiliar to give students an opportunity for reflection	Guiding the development of strategies/habits to support curiosity and information seeking

Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
	Discussing ethics in occupational therapy	Writing treatment notes	Having discussions of how to make objective decisions in practice
	Using content that requires the application of reasoning skills	Giving students opportunities to provide feedback to peers	Teaching students how to assess their own knowledge/gaps in knowledge
	Advocacy activities	Having students re-do assignments after feedback	Teaching about AOTA's Choosing Wisely resources
	Professional development activities	Revisiting material across semesters to show student's their growth	Teaching an eclectic method of using theory to support decision-making
	Providing explicit examples of what the skill looks like	Creating brave spaces so students are willing to share	Teaching principles of translational health science
			Being honest about what we know/don't know in the profession
			Explicitly discussing why the skill is important

Note. AOTA = American Occupational Therapy Association.

Discussion

In this study we aimed to understand how educators conceptualized best-practice teaching strategies for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice in occupational therapy students. We found consensus on many, but not all, of the identified teaching strategies, which, in accordance with the pragmatic pedagogy of the profession, largely fell under the umbrella of experiential/active learning. Participants also agreed on many explicit teaching strategies for supporting the development of professional thinking skills.

Experiential and Active Learning

Participants identified that fieldwork supports the development of clinical reasoning and reflective practice. Fieldwork has been previously identified as an essential way to instill professional skills like reasoning and reflection in occupational therapy students (Bolton & Dean, 2018; Mattila et al., 2018). ACOTE® (2018) also provided that simulations and standardized patient experiences, which are active learning approaches (Harris & Bacon, 2019), can be substituted as an experiential learning option for Level I fieldwork. Experiential learning is expected to occur through acting and experiencing and then reflecting on the experience, which makes it logically suited to the development of reasoning and reflection skills.

Participants also identified both problem-based learning and case studies—two active learning methods—as best-practice teaching strategies across professional skills. Problem-based learning involves small groups of self-directed learners working through a given case/scenario (Gewurtz et al., 2016). Research is inconsistent on whether problem-based learning is effective for developing reasoning skills (McCarron & Amico, 2002; Scaffa & Wooster, 2004), but problem-based learning has been described as helpful for developing evidence-based practice skills within health professional education (Lusardi et al., 2002) and for developing professional reflection within occupational therapy curricula (McNulty et al., 2004). Case-based learning, on the other hand, has been shown to promote the development of clinical reasoning (Bathje et al., 2022). Interestingly, problem-based learning and case studies were the only teaching strategies identified as best-practice approaches for facilitating all four skills. As such, future research should explore how these strategies could be harnessed to foster skill integration.

In relation to clinical reasoning and reflective practice, participants also identified modeling as a best-practice teaching strategy, including modeling in general (for reflective practice skills) and practitioner or instructor modeling (for clinical reasoning). Although instructor and practitioner modeling are not direct hands-on or active learning approaches, modeling often exists within the context of experiential learning, such as during fieldwork. One participant noted that the quality of the modeling has an impact on student learning; similarly, Benfield and Jeffery (2022) noted that practitioners who continue to report low levels of engagement in evidence-based practice are most likely poorly modeling evidence-based practice activities to students. We suggest that inadequate modeling may pose a similar problem for the arguably less easily

demonstrable skills of reasoning and reflection. Therefore, although modeling may be an effective teaching strategy broadly, participants and research literature agree that the quality of the modeling matters.

Participants also identified advocacy and program development activities as useful for facilitating the development of professional reasoning. Although these are not clinical activities, they do provide experiential learning opportunities for other activities in occupational therapy's scope of practice. Interestingly, the question of the best way to teach advocacy skills has only recently been explored (Alden et al., 2021; Eglseder et al., 2022), and program development activities have been identified as the most common way occupational therapy doctoral students complete their capstone projects (Kiraly-Alvarez et al., 2022). These skills and activities are themselves important for occupational therapy practice (ACOTE®, 2018). Further exploration of how advocacy and program development skills relate to other professional skills like those endorsed by participants in this study may contribute to higher level integration of skills across curricula.

Explicit Teaching

Participants also reached consensus around the significance of explicit teaching approaches for developing clinical reasoning, professional reasoning, reflective practice, and evidence-based practice skills. Within the field of education, explicit teaching is described as the presentation of material, which is often broken down into small steps/pieces, alongside clear explanations, giving students opportunities for active practice, and providing frequent and systematic feedback (Rosenshine, 1986). In this study, participants endorsed explicit teaching of clinical and professional reasoning and evidence-based practice, including breaking the skill down into steps (for clinical reasoning), discussing why the skill is important (for evidence-based practice), giving specific examples of what the skill looks like (for professional reasoning) or where it is being used (for clinical reasoning), and giving feedback about skill use (for clinical reasoning).

Participants also agreed about cognitive mapping (for clinical reasoning and reflective practice), another explicit teaching practice. Cognitive maps are visual representations of knowledge; concept maps, one type of cognitive map, have been used in occupational therapy education to support active engagement with material and to support critical thinking (Grice, 2016). Visually mapping information results in explicit delineation of steps, elements, or considerations related to each concept, making it a visual explicit teaching approach. Occupational therapy education literature has not extensively explored explicit teaching by that name; still, principles of explicit teaching are endorsed as useful for teaching complex professional thinking skills (Benfield & Jeffery, 2022; Chan & Lee, 2021; Henderson et al., 2017; Hills et al., 2017; Neistadt, 1996).

In addition to explicitly teaching the four specified skills (clinical reasoning, professional reasoning, reflective practice, and evidence-based practice), participants also agreed that explicitly teaching *critical thinking* was important for facilitating the development of

clinical and professional reasoning. Critical thinking has been described as a component of clinical reasoning that is essential for providing evidence-based services and is related to reflection about practice (Allen & Toth-Cohen, 2019). Clinical reasoning has been defined as the application of critical thinking (Jones, 1988; Victor-Chmil, 2013) and as an umbrella term that includes critical thinking (Berg et al., 2021). Berg and colleagues (2021) described critical thinking as essential to exposing assumptions and biases that filter clinical reasoning processes, which connects both these skills to reflective practice. Alternatively, Benfield and Jeffery (2022) described the application of critical thinking to clinical situations as "critical clinical reasoning." Participant perspectives and the literature therefore emphasize the significance of critical thinking to the development of reasoning, and potentially reflective practice, in occupational therapy. Further exploration of how educators facilitate integration of these skills is needed.

Explicit teaching approaches appear to be valuable for developing clinical reasoning, professional reasoning, reflective practice, and evidence-based practice skills in occupational therapy students. However, it is important to note that educators must themselves have a clear understanding of the skills being taught and be able to communicate about them explicitly for these approaches to be effective. Unfortunately, this is not always the case. For example, research has shown that educators have found their own lack of adequate knowledge to be a barrier to teaching reflection to students (Chan & Lee, 2021). Explicit teaching approaches may be especially valuable for requiring educators to themselves become more aware of their own conceptualizations of skills they are teaching.

Skill-Specific Strategies

Professional Reasoning

From other data collected as part of this study (see Table 2), we know that participants defined professional reasoning as a professional thinking skill that is used on interdisciplinary teams and is related to professional identity. This differentiated professional reasoning from clinical reasoning for participants. It makes sense, then, that many of the activities identified for facilitating the development of professional reasoning would be related to occupational therapy's scope of practice, such as discussing the *Occupational Therapy Practice Framework* (AOTA, 2020) and factors that impact the profession's approach towards working with clients. Teaching content related to occupational therapy's scope and professional identity would necessarily support students in appreciating what they uniquely bring to interdisciplinary teams and to think in ways specific to occupational therapy. Although not all authors agree with this distinction between clinical and professional reasoning (Unsworth & Baker, 2016), there is some discussion of the significance of professional identity to the development of professional reasoning specifically (Parkinson et al., 2011). Further, it is significant that although this conceptualization of professional reasoning might not be common within occupational therapy literature, participants agreed on teaching strategies that were

consistent with their own definition. These findings reinforce the importance of being explicit within the educational context about which definition of a construct is being used to, at minimum, support instructional cohesion.

Reflective Practice

Although reflective practice is a complex construct (Kinsella, 2001), participants largely agreed on reflective strategies to support its development. These included activities such as reflecting on recordings of practice scenarios or observations, asking reflective questions, providing opportunities that are uncomfortable/unfamiliar to students, and journaling. Providing opportunities for authentic reflection is essential to becoming a reflective practitioner (Wong et al., 2016). Additionally, participants noted the importance of creating “brave spaces” to allow for student reflection. The term “brave space” has been proposed in social justice literature as an alternative to the phrase “safe space,” acknowledging that there may still be risk in a given classroom situation, but that teachers and students must foster active, brave engagement with one another around challenging content (Arao & Clemens, 2013). Creating safe/brave spaces (Mann et al., 2009) and creating the appropriate conditions for fostering reflective capacity (Wong et al., 2016) are similarly described in literature as essential for engaging in this skill.

Reflective practice is notably removed from technical rationality within occupational therapy literature (Kinsella, 2009). Technical rationality is an epistemology of practice that is aligned with positivist thinking and largely positions practitioners as solving problems by selecting the objectively best technical means (Schön, 1987). Alternatively, the epistemology of reflective practice centers the professional as agentic in the problem-solving process, able to use pragmatic thinking to address messier problems (Kinsella, 2007). It is thus important to note the tension that exists around using reflection in a reductionist way (for example, for assessment of learning outcomes) that removes it from the more artistic, pragmatic realm necessary for professional practice (Fragkos, 2016; Wong et al., 2016). Therefore, as participants noted, it is important to explicitly teach reflective practice and provide opportunities to personally experience reflection, rather than merely expecting that engagement in reflection is sufficient to facilitate the development of applied habits of reflection in practice.

Evidence-Based Practice

For facilitating the development of evidence-based practice, participants identified the importance of teaching students research-related activities (how to find, read, analyze, and critique research articles) and teaching theory to support decision-making, which is aligned with findings from previous research (DeAngelis et al., 2013). The continued lack of reported engagement in evidence-based practice by practicing therapists, though, raises the question of how effective these teaching strategies truly are (Ramis et al., 2019; Thomas et al., 2011). Interestingly, participants did not specifically identify teaching strategies related to using client perspectives or personal/clinical experience as evidence. Focusing on integration of various sources of evidence is cited as an important strategy to increase uptake of evidence-based practice activities (Benfield & Jeffery, 2022; Jeffery et al., 2021). A recent review of evidence-based practice

competencies by healthcare professionals concluded that there are widespread misunderstandings in practice about what constitutes “evidence” (Saunders et al., 2019), and occupational therapy curricula appear to focus largely on research while excluding other types of evidence (Murphy et al., 2019). Advocates and researchers also have highlighted the need for allied health professionals to integrate evidence from individuals’ and communities’ lived experiences into practice decisions (Barclay et al., 2020; Jane, 2023). Participants may have considered “evidence integration” to be an inherent component of the strategies they identified here. Still, literature suggests educators may need to be clearer about *how* to integrate evidence as one approach to addressing the gap in implementation of evidence-based practice.

Although participants agreed that reflective and evidence-based practice activities support the development of reasoning, they did not identify any specific reasoning-related activities to teach evidence-based practice. However, the literature does suggest that supporting engagement in reasoning and reflection may increase engagement in evidence-based practice (Benfield & Jeffery, 2022). Further research is needed on the value of integrating reasoning, reflection, and evidence-based practice within education and how this relates to their application in practice (Benfield & Krueger, 2021; Krueger et al., 2020; Lehane et al., 2019).

Limitations

Although the size of the participant panel in this study was consistent with similar Delphi studies (De Villiers et al., 2005; Skulmoski et al., 2007), a larger sample size may have returned a wider breadth of perspectives and allowed for clearer interpretation of IQR values (Birko et al., 2015). For this study we aimed to develop a complete picture of educational strategies used to facilitate the development of professional thinking skills and, therefore, we did not ask participants to narrow down or rank the strategies in any way. However, asking participants to prioritize the importance of teaching strategies may have given a clearer picture of which are considered essential (vs. just “best practice”). Finally, the linear nature of the Delphi process did not allow for participant discussion of relationships between educational strategies for different professional thinking skills. Future research in this area may add to an understanding of the integration of these skills in education.

Implications for Occupational Therapy Education

Findings from this study can inform occupational therapy educators in their approach to supporting students to develop clinical and/or professional reasoning, reflective practice, and evidence-based practice. Occupational therapy educators endorsed provision of experiential and active learning opportunities and explicit teaching as best practice approaches to teaching these professional thinking skills. The fact that these broad teaching strategies are considered relevant across professional thinking skills suggests that educators should consider how they apply these strategies to support integration of skills. Further, problem-based learning and case studies were considered best practice approaches for teaching all four professional thinking skills, making them potentially

appropriate specific strategies for exploration of skill integration. Educators may benefit from comparing their teaching strategies to those that reached consensus in this study to support their own professional reflection and development.

Finally, although not the only arbiter of what goes into an occupational therapy curriculum, it is interesting to acknowledge how ACOTE® (2018) recognizes these professional thinking skills in their education standards. For instance, there are accreditation standards related to student development of clinical reasoning and ACOTE® notes that fieldwork should support reflective practice. Relative to the latter it is important to recognize that there is not an associated educational standard for this skill, although ongoing professional development is expected. ACOTE® also describes the importance of students learning to consume research evidence and learning to integrate evidence, although these are not described together as contributing to evidence-based practice, and this professional thinking skill is itself not defined. As research continues to explore the significance of these skills and their integration to uptake in practice, it is necessary to go beyond these standards to support professional practice in occupational therapy.

Occupational therapy educators are tasked with supporting students to develop professional thinking skills they can use to deliver high-quality services to clients. Findings from this study suggest that occupational therapy educators in the United States endorse supporting the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice largely through experiential and/or active learning opportunities and explicit teaching approaches. They also acknowledge the significance of skill-specific teaching strategies. Literature suggests that educators should support students in integrating professional thinking skills to facilitate the process of students becoming occupational therapists. Accordingly, future research should explore how professional thinking skills are taught alongside one another and how teaching strategies relate to implementation of professional thinking skills in practice by students entering the field. Continued research in this area will add to our understanding of how occupational therapy students learn and ultimately work with professional competence.

References

Accreditation Council for Occupational Therapy Education (ACOTE®). (2018). *Accreditation Council for Occupational Therapy Education (ACOTE®) standards and interpretive guide* (pp. 1–56). https://doi.org/10.5014/ajot.2018.72S217

Alden, J., Hill, L., Banks, F., Connolly, R., & Ngwa, J. (2021). Designing an educational program to promote diversity and student engagement in professional advocacy (SEPA). *Journal of Occupational Therapy Education*, *5*(3). https://doi.org/10.26681/jote.2021.050315

Allen, D. D., & Toth-Cohen, S. (2019). Use of case studies to promote critical thinking in occupational therapy students. *Journal of Occupational Therapy Education*, *3*(3). https://doi.org/10.26681/jote.2019.030309

American Occupational Therapy Association. (2018a). Occupational therapy education research agenda—Revised. *American Journal of Occupational Therapy*, *72*(2), 1–5. https://doi.org/10.5014/ajot.2018.72S218

American Occupational Therapy Association. (2018b). Philosophy of occupational therapy education. *American Journal of Occupational Therapy*, *61*(6), 678. https://doi.org/10.5014/ajot.61.6.678

American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, *74*(Supplement_2), 7412410010p1-7412410010p87. https://doi.org/10.5014/ajot.2020.74S2001

Arao, B., & Clemens, K. (2013). From safe spaces to brave spaces: A new way to frame dialogue around diversity and social justice. In L. M. Landreman (Ed.), *The art of effective facilitation: Reflections from social justice educators* (pp. 135–150). Styles Publishing. https://doi.org/10.4324/9781003447580-11

Bannigan, K., & Moores, A. (2009). A model of professional thinking: Integrating reflective practice and evidence based practice. *Canadian Journal of Occupational Therapy*, *76*(5), 342–350. https://doi.org/10.1177/000841740907600505

Barclay, L., Callaway, L., & Pope, K. (2020). Perspectives of individuals receiving occupational therapy services through the National Disability Insurance Scheme: Implications for occupational therapy educators. *Australian Occupational Therapy Journal*, *67*(1), 39–48. https://doi.org/10.1111/1440-1630.12620

Bathje, M., Escobar, K., Crisp, M., Killian, C., & Royeen, C. (2022). The impact of a psychosocial-focused experiential learning activity on occupational therapy students' perceived clinical reasoning. *Journal of Occupational Therapy Education*, *6*(3). https://doi.org/10.26681/jote.2022.060304

Benfield, A. M., & Jeffery, H. (2022). Exploring evidence based practice implementation by occupational therapists: Implications for fieldwork. *Journal of Occupational Therapy Education*, *6*(4). https://doi.org/10.26681/jote.2022.060410

Benfield, A. M., & Krueger, R. B. (2021). Topic: Professional competence in occupational therapy. *Australian Occupational Therapy Journal*, 68(3), 282-283. https://doi.org/10.1111/1440-1630.12724

Bennett, S., & Bennett, J. W. (2000). The process of evidence-based practice in occupational therapy: Informing clinical decisions. *Australian Occupational Therapy Journal*, *47*(4), 171–180. https://doi.org/10.1046/j.1440-1630.2000.00237.x

Berg, C., Philipp, R., & Taff, S. D. (2021). Scoping review of critical thinking literature in healthcare education. *Occupational Therapy in Health Care*, *37*(0), 1–18. https://doi.org/10.1080/07380577.2021.1879411

Birko, S., Dove, E. S., Özdemir, V., & Dalal, K. (2015). Evaluation of nine consensus indices in Delphi foresight research and their dependency on Delphi survey characteristics: A simulation study and debate on Delphi design and interpretation. *PLoS ONE*, *10*(8), 1–14. https://doi.org/10.1371/journal.pone.0135162

Bolton, T., & Dean, E. (2018). Self-determination theory and professional reasoning in occupational therapy students: A mixed methods study. *Journal of Occupational Therapy Education*, *2*(3). https://doi.org/10.26681/jote.2018.020304

Breines, E. (1987). Pragmatism as a foundation for occupational therapy curricula. *American Journal of Occupational Therapy*, *41*(8), 522–525. https://doi.org/10.5014/ajot.41.8.522

Brown, T., Yu, M. lin, Hewitt, A., Cousland, R., & Etherington, J. (2021). Professionalism, resilience and reflective thinking: How do these influence occupational therapy student fieldwork outcomes? *Occupational Therapy in Health Care*, *36*(4), 327-352. https://doi.org/10.1080/07380577.2021.1978606

Burke, H. K., Sample, P. L., Bundy, A. C., & Lane, S. J. (2024a). Defining reasoning, reflective practice, and evidence-based practice in occupational therapy education: A Delphi study. *Journal of Occupational Therapy Education, 8*(1), 1-27*.* https://doi.org/10.26681/jote.2024.080107

Burke, H. K., Sample, P. L., Bundy, A. C., & Lane, S. J. (2024b). Relationships between reasoning, reflective practice, and evidence-based practice: Educators' perspectives. *Journal of Occupational Therapy Education, 8*(2), 1-22*.* https://doi.org/10.26681/jote.2024.080107

Chaffey, L., Unsworth, C. A., & Fossey, E. (2012). Relationship between intuition and emotional intelligence in occupational therapists in mental health practice. *American Journal of Occupational Therapy*, *66*(1), 88–96. https://doi.org/10.5014/ajot.2012.001693

Chan, C. K. Y., & Lee, K. K. W. (2021). Reflection literacy: A multilevel perspective on the challenges of using reflections in higher education through a comprehensive literature review. *Educational Research Review*, *32*(May 2020), 100376. https://doi.org/10.1016/j.edurev.2020.100376

Chun, I., Taff, S., Mehta, A., & Chang, C.-H. (2020). Identifying essential competency areas for occupational therapy education: A scoping review. *Journal of Occupational Therapy Education*, *4*(4). https://doi.org/10.26681/jote.2020.040402

De Villiers, M. R., De Villiers, P. J. T., & Kent, A. P. (2005). The Delphi technique in health sciences education research. *Medical Teacher*, *27*(7), 639–643. https://doi.org/10.1080/13611260500069947

DeAngelis, T. M., DiMarco, T. G., & Toth-Cohen, S. (2013). Evidence-based practice in occupational therapy curricula. *Occupational Therapy in Health Care*, *27*(4), 323–332. https://doi.org/10.3109/07380577.2013.843115

Eglseder, K., Lawson, S., & Beatty, R. (2022). Situated cognition and self-directed learning: Pedagogical approaches to developing skills in advocacy. *Journal of Occupational Therapy Education*, *6*(4). https://doi.org/10.26681/jote.2022.060413

Fragkos, K. C. (2016). Reflective practice in healthcare education: An umbrella review. *Education Sciences*, *6*(3), 27. https://doi.org/10.3390/educsci6030027

Gewurtz, R. E., Coman, L., Dhillon, S., Jung, B., & Solomon, P. (2016). Problem-based learning and theories of teaching and learning in health professional education. *Journal of Perspectives in Applied Academic Practice*, *4*(1), 59–70. https://doi.org/10.14297/jpaap.v4i1.194

Grice, K. (2016). Concept mapping as a learning tool in occupational therapy education. *Occupational Therapy In Health Care*, *30*(3), 309–318. https://doi.org/10.3109/07380577.2015.1130886

Hallowell, M. R., & Gambatese, J. A. (2010). Qualitative research: Application of the Delphi method to CEM research. *Journal of Construction Engineering and Management*, *136*(1), 99–107. https://doi.org/10.1061/(ASCE)CO.1943-7862.0000137

Harris, N., & Bacon, C. E. W. (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

Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, *32*(4), 1008–1015. https://doi.org/10.1046/j.1365-2648.2000.t01-1-01567.x

Henderson, W., Coppard, B., & Qi, Y. (2017). Identifying instructional methods for development of clinical reasoning in entry-level occupational therapy education: A mixed methods design. *American Journal of Occupational Therapy*, *72*(4_Supplement_1), 7211505146p1. https://doi.org/10.5014/ajot.2018.72s1-po7010

Hills, C. M., Levett-Jones, T., Lapkin, S., & Warren-Forward, H. (2017). Generation Y health professional students' preferred teaching and learning approaches: A systematic review. *Open Journal of Occupational Therapy*, *5*(1). https://doi.org/10.15453/2168-6408.1278

Hooper, B., Krishnagiri, S., Price, P., Taff, S. D., & Bilics, A. (2017). Curriculum-level strategies that U.S. occupational therapy programs use to address occupation: A qualitative study. *American Journal of Occupational Therapy*, *72*(1), 7201205040p1-7201205040p10. https://doi.org/10.5014/ajot.2018.024190

Jane, S. (2023, March 9). Lived experience informed practice: An alternative to evidence based practice. *Lived Experience Educator*. https://livedexperienceeducator.com/blog/livedexperienceinformedpractice

Jeffery, H., Robertson, L., & Reay, K. L. (2021). Sources of evidence for professional decision-making in novice occupational therapy practitioners: Clinicians' perspectives. *British Journal of Occupational Therapy*, *84*(6), 346–354. https://doi.org/10.1177/0308022620941390

Jones, J. A. (1988). Clinical reasoning in nursing. *Journal of Advanced Nursing*, *13*(2), 185–192. https://doi.org/10.1111/j.1365-2648.1988.tb01407.x

Jünger, S., Payne, S. A., Brine, J., Radbruch, L., & Brearley, S. G. (2017). Guidance on Conducting and REporting DElphi Studies (CREDES) in palliative care: Recommendations based on a methodological systematic review. *Palliative Medicine*, *31*(8), 684–706. https://doi.org/10.1177/0269216317690685

Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, *68*(3), 195–198. https://doi.org/10.1177/000841740106800308

Kinsella, E. A. (2007). Technical rationality in Schön's reflective practice: Dichotomous or non-dualistic epistemological position. *Nursing Philosophy*, *8*(2), 102–113. https://doi.org/10.1111/j.1466-769X.2007.00304.x

Kinsella, E. A. (2009). Professional knowledge and the epistemology of reflective practice. *Nursing Philosophy*, *11*(5), 3–14. https://doi.org/10.1111/j.1466-769X.2009.00428.x

Kiraly-Alvarez, A. F., Clegg, A., Lucas Molitor, W., & Friberg, D. (2022). An exploration of the occupational therapy doctoral capstone: Perspectives from capstone coordinators, graduates, and site mentors. *Journal of Occupational Therapy Education*, *6*(1). https://doi.org/10.26681/jote.2022.060114

Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development* (Vol. 2). Pearson Education Inc.

Krishnagiri, S., Hooper, B., Price, P., Taff, S. D., & Bilics, A. (2019). A national survey of learning activities and instructional strategies used to teach occupation: Implications for signature pedagogies. *American Journal of Occupational Therapy*, *73*(5), 7305205080p1-7305205080p11. https://doi.org/10.5014/ajot.2019.032789

Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020). Self-reflection as a support to evidence-based practice: A grounded theory exploration. *American Journal of Occupational Therapy*, *74*(4_Supplement_1), 7411505100p1. https://doi.org/10.5014/ajot.2020.74s1-po3025

Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change*, *73*(5), 467–482. https://doi.org/10.1016/j.techfore.2005.09.002

Lecours, A., Baril, N., & Drolet, M. J. (2021). What is professionalism in occupational therapy? A concept analysis. *Canadian Journal of Occupational Therapy*, *88*(2), 117–130. https://doi.org/10.1177/0008417421994377

Lehane, E., Leahy-Warren, P., O'Riordan, C., Savage, E., Drennan, J., O'Tuathaigh, C., O'Connor, M., Corrigan, M., Burke, F., Hayes, M., Lynch, H., Sahm, L., Heffernan, E., O'Keeffe, E., Blake, C., Horgan, F., & Hegarty, J. (2019). Evidence-based practice education for healthcare professions: An expert view. *BMJ Evidence-Based Medicine*, *24*(3), 103–108. https://doi.org/10.1136/bmjebm-2018-111019

Lusardi, M. M., Levangie, P. K., & Fein, B. D. (2002). A problem-based learning approach to facilitate evidence-based practice in entry-level health professional education. *Journal of Prosthetics and Orthotics*, *14*(2), 40–50. https://doi.org/10.1097/00008526-200206000-00005

Mann, K., Jill, A. E., Ae, G., MacLeod, A., Gordon, J., MacLeod, A., Jill, A. E., Ae, G., MacLeod, A., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Sciences Education*, *14*(4), 595–621. https://doi.org/10.1007/s10459-007-9090-2

Marr, D. (2017). Fostering full implementation of evidence-based practice. *American Journal of Occupational Therapy*, *71*(1), 7101100050. https://doi.org/10.5014/ajot.2017.019661

Mattila, A., DeIuliis, E. D., & Cook, A. B. (2018). Increasing self-efficacy through role emerging placements: Implications for occupational therapy experiential learning. *Journal of Occupational Therapy Education*, *2*(3), 1–20. https://doi.org/10.26681/jote.2018.020303

McCarron, K. A., & Amico, F. D. (2002). The impact of problem-based learning on clinical reasoning in occupational therapy education. *Occupational Therapy in Health Care*, *16*(1), 1–13. https://doi.org/10.1080/J003v16n01_01

McNulty, M. C., Crowe, T. K., & VanLeit, B. (2004). Promoting professional reflection through problem-based learning evaluation activities. *Occupational Therapy in Health Care*, *18*(1–2), 71–82. https://doi.org/10.1080/J003v18n01_08

Moon, J. (2001). Reflection in higher education learning (PDP working paper 4). *The Higher Education Academy*. Retrieved August 28, 2023, from https://www.researchgate.net/publication/255648945_PDP_Working_Paper_4_Reflection_in_Higher_Education_Learning

Murphy, K., Parnell, T., Pope, R., Hughes, C., Bramble, M., Biles, J., OConnor, S., Curtin, M., Speedie, L., & Plowman, E. (2019, June 26). *Improving evidence-based practice education in healthcare courses: A participatory action research multiple-case study*. Fifth International Conference on Higher Education Advances. https://doi.org/10.4995/HEAD19.2019.9152

Neistadt, M. E. (1996). Teaching strategies for the development of clinical reasoning. *American Journal of Occupational Therapy*, *50*(8), 676–684. https://doi.org/10.5014/ajot.50.8.676

Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, *63*(2), 95–104. https://doi.org/10.1111/1440-1630.12252

Parkinson, S., Shenfield, M., Reece, K., & Fisher, J. (2011). Enhancing professional reasoning through the use of evidence-based assessments, robust case formulations and measurable goals. *British Journal of Occupational Therapy*, *74*(3), 148–152. https://doi.org/10.4276/030802211X12996065859364

Ramis, M.-A., Chang, A., Conway, A., Lim, D., Munday, J., & Nissen, L. (2019). Theory-based strategies for teaching evidence-based practice to undergraduate health students: A systematic review. *BMC Medical Education*, *19*(267), 1–13. https://doi.org/10.1186/s12909-019-1698-4

Raskin, M. S. (1994). The Delphi study in field instruction revisited: Expert consensus on issues and research priorities. *Journal of Social Work Education*, *30*(1), 75–89. https://doi.org/10.1080/10437797.1994.10672215

Rosenshine, B. (1986). Synthesis of research on explicit teaching. *Educational Leadership*, *43*(7), 60–69.

Royeen, C. B. (1995). Problem-based learning curriculum for occupational therapy education. *American Journal of Occupational Therapy*, *49*(4), 338–346. https://doi.org/10.5014/ajot.49.4.338

Sackett, D. L., Rosenberg, W. M., Gray, J. A. M., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal*, *312*, 71–72. https://doi.org/10.1115/1.2899246

Saunders, H., Gallagher-Ford, L., Kvist, T., & Vehviläinen-Julkunen, K. (2019). Practicing healthcare professionals' evidence-based practice competencies: An overview of systematic reviews. *Worldviews on Evidence-Based Nursing*, *16*(3), 176–185. https://doi.org/10.1111/wvn.12363

Scaffa, M. E., & Wooster, D. M. (2004). Effects of problem-based learning on clinical reasoning in occupational therapy. *American Journal of Occupational Therapy*, *58*(3), 333–336. https://doi.org/10.5014/ajot.58.3.333

Schell, B. A. B. (2019). Professional reasoning in practice. In B. A. B. Schell & G. Gillen (Eds.), *Willard and Spackman's occupational therapy* (13th ed.). Wolters Kluwer.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass.

Skulmoski, G., Hartman, F., & Krahn, J. (2007). The Delphi method for graduate research. *Journal of Information Technology Education*, *6*, 93–105. https://doi.org/10.1007/3-540-47847-7_10

Stemler, S. (2000). An overview of content analysis. *Practical Assessment, Research, and Evaluation*, *7*(17), 1–6. https://doi.org/10.7275/z6fm-2e34

Thomas, A., Saroyan, A., & Dauphinee, W. D. (2011). Evidence-based practice: A review of theoretical assumptions and effectiveness of teaching and assessment interventions in health professions. *Advances in Health Sciences Education*, *16*(2), 253–276. https://doi.org/10.1007/s10459-010-9251-6

Unsworth, C. A., & Baker, A. (2016). A systematic review of professional reasoning literature in occupational therapy. *British Journal of Occupational Therapy*, *79*(1), 5–16. https://doi.org/10.1177/0308022615599994

Victor-Chmil, J. (2013). Critical thinking versus clinical reasoning versus clinical judgment: Differential diagnosis. *Nurse Educator*, *38*(1), 34–36. https://doi.org/10.1097/NNE.0b013e318276dfbe

von der Gracht, H. A. (2012). Consensus measurement in Delphi studies: Review and implications for future quality assurance. *Technological Forecasting and Social Change*, *79*(8), 1525–1536. https://doi.org/10.1016/j.techfore.2012.04.013

Wong, K. Y., Whitcombe, S. W., & Boniface, G. (2016). Teaching and learning the esoteric: An insight into how reflection may be internalised with reference to the occupational therapy profession. *Reflective Practice*, *17*(4), 472–482. https://doi.org/10.1080/14623943.2016.1175341

Zafran, H. (2019). A narrative phenomenological approach to transformative learning: Lessons from occupational therapy reasoning in educational practice. *American Journal of Occupational Therapy*, *74*(1), 7401347010p1-7401347010p6. https://doi.org/10.5014/ajot.2020.033100