Use of learning theories to guide simulation-based learning in allied health student professional placements: A narrative review

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Using a learning theory is key when designing simulation-based learning linked to allied health professional placements to ensure the purposeful selection of educational methods and to understand how it may assist learners in achieving desired learning outcomes. A narrative review was undertaken to identify the learning theories reported in simulation-based learning linked to allied health professional placements and how the learning outcomes aligned with the reported theories. Only eight of the 25 reviewed studies explicitly reported a learning theory, with minimal attempt to link them to the learning experience. Educators are encouraged to develop an understanding of the breadth and depth of learning theories and how they can best align these with the desired learning outcomes to allow the best fit for purpose. As a result, the authors have developed a practical guide to assist educators in designing simulation-based learning to better understand how learning theories could be incorporated and the anticipated outcomes that could be measured.

Keywords: Allied Health, learning theories, professional placements, simulation-based learning

Simulation-based learning is a popular technique in the education of allied health professionals (Ryall et al., 2016). Incorporating various technologies and modalities, the versatility of simulation allows educators to adapt practical experiences to meet the learner's needs while also addressing curriculum and professional accreditation requirements (Motola et al., 2013). Moving beyond the classroom, simulation-based learning as an educational tool is increasingly used to prepare students for professional placements or substitute placement hours in allied health professional curricula (Squires et al., 2022). Professional placements are fundamental to developing competent health professionals (Lave & Wenger, 1991; Maidment, 2013). While demonstrating discipline-specific technical capabilities is essential, learners must also develop the relational and organizational attributes that contribute to competence in the healthcare setting (Parlamis & Monnot, 2019). Within the literature, simulation modalities such as manikins and part-task trainers are commonly utilized to develop technical skills (Issenberg & Scalese, 2008). In contrast, simulated patients provide the opportunity to replicate the complexities of 'real-life' patient interactions, creating an authentic environment to develop the broader, more transferable qualities of an entry-level healthcare practitioner (Williams & Song, 2016).

Extensive evidence shows learners are satisfied with simulation experiences, with ratings independent of the simulation modality, activity, and student level (O'Donnell et al., 2014). It is also acknowledged that simulation-based learning can immediately impact a learner's confidence and capabilities (O'Donnell et al., 2014; Squires et al., 2022). A recent scoping review (Squires et al., 2022) specifically

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mapped the use of simulation-based learning to support professional placements for allied health students. Consistent with research within the medicine and nursing fields (Johnston et al., 2018; McGaghie et al., 2010), the majority of studies in the scoping review demonstrated positive outcomes related to learner satisfaction and self-reported confidence, knowledge, and skills (Squires et al., 2022). However, as simulation-based learning continues to increase, those designing and implementing simulation experiences need to understand why simulation is used and how students' participation in experiences is expected to achieve the desired learning outcomes (Lavoie et al., 2018).

Health professional educators are not always equipped with the background to understand the psychology of learning (Blazeck, 2011) and are commonly designing simulation activities with a sole focus on the specific learning outcomes they want to achieve. These outcomes can be summative assessments, which measure how students have met specific learning objectives or standards by the end of a simulation experience (assessment of learning) (Earl, 2012; Hargreaves, 2005). Alternatively, educators may employ formative assessments to provide feedback and support to students during the learning process, aiming to identify strengths and weaknesses and guide instructional decisions (assessment for learning) (Earl, 2012; Hargreaves, 2005). A learning theory used in designing a simulation-based experience can assist educators in understanding how desired learning outcomes can be met (Bearman et al., 2017).

Learning theories provide a foundation for understanding how a learner's knowledge is constructed, understood, and applied (Khalil & Elkhider, 2016). The alignment of a learning theory in the design of simulation activities could ensure the purposeful selection of teaching approaches and assessment methods to enhance the efficiency and effectiveness of an activity (Bearman et al., 2017). Within education, six theoretical underpinnings are commonly identified in the literature (behaviorism, constructivism, cognitivism, sociocultural theory, humanism, and connectivism). However, the simulation literature, to date, has only been linked to three theoretical underpinnings: behaviorism, cognitivism, and constructivism (Bearman et al., 2017; Erlam et al., 2017; Lavoie et al., 2018; Rutherford-Hemming, 2012). See Box 1 for an overview of each theoretical underpinning.

BOX 1: Overview of key theoretical underpinnings described in the simulation literature.

Behaviorism believes learning relates to the objective truth and how it can be measured. It is less concerned with how a learner understands but with what can be observed and repeated. It strongly links positive reinforcement as a feedback mechanism (Bearman et al., 2017; Woollard, 2011).

Cognitivism explores how people think and is influenced by internal thoughts and external elements. It encompasses a learner's perception, memory, processing, and structuring. It has a central focus on what knowledge means to the individual rather than on changes in behavior (Gredler, 1997; Merriam & Baumgartner, 2020; Rutherford-Hemming, 2012).

Constructivism considers how learners use their experiences and ideas to construct new knowledge and meaning. Learning is a very active process for the learner (Merriam & Baumgartner, 2020; Rutherford-Hemming, 2012; Torre et al., 2006).

Sociocultural theory emphasizes the role of social and cultural factors in the learning process. Learning is a collaborative and socially mediated activity that occurs through interactions with others and the cultural tools and resources available in a particular sociocultural context (Cong-Lem, 2022; John-Steiner & Mahn, 1996).

Humanism emphasizes the freedom and autonomy of learners. It connects the ability to learn with the fulfillment of needs and the learner's perceived utility of the knowledge (Torre et al., 2006).

Connectivism is grounded in the notion that learning is through the formation of connections. Strongly linked with learning using technology, learning can traverse and construct networks (Dacholfany et al., 2022).

Within each theoretical underpinning sits numerous learning theories represented as models or step-by-step frameworks. The most common theories include experiential learning (A. Y. Kolb & D. A. Kolb, 2005; D. A. Kolb, 2014), reflective practice (Schön, 1983), and situated learning (Lave & Wenger, 1991). While each theory has a specific framework, they all, to some degree, allow students to repeat practice and receive individualized directed feedback with time for reflection (Erlam et al., 2017). While the literature on theoretical underpinnings and theories is extensive, there is no consensus on which theory best supports the skill development of allied health professions undertaking simulation-based learning (O'Shea et al., 2022; Rutherford-Hemming, 2012). It is also evident within the literature that the terms are often described using abstract concepts that can be difficult for educators, who often do not have an education background, to interpret into relevant experiences (Bearman et al., 2017; Kaakinen & Arwood, 2009; Lavoie et al., 2018). This has been explored within the nursing profession by two systematic reviews. Kaakinen and Arwood (2009) revealed that from 120 studies, only 16 referenced a learning theory, while Lavoie et al. (2018), identified from 182 studies, 56% referenced a theory.

Incorporating learning theories in the design of simulation-based learning would enable educators to create simulations that align with authentic learning experiences, engage learners and optimize the use of resources (Bearman et al., 2017; INACSL, 2016; O'Shea et al., 2022; Rutherford-Hemming, 2012; Torre et al., 2006; Watts et al., 2021). Ultimately providing more meaningful and effective educational experiences that support simulation design for different learning needs. There have been few attempts within the simulation literature to report the link between simulation-based experiences and learning theories (O'Shea et al., 2022). The educational basis of simulation would be strengthened by a more deliberate link to a learning theory underpinning the simulation experience. This review aimed to

explore simulation-based learning using simulated patients linked to allied health student professional placements to (i) identify the learning theories reported and (ii) how learning outcomes align with the reported learning theories. In addition, the findings from this review have been used to develop a practical guide on how simulation-based learning could be designed in alignment with existing learning theories.

METHOD

This narrative review was based on a process outlined by Ferrari (2015) and occurred in two phases. Phase 1 involved establishing the pre-existing theoretical underpinnings and associated learning theories known to be used in simulation education identified from our published scoping review (Squires et al., 2022). The commonly used learning outcomes of simulation-based experiences also identified in the previous review (Squires et al., 2022) were collated and categorized into primary learning outcomes – confidence, self-concept, attitudes, capabilities, and competence. See Box 2 for definitions of the primary learning outcomes identified in simulation-based experiences. While the terms *confidence* and *self-efficacy* were commonly used interchangeably in the literature, it is important to acknowledge that these terms have different meanings. However, the purpose of this article was to map the theories with the reported outcomes. Therefore, for this review, the term confidence will be used to broadly capture a learner's overall belief in their ability (*confidence*) and self-belief in their ability to perform specific tasks (*self-efficacy*). Each learning outcome was aligned with one or more learning theories. These components were collated to provide an overview of theoretical underpinnings, associated theories, and how they aligned with outcome measures (Table 1).

BOX 2: Definitions of primary learning outcomes in simulation-based experiences.

Confidence is a metacognitive experience characterized as a trait or quality (Brodie et al., 1995; Stankov et al., 2012).

Self-efficacy is a belief in one's capacity to produce outcomes specific to the task (Stankov et al., 2012).

Self-concept is the perception or belief about oneself (Stankov et al., 2012).

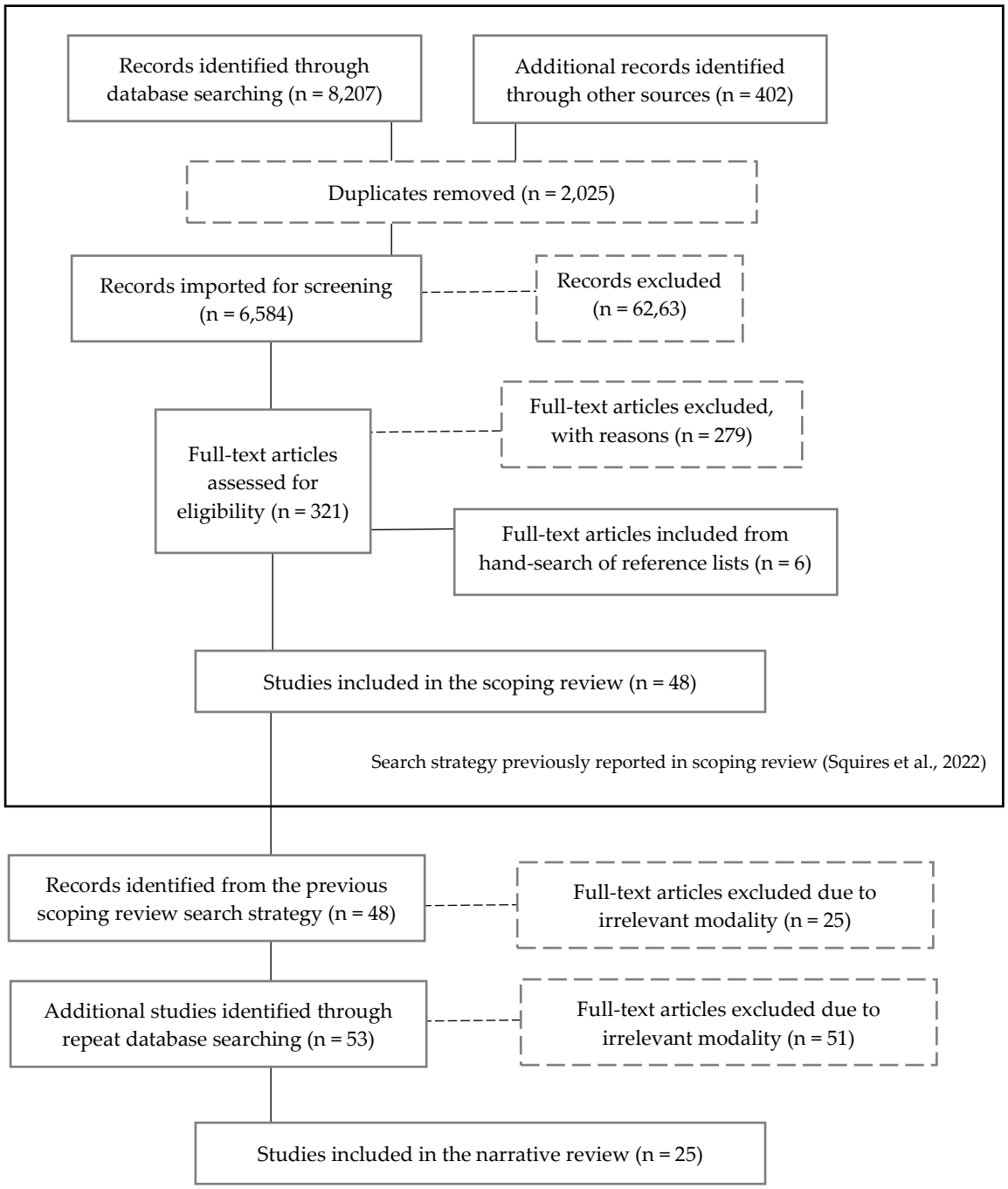
Attitudes are an individual's judgments or beliefs toward a particular idea, situation, or person. They can shape an individual's interactions and behavior (Vargas-Sánchez et al., 2016).

Capabilities are the skills, knowledge, and attributes that, when combined with confidence, enable learners to manage in familiar and unfamiliar environments (Cairns & Stephenson, 2009).

Competence is the acquisition of knowledge and skills by the learner with the ability to apply what has been learned (Glaesser, 2019).

Phase 2 involved using included studies identified in our previous scoping review (n = 48) (Squires et al., 2022) with a repeated database search in July 2021 (yielding a further 53 studies). A further, more focused inclusion criterion was applied to all studies (n= 101) to assess eligibility for inclusion in this narrative review. Included studies were required to utilize simulated patients as the sole simulation modality, with modalities such as high-fidelity manikins, computer simulation, and part-task trainers excluded. The revised search strategy for this narrative review (n= 25) is presented as a PRISMA flow diagram (Tricco et al., 2018) in Figure 1.

FIGURE 1: PRISMA flow diagram.



Note. Adapted from "PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation," by A. C. Tricco, E. Lillie, W. Zarin, K. K. O'Brien, H. Colquhoun, D. Levac, D. Moher, M. D. Peters, T. Horsley and L. Weeks, 2018, *Annals of Internal Medicine*, 169(7), Appendix Figure 1. Copyright 2018 by American College of Physicians. Adapted with permission.

TABLE 1: Overview of theoretical underpinnings and associated theories aligned to learning outcomes.

Theoretical Underpinnings	Learning Theories	Teaching strategies	Aligned Outcome Measures
Behaviorism			
Learning related to objective, observable behavior resulting in measurable change. Strongly linked to the concept of consequences as a mechanism of feedback.	**Operant Conditioning (Skinner, 1965)** Observable behavior compared to the ideal. Immediate feedback rewards positive behavior and suppresses unfavorable outcomes. **Classical Conditioning (Pavlov, 2019)** Learning focuses on involuntary behaviors, using associations with neutral stimuli to evoke a specific involuntary response. **Social Cognitive Theory (Bandura, 1993)** Learners acquire new behaviors and skills by observing the consequences others experience.	– Teacher centered – Repetition and feedback important – Feedback shapes behavior – Reward structures	**Capabilities** – Knowledge or skill assessment (yes/no) **Competency** – Tick box outcomes (pass/fail)
Cognitivism			
Internal thoughts and external elements such as the environment and others influence learning. A central focus on what knowledge means to the individual.	**Cognitive Learning Theory (Bode, 1929; Gredler, 1997)** Linked to perception, thought, memory, and information processing. Influenced by goals, expectations, and experiences. **Information Processing Theory (J. Miller, 1988)** Learning involves acquiring, organizing, and integrating new information into existing mental structures. **Schema Theory (Piaget, 1971)** Learning involves the assimilation of new information into existing schemas and the accommodation of schemas to accommodate new information.	– Individual tasks – Draw on prior knowledge to understand	**Capabilities** – Pre-/post- knowledge test **Competency** – Collaboration or teamwork
	Social Learning Theory (Bandura & Walters, 1977) Learning can occur from observation in a social environment. Learners store the modeled behavior and retrieve it as needed. **Social Cognitive Theory (Bandura, 1993)** Builds on Social Learning Theory concepts with greater emphasis on cognitive processes. Captures self-efficacy as a belief in self to learn or perform and the individual's active role in their learning.	– Modeling important – Team environment – Opportunity for feedback	**Self-efficacy** – Self-reported survey
Constructivism			
Cognitive constructivism (Piaget, 1980) Reliant on processing prior knowledge to construct new realities or alter pre-existing ones. **Social constructivism (Vygotsky & Cole, 1978)** The environment is important in constructing reality and knowledge.	**Situated Learning (Dewey, 1986; Lave & Wenger, 1991)** Learning occurs through relationships and connecting prior knowledge when performing authentic tasks **Reflective Practice (Schön, 1983)** Learners critically analyze experiences to construct understanding to shape learning actively. Encompasses reflection on & in action. **Experiential Learning (D. A. Kolb, 2014)** Learning occurs by doing. Knowledge is formed and reformed repeatedly based on experiences. **Transformative Learning (Mezirow, 2008)**	– Learner-centered – Individual (cognitive) or team (social) environment – Realistic, authentic environment – Repeat and experiment with new ideas – Feedback and reflection	**Self-concept** – Reflection of learning – Review of performance, knowledge, or skill change assessed using a rubric or checklist

Theoretical Underpinnings	Learning Theories	Teaching strategies	Aligned Outcome Measures
	When linking new events, learners review feelings, values, beliefs, and prior knowledge. **Adult Learning (Knowles, 1978)** Learners are self-directed and autonomous. Bring life experience and prior knowledge to engage in the learning process.		
Sociocultural Theory Emphasizes social interaction and cultural context in learning. Learning occurs through collaboration and is influenced by social and cultural factors.	**Transformative Learning (Mezirow, 2008)** Acknowledges the social context on learning through reflection and reconstruction of meaning.	– Peer interaction – Scaffolding of content – Use of culturally relevant content	**Self-concept** – Reflection of learning **Competency** – Collaboration or teamwork
Humanism Learning is self-directed and encourages the independence of learners. Learners can achieve when the learning environment meets their social, emotional, and cognitive needs.	**Experiential Learning (D. A. Kolb, 2014)** Emphasizes personal experience. Learning occurs best in an environment with direct experience, reflection, and hands-on activities. **Self-Directed Learning (Knowles, 1975)** Learners take control of their learning. Emphasizes intrinsic motivation, autonomy, and goal setting **Hierarchy of Needs (Maslow & Lewis, 1987)** While not a learning theory, commonly associated as it suggests a learner must have their basic needs met before engaging in learning activities.	– Learner-centered – Hands-on activities – Group tasks for collaboration – Opportunity for self-directed activities – Feedback and reflection	**Self-concept** – Reflection of learning **Competency** – Collaboration or teamwork
Connectivism It builds on traditional learning theories for understanding learning in the digital age. Emphasizes that learning occurs through the formation of connections.	**Community of Inquiry (Garrison, 2016)** Learners collaborate and engage in critical review and reflection to construct meaning. Requires learner involvement to ensure mutual understanding within the network. **Communities of Practice (Wenger, 1999)** Learners are placed in groups with similar interests and expertise to foster learning by sharing knowledge and experience in a socially situated environment. **Activity Theory (Vygotsky & Cole, 1978)** Learners play an active role in learning with a focus on the connections and environment they interact to share experiences.	– Collaboration in online networks	**Self-concept** – Reflection of learning – Review of performance, knowledge, or skill change assessed using a rubric or checklist **Competency** – Collaboration or teamwork

FINDINGS: REPORTED LEARNING THEORIES IN SIMULATION LINKED TO PROFESSIONAL PLACEMENTS

The infrequent reporting of learning theories has been demonstrated in this current review (Table 2), with only eight studies explicitly reporting the use of a learning theory (Barker et al., 2018; Fejzic & Barker, 2015; Fejzic et al., 2016; Imms et al., 2018; Knight et al., 2020; A. H. Miller et al., 2017; Pfaff, 2014; Quail et al., 2016).

TABLE 2: Results of included studies regarding theoretical basis and intended learning outcomes.

Author (year)	**Learning Theory**	**Learning Outcomes**				
		Confidence	**Self-Concept**	**Attitudes**	**Capabilities**	**Competence**
Barker et al. (2018).	Social Cognitive Learning; Operant & Classical Conditioning	✓				
Blackford et al. (2015).		✓				✓
Blackford et al. (2020).					✓	
Blackstock et al. (2013).		✓			✓	✓
Farahat et al. (2015).		✓	✓			
Fejzic & Barker (2015).	Social Cognitive Learning; Operant & Classical Conditioning		✓			
Fejzic et al. (2016).	Social Cognitive Learning; Operant & Classical Conditioning		✓			
Henry et al. (2009).			✓			
Hill et al. (2013).		✓	✓			
Hill et al. (2021).						✓
Imms et al. (2018).	Situated Learning	✓	✓		✓	✓
Kelly et al. (2021).		✓	✓	✓		
Ketterer et al. (2020).		✓			✓	
Knight et al. (2020).	Experiential Learning	✓		✓		
Lucas et al. (2019).		✓		✓		
Miller et al., (2017).	Experiential Learning; Reflective Practice; Adult Learning		✓			✓
Nieuwoudt et al. (2021).			✓	✓		
Pfaff (2014).	Social Learning Theory		✓			
Phillips et al. (2018).						✓
Quail et al. (2016).	Experiential Learning	✓	✓	✓		
Shorland et al. (2018).		✓	✓	✓		
Tuttle & Horan (2019).						✓
Watson et al. (2012).		✓				✓
Wilson et al. (2010).			✓	✓		
Wright et al. (2018).		✓				✓

Three of the four studies (Barker et al., 2018; Fejzic & Barker, 2015; Fejzic et al., 2016), aligning with cognitivism, were related to the one research project exploring teaching professional communication competencies with simulation in pharmacy education. Bandura's social cognitive learning theory

(Bandura, 1986) was used in these studies to underpin a schematic skills-based resource for developing communication competencies adapted for this study. The fourth study (Pfaff, 2014) described an interprofessional education initiative between nursing and radiologic technology students. Bandura's social learning theory (Bandura & Walters, 1977) was introduced in the methods of Pfaff's study to develop the self-efficacy items on the data collection instrument.

The learning theories, operant and classical conditioning, which align with behaviorism, were reported in the same three studies identified above (Barker et al., 2018; Fejzic & Barker, 2015; Fejzic et al., 2016). The theories were introduced as background to the development of the EXCELL (Excellence in Cultural Experiential Learning and Leadership) model, a predeveloped schema that the authors were using in this study to develop learners' generic communication competencies.

Four studies explicitly aligned with underpinnings of constructivism as a learning theory. Theories included experiential learning (Knight et al., 2020; A. H. Miller et al., 2017; Quail et al., 2016), reflective practice (A. H. Miller et al., 2017), situated learning (Imms et al., 2018) and adult learning theory (A. H. Miller et al., 2017). While it is acknowledged that these theories align with constructivism, they also add new understandings that go beyond constructivism. Knight et al., (2020) and Quail et al., (2016) provided the most explicit inclusion of a learning theory. Knight et al., (2020) detailed the key elements of experiential learning relevant to their reported simulation program. In contrast, Quail et al., (2016) referenced another author's work, connecting simulation design with the four stages of Kolb's experiential learning theory. However, this was not explicitly linked to the presented simulation program. The design of the two-week simulation program, as reported by A. H. Miller et al., (2017), was guided by the principles of experiential learning, reflective practice, and adult learning theory. While these principles were introduced in the paper, there was no explicit link between the design of the reported program and how these principles were incorporated. Lastly, Imms et al., (2018) reported that the program's design aligned with the theories required for authentic learning. However, the link to situated learning was left for the reader to explore in the referenced literature.

ALIGNMENT OF LEARNING THEORIES AND REPORTED LEARNING OUTCOMES

Behaviorism

In addition to identifying learning theories, it is important to examine the alignment between those learning theories and the reported learning outcomes. Three studies were underpinned by the behaviorism theories of operant and classical conditioning (Barker et al., 2018; Fejzic & Barker, 2015; Fejzic et al., 2016), which rely on the learner to be motivated by positive rewards and the desire to avoid negative consequences. A review of these studies found a misalignment between the theoretical frameworks and the reported learning outcomes. In the studies, learners were given the marking criteria after the simulation event, resulting in an unclear understanding of the assessment standards. Additionally, there was a lack of objective measures to assess the learner's skill or competence and no reported opportunity for the learner to repeat practice to correct errors in performance which are all key elements of behaviorism (Barker et al., 2018; Fejzic & Barker, 2015; Fejzic et al., 2016).

Cognitivism

The three studies identified above were underpinned by social cognitive learning theory (Barker et al., 2018; Fejzic & Barker, 2015; Fejzic et al., 2016). With this theory, there was a clear alignment between their aim of assessing confidence to their learning outcomes which assessed the learner's self-perceived confidence and capabilities. The study found that participation in the simulation-based experience

increased the learner's self-reported confidence, professionalism, and profession-specific practice skills. Additionally, the study by Pfaff (2014) saw a strong alignment between the reported theoretical underpinnings, simulation design, and learning outcomes. The study focused on assessing the self-perceived confidence and capabilities of nursing and radiologic technology students regarding specific clinical knowledge and skills (Pfaff, 2014). To achieve this alignment, learners were given an orientation to the simulation, including learning objectives. The scenarios and equipment utilized in the simulation were designed to replicate the clinical setting authentically. A debrief session was also conducted after the simulation to facilitate reflection and further learning (Pfaff, 2014). As a result, all aspects of the reported simulation design effectively align with the principles of cognitivism.

Constructivism

Simulation design is crucial in achieving the desired learning outcomes in studies aligned with Constructivist theories. Of the four studies that reported constructivism theories as their theoretical foundations (Imms et al., 2018; Knight et al., 2020; A. H. Miller et al., 2017; Quail et al., 2016), each varied in the level of detail provided regarding simulation design.

In the study by Imms et al., (2018), situated learning was referenced as an appropriate theory supporting authentic learning. The study demonstrated that participating in the simulation resulted in students achieving comparable learning outcomes to those in traditional clinical placements. However, the reporting of the study needed more specific information on the approaches utilized to support situated learning, such as reflection and the opportunity for repetition to consolidate the newly acquired knowledge and skills (Imms et al., 2018).

Knight et al., (2020) reported that learners demonstrated increased confidence in communication skills and a positive shift in attitudes towards developing communication skills following participation in the simulation. While changes to self-reported confidence typically aligned with cognitivism, examining changes to communication skills was reported after an opportunity for feedback and reflection, aligning appropriately with experiential learning principles. Similarly, Quail et al., (2016) demonstrated appropriate alignment with experiential learning theory in their reported simulation design. Learners engaged in an authentic environment during the simulation, followed by feedback and reflection to enhance their knowledge and skills. The study found that learners reported higher self-reported communication skills, knowledge, and confidence following participation in the simulation, which aligns with the principles of experiential learning (Quail et al., 2016).

The final study reported alignment with constructivist principles, including experiential learning, reflective practice, and adult learning (A. H. Miller et al., 2017). Learners were given opportunities to practice skills, receive feedback, and reflect on their performance. However, it is worth noting that the simulation occurred in a lab environment, which did not fully replicate an authentic clinical setting, an essential aspect of constructivist approaches. Although the study did prompt learners to reflect on the most beneficial learning experience in the module, the primary learning outcome was the routine competency assessment conducted during the learner's eight-week placement.

DISCUSSION

Learning theories can provide educators with an understanding of how students learn and are vital in designing an experience to achieve the desired learning outcomes. Incorporating theories would give educators a more comprehensive understanding of how the learning experience can be strategically designed for maximum effectiveness (Bearman et al., 2017; O'Shea et al., 2022; Rutherford-Hemming,

2012). Despite their importance, learning theories are infrequently reported in the literature (O'Shea et al., 2022), which was further identified in this current review. This review explored simulation-based learning within the allied health professions. Of the 25 studies reviewed, only eight identified a learning theory, and only two explicitly outlined how the reported simulation activity aligned with the reported theory. This supports a need for consistent reporting in the simulation literature of learning theories to increase transparency in understanding how they align to achieve the desired learning outcomes.

In allied health education, simulation facilitators typically consist of academics or clinicians who often approach the design of simulation-based learning from a practical perspective. As a result, educators have frequently identified the desired learning outcomes, such as enhancing a learner's communication confidence. Although it might be convenient to teach using familiar methods or approaches that have been used or experienced before, this tendency may lead to the selection of simulation activities that fail to demonstrate or achieve the desired outcomes effectively or that are unsuitable for addressing the specific needs of the learner (Bearman et al., 2017). It is essential to critically evaluate the underlying theories that support student learning and the teaching methods employed in simulation design (Rutherford-Hemming, 2012). Therefore, more support is needed to assist educators with little educational experience, to understand how learning theories can be practically applied (Blazeck, 2011). One recent article (O'Shea et al., 2022) aimed to guide the development of dietetic-specific simulation-based experiences using a constructivism lens. It is acknowledged that this theoretical underpinning is commonly used within the allied health professions' simulation-based learning activities due to its experiential nature. However, educators must develop an understanding of the breadth and depth of learning theories and how they can best align with the associated learning outcomes to allow educators to choose the best fit for the purpose.

IMPLICATIONS FOR PRACTICE

To facilitate the practical implementation of learning theories in simulation-based learning, the authors have presented an overview of learning theories to enable alignment with anticipated learning outcomes (Table 3). While this does present the theoretical underpinnings and associated learning theories in a very simplified approach, this framework can serve as a guide for those new to simulation design or without an educational background, illustrating how learning theories can be effectively incorporated into simulation-based experiences. By utilizing this framework, educators would better understand grand theoretical underpinnings that inform the selection of suitable activities and assessments that align with desired learning outcomes. Ultimately empowering educators to design more effective simulation-based learning that maximizes learning outcomes.

TABLE 3: Practical application of learning theories in simulation-based learning design with a simulated patient focus.

	Preparation	Simulation-based experience	Feedback/debrief	Example of learning outcomes
Behaviorism	Provided learning objectives and step-by-step protocol for completing a single skill-focused task. Required equipment and resources are provided. The setting does not need to be authentic.	Undertake the task following the protocol. The task can be repeated after the provision of feedback.	Provision of immediate feedback on completeness and accuracy compared to the protocol. Provided clear, actionable strategies.	Assessed on completeness and accuracy, marks are deducted for mistakes.
Cognitivism [Cognitive Learning Theory]	Provided learning objectives and the allocated task. Provided adequate time to prepare and recall prior knowledge.	Use prior knowledge and experience to implement the activity in the environment. Scenario building in complexity as each component is mastered.	Provided with an opportunity to reflect on the experience to comprehend and store newly developed knowledge and experience.	Completes a knowledge or skill test, completing the post-test before increasing complexity to demonstrate mastery.
Cognitivism [Social Learning Theory]	Provided learning objectives and relevant task-related information. Set goals and challenges for the experience.	Observation of the task modeled. May have an opportunity to participate in a guided experience.	Guided feedback and reflection opportunities are provided to align confidence with performance.	Undertakes self-reflection of abilities. Commonly self-reported confidence or knowledge/skills.
Constructivism	Provided learning objectives, and orientation to the environment, to ensure full participation.	Authentic environment. Explore problems and make meaning. Tasks based on current knowledge and skill level with scaffolding for complexity. Tasks repeated after feedback to cement experiences.	Feedback is provided from various sources. Learner provided time to reflect and make meaning of the task to advance knowledge development.	Assessed on the ability to complete the activity. Considers the complexities of competence and is considered on a spectrum based on the learner's current experience.
Sociocultural Theory	Collaborative simulation, where learners work together to solve a problem	Learners collaborate to navigate the scenario. Opportunities to share perspectives and knowledge. More experienced members serve as mentors.	Guided feedback emphasizes the social nature of learning and collaboration to advance skills and understanding. Time for reflection provided.	Completes a peer and self-assessment using a rubric to reflect on strengths, weaknesses, and group progress.
Humanism	Scenario designed to incorporate aspects of patient diversity, cultural considerations, and emotional experiences.	Authentic environment. Consideration is given to the broader context of the situation to include social, emotional, and cultural aspects.	Feedback is provided with a focus on skills related to patient-centered care. The learner provided time to reflect.	Assessed on the ability to consider and integrate the broader aspects of care on the patient.
Connectivism	Provided learning objectives, and orientation to the online environment, to ensure full participation.	Undertake a task with an emphasis on collaboration and information sharing. Use of a mentor to guide the experience.	Feedback is provided. Learner provided time to reflect on the experience and environment.	Assessed on the ability to complete the activity and collaborate across digital platforms.

It is acknowledged that while most articles did not report on a learning theory, we cannot be certain they did not use one in the design of their simulation activities. Furthermore, although this review focused on exploring the theoretical underpinnings and associated theories related to simulation-based learning with simulated patients, it is acknowledged that numerous other learning theories could be applicable. It is crucial to recognize that no single learning theory exclusively applies to simulation-based learning. Additionally, considering a learner's placement stage and the desired learning outcomes becomes essential in making informed decisions about the appropriate learning theories to inform simulation design. Therefore, educators should continue exploring existing literature on learning theories to identify the concepts and attributes that best align with their specific educational objectives (Snelbecker, 1983).

CONCLUSION

For simulation to deliver a meaningful learning experience for students, it is crucial to have a strong foundation in an appropriate learning theory that supports the design of the simulation to cater to diverse learning needs. This review and subsequent framework can serve as a valuable resource for educators, offering practical guidance in the decision-making process and strengthening the reporting and transparency of simulation literature.

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REFERENCES

Bandura, A. (1986). *Social foundations of thought and action*. Prentice Hall.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational psychologist*, *28*(2), 117–148.

Bandura, A., & Walters, R. H. (1977). *Social learning theory*. Prentice Hall.

Barker, M., Fejzic, J., & Mak, A. S. (2018). Simulated learning for generic communication competency development: a case study of Australian postgraduate pharmacy students. *Higher Education Research & Development*, *37*(6), 1109-1123. https://doi.org/10.1080/07294360.2018.1479377.

Bearman, M., Nestel, D., & McNaughton, N. (2017). Theories informing healthcare simulation practice. In D. Nestel, M. Kelly, B. Jolly, & M. Watson (Eds.), *Healthcare simulation education: Evidence, theory and practice* (pp. 7–15). John Wiley & Sons.

Blackford, J., Alison, J., McAllister, L., & Nisbet, G. (2020). Replacing physiotherapy student clinical education time with simulation-The clinical educators' experience. *International Journal of Practice-based Learning in Health and Social Care*, *8*(1), 60-72. https://doi.org/10.18552/ijpblhsc.v8i1.554.

Blackford, J., McAllister, L., & Alison, J. (2015). Simulated learning in the clinical education of novice physiotherapy students. *International Journal of Practice-based Learning in Health and Social Care*, *3*(1), 77–93. https://doi.org/10.18552/ijpblhsc.v3i1.209.

Blackstock, F. C., Watson, K. M., Morris, N. R., Jones, A., Wright, A., McMeeken, J. M., Rivett, D. A., O'Connor, V., Peterson, R. F., & Haines, T. P. (2013). Simulation can contribute a part of cardiorespiratory physiotherapy clinical education: Two randomized trials. *Simulation in Healthcare*, *8*(1), 32–42. https://doi.org/10.1097/SIH.0b013e318273101a.

Blazeck, A. (2011). Simulation anxiety syndrome: Presentation and treatment. *Clinical Simulation in Nursing*, *7*(2), e57-e60. https://doi.org/https://doi.org/10.1016/j.ecns.2010.05.002

Bode, B. H. (1929). *Conflicting psychologies of learning*. DC Heath.

Brodie, I., Reeve, F., & Whittaker, R. (1995). Delivering the DEAL: Implementation of a work-based learning programme at degree level. *The Vocational Aspect of Education*, *47*(4), 365–385. https://doi.org/10.1080/0305787950470403.

Cairns, L., & Stephenson, J. (2009). *Capable workplace learning*. Sense Publishers.

Cong-Lem, N. (2022). Vygotsky's, Leontiev's and Engeström's cultural-historical (activity) theories: Overview, clarifications and implications. *Integrative Psychological and Behavioral Science*, *56*(4), 1091-1112.

Dacholfany, M. I., Saifi, I. L., & Sulaiman, S. (2022). Connectivism and constructivism approaches to social learning theory. *International Journal of Education, Vocational and Social Science, 1*(01), 1-19.

Dewey, J. (1986). *Experience and education*. The Educational Forum; Macmillan.
Earl, L. M. (2012). *Assessment as learning: Using classroom assessment to maximize student learning*. Corwin Press.
Erlam, G. D., Smythe, L., & Clair, W.-S. (2017). Simulation is not a pedagogy. *Open Journal of Nursing*, *7*(7), 779-787. https://doi.org/10.4236/ojn.2017.77059.
Farahat, E., Rice, G., Daher, N., Heine, N., Schneider, L., & Connell, B. (2015). Objective structured clinical examination (OSCE) improves perceived readiness for clinical placement in nutrition and dietetic students. *Journal of Allied Health*, *44*(4), 208-214.
Fejzic, J., & Barker, M. (2015). Implementing simulated learning modules to improve students' pharmacy practice skills and professionalism. *Pharmacy Practice*, *13*(3). https://doi.org/10.18549/PharmPract.2015.03.583.
Fejzic, J., Barker, M., Hills, R., & Priddle, A. (2016). Communication capacity building through pharmacy practice simulation. *American Journal of Pharmaceutical Education*, *80*(2), Article 28 https://doi.org/10.5688/ajpe80228.
Ferrari, R. (2015). Writing narrative style literature reviews. *Medical Writing*, *24*(4), 230–235. https://doi.org/10.1179/2047480615Z.000000000329.
Garrison, D. R. (2016). *E-learning in the 21st century: A community of inquiry framework for research and practice*. Taylor & Francis.
Glaesser, J. (2019). Competence in educational theory and practice: a critical discussion. *Oxford Review of Education*, *45*(1), 70–85. https://doi.org/10.1080/03054985.2018.1493987.
Gredler, M. E. (1997). *Learning and instruction: Theory into practice* (3rd ed.). Prentice Hall.
Hargreaves, E. (2005). Assessment for learning? Thinking outside the (black) box. *Cambridge Journal of Education*, *35*(2), 213-224. https://doi.org/10.1080/03057640500146880.
Henry, B. W., Duellman, M. C., & Smith, T. J. (2009). Nutrition-based standardized patient sessions increased counseling awareness and confidence among dietetic interns. *Topics in Clinical Nutrition*, *24*(1), 25-34. https://doi.org/10.1097/TIN.0b013e3181978050.
Hill, A. E., Davidson, B. J., & Theodoros, D. G. (2013). Speech-language pathology students' perceptions of a standardized patient clinic. *Journal of Allied Health*, *42*(2), 84-91B.
Hill, A. E., Ward, E., Heard, R., McAllister, S., McCabe, P., Penman, A., Caird, E., Aldridge, D., Baldac, S., & Cardell, E. (2021). Simulation can replace part of speech-language pathology placement time: A randomized controlled trial. *International Journal of Speech-Language Pathology*, *23*(1), 92–102. https://doi.org/10.1080/17549507.2020.1722238.
Imms, C., Froude, E., Chu, E. M. Y., Sheppard, L., Darzins, S., Guinea, S., Gospodarevskaya, E., Carter, R., Symmons, M. A., & Penman, M. (2018). Simulated versus traditional occupational therapy placements: A randomized controlled trial. *Australian Occupational Therapy Journal*, *65*(6), 556–564. https://doi.org/10.1111/1440-1630.12513.
INACSL [International Nursing Association for Clinical Simulation and Learning]. (2016). Standards of best practice: Simulation outcomes and objectives. *Clinical Simulation in Nursing*, *12*, S13-S15. https://doi.org/10.1016/j.ecns.2016.09.006
Issenberg, S. B., & Scalese, R. J. (2008). Simulation in health care education. *Perspectives in Biology and Medicine*, *51*(1), 31-46. https://doi.org/10.1353/pbm.2008.0004.
John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian framework. *Educational Psychologist*, *31*(3-4), 191-206. https://doi.org/10.1080/00461520.1996.9653266.
Johnston, S., Coyer, F. M., & Nash, R. (2018). Kirkpatrick's evaluation of simulation and debriefing in health care education: a systematic review. *Journal of Nursing Education*, *57*(7), 393–398. https://doi.org/10.3928/01484834-20180618-03.
Kaakinen, J., & Arwood, E. (2009). Systematic review of nursing simulation literature for use of learning theory. *International Journal of Nursing Education Scholarship*, *6*(1). https://doi.org/10.2202/1548-923X.1688.
Kelly, T., Surjan, Y., Rinks, M., & Warren-Forward, H. (2021). Effect of communication skills training on radiation therapy student's confidence and interactions during their first clinical placement. *Radiography*, *27*(1), 59–66. https://doi.org/10.1016/j.radi.2020.05.015.
Ketterer, S., Callender, J., Warren, M., Al-Samarraie, F., Ball, B., Calder, K.-A., Edgerley, J., Kirby, M., Pilkington, P., & Porritt, B. (2020). Simulated versus traditional therapeutic radiography placements: a randomized controlled trial. *Radiography*, *26*(2), 140–146. https://doi.org/10.1016/j.radi.2019.10.005.
Khalil, M. K., & Elkhider, I. A. (2016). Applying learning theories and instructional design models for effective instruction. *Advances in Physiology Education*, *40*(2), 147–156. https://doi.org/10.1152/advan.00138.2015.
Knight, A., Baldwin, C., Reidlinger, D. P., & Whelan, K. (2020). Communication skills teaching for student dietitians using experiential learning and simulated patients. *Journal of Human Nutrition and Dietetics*, *33*(5), 601–613. https://doi.org/10.1111/jhn.12743.
Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers.* (ED114653). ERIC. https://eric.ed.gov/?id=ED114653
Knowles, M. S. (1978). Andragogy: Adult learning theory in perspective. *Community College Review*, *5*(3), 9-20.
Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, *4*(2), 193-212. https://doi.org/10.5465/amle.2005.17268566.
Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT Press.
Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Lavoie, P., Michaud, C., Belisle, M., Boyer, L., Gosselin, E., Grondin, M., Larue, C., Lavoie, S., & Pepin, J. (2018). Learning theories and tools for the assessment of core nursing competencies in simulation: A theoretical review. *Journal of Advanced Nursing*, *74*(2), 239-250. https://doi.org/10.1111/jan.13416.

Lucas, C., Williams, K., & Bajorek, B. (2019). Virtual pharmacy programs to prepare pharmacy students for community and hospital placements. *American Journal of Pharmaceutical Education*, *83*(10), Article 7011. https://doi.org/10.5688/ajpe7011.

Maidment, J. (2013). Getting ready for placement. In K. Stagnitti, A. Schoo, & D. Welch (Eds.), *Clinical and fieldwork placement in the health professions* (pp. 3–12). Oxford University Press.

Maslow, A., & Lewis, K. (1987). Maslow's hierarchy of needs. *Salenger Incorporated, 14*(17), 987-990.

McGaghie, W. C., Issenberg, S. B., Petrusa, E. R., & Scalese, R. J. (2010). A critical review of simulation-based medical education research: 2003–2009. *Medical Education*, *44*(1), 50-63. https://doi.org/10.1111/j.1365-2923.2009.03547.x.

Merriam, S. B., & Baumgartner, L. M. (2020). *Learning in adulthood: A comprehensive guide*. John Wiley & Sons.

Mezirow, J. (2008). An overview on transformative learning. In J. Crowther & P. Sutherland (Eds.), *Lifelong learning* (pp. 40–54). Routledge.

Miller, A. H., Tomlinson, S., Tomlinson, J. D., & Readinger, J. (2017). Addition of a patient examination module to address student preparedness for the first full-time clinical experience. *Journal of Physical Therapy Education*, *31*(2), 30–43.

Miller, J. (1988). Discrete and continuous models of human information processing: Theoretical distinctions and empirical results. *Acta Psychologica, 67*(3), 191-257. https://doi.org/https://doi.org/10.1016/0001-6918(88)90013-3

Motola, I., Devine, L. A., Chung, H. S., Sullivan, J. E., & Issenberg, S. B. (2013). Simulation in healthcare education: A best evidence practical guide. AMEE Guide No. 82. *Medical Teacher*, *35*(10), e1511-e1530. https://doi.org/10.3109/0142159X.2013.818632.

Muhammad Ihsan, D., Imran Latif, S., & Sabariah, S. (2022). Connectivism and constructivism approaches to social learning theory. *International Journal of Education, Vocational and Social Science, 1*(01), 1-19.

Nieuwoudt, L., Hutchinson, A., & Nicholson, P. (2021). Pre-registration nursing and occupational therapy students' experience of interprofessional simulation training designed to develop communication and teamwork skills: A mixed methods study. *Nurse Education in Practice*, *53*, Article 103073. https://doi.org/10.1016/j.nepr.2021.103073.

O'Donnell, J. M., Decker, S., Howard, V., Levett-Jones, T., & Miller, C. W. (2014). NLN/Jeffries simulation framework state of the science project: Simulation learning outcomes. *Clinical Simulation in Nursing*, *10*(7), 373–382. https://doi.org/10.1016/j.ecns.2014.06.004.

O'Shea, M.-C., Palermo, C., Rogers, G., Cardell, E., & Williams, L. T. (2022). It is time to link theory to practice in simulation-based learning: lessons from learning theories. *Journal of the Academy of Nutrition and Dietetics*, *122*(3), 516–518. https://doi.org/10.1016/j.jand.2021.06.011.

Parlamis, J., & Monnot, M. J. (2019). Getting to the CORE: Putting an end to the term "soft skills". *Journal of Management Inquiry*, *28*(2), 225-227. https://doi.org/10.1177/1056492618818023.

Pavlov, Y. G., & Kotchoubey, B. (2019). Classical conditioning in oddball paradigm: A comparison between aversive and name conditioning. *Psychophysiology, 56(7),* e13370.

Pfaff, M. A. (2014). Learning together: The image gently interprofessional simulation for nursing and allied health students. *Teaching and Learning in Nursing*, *9*(3), 108–114. https://doi.org/10.1016/j.teln.2014.02.001.

Phillips, E. S., Wood, G. J., Yoo, J., Ward, K. J., Hsiao, S. C., Singh, M. I., & Morris, B. (2018). A virtual field practicum: Building core competencies prior to agency placement. *Journal of Social Work Education*, *54*(4), 620–640. https://doi.org/10.1080/10437797.2018.1486651.

Piaget, J. (1971). *Biology and knowledge: An essay on the relations between organic regulations and cognitive processes*. University of Chicago Press.

Piaget, J. (1980). The psychogenesis of knowledge and its epistemological significance. In M. Piattelli-Palmarini (Ed.), *Language and learning: The debate between Jean Piaget and Noam Chomsky* (pp. 1-23). Harvard University Press.

Quail, M., Brundage, S. B., Spitalnick, J., Allen, P. J., & Beilby, J. (2016). Student self-reported communication skills, knowledge and confidence across standardized patient, virtual and traditional clinical learning environments. *BMC Medical Education*, *16,* Article 73. https://doi.org/10.1186/s12909-016-0577-5.

Rutherford-Hemming, T. (2012). Simulation methodology in nursing education and adult learning theory. *Adult Learning*, *23*(3), 129–137. https://doi.org/10.1177/1045159512452848.

Ryall, T., Judd, B. K., & Gordon, C. J. (2016). Simulation-based assessments in health professional education: A systematic review. *Journal of Multidisciplinary Healthcare*, *9*, 69-82. https://doi.org/10.2147/JMDH.S92695.

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

Shorland, J., Morris, C., & Stephens, D. (2018). Simulation speaks for itself: Building speechlanguage pathology students confidence through high quality simulation within a workplace clinical placement. *Focus on Health Professional Education: A Multidisciplinary Journal*, *19*(2), 53–67.

Skinner, B. F. (1965). *Science and human behavior*. Simon and Schuster.

Snelbecker, G. E. (1983). ls instructional theory alive and well? In C. M. Reigeluth (Ed.), *Instructional design theories and models: An overview of their current status* (pp. 437-472). Lawrence Erlbaum Associates.

Squires, K., Heaney, S., MacDonald-Wicks, L., Johnston, C., & Brown, L. (2022). Mapping simulated-based learning experiences incorporated into professional placements in allied health programs: A scoping review. *Simulation in Healthcare*, *17*(6), 403-415. https://doi.org/10.1097/SIH.0000000000000627.

Stankov, L., Lee, J., Luo, W., & Hogan, D. J. (2012). Confidence: A better predictor of academic achievement than self-efficacy, self-concept and anxiety? *Learning and Individual Differences*, *22*(6), 747-758. https://doi.org/https://doi.org/10.1016/j.lindif.2012.05.013.

Torre, D. M., Daley, B. J., Sebastian, J. L., & Elnicki, D. M. (2006). Overview of current learning theories for medical educators. *The American Journal of Medicine*, *119*(10), 903-907. https://doi.org/10.1016/j.amjmed.2006.06.037.

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D., Horsley, T., & Weeks, L. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850.

Tuttle, N., & Horan, S. A. (2019). The effect of replacing 1 week of content teaching with an intensive simulation-based learning activity on physiotherapy student clinical placement performance. *Advances in Simulation*, *4,* Article 14. https://doi.org/10.1186/s41077-019-0095-8.

Vargas-Sánchez, A., Plaza-Mejía, M. Á., & Porras-Bueno, N. (2016). Attitude. In J. Jafari & H. Xiao (Eds.), *Encyclopedia of tourism* (pp. 58-62). Springer. https://doi.org/10.1007/978-3-319-01384-8_11.

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes*. Harvard University Press.

Watson, K., Wright, A., Morris, N., McMeeken, J., Rivett, D., Blackstock, F., Jones, A., Haines, T., O'Connor, V., & Watson, G. (2012). Can simulation replace part of clinical time? Two parallel randomized controlled trials. *Medical Education*, *46*(7), 657–667. https://doi.org/10.1111/j.1365-2923.2012.04295.x.

Watts, P. I., McDermott, D. S., Alinier, G., Charnetski, M., Ludlow, J., Horsley, E., Meakim, C., & Nawathe, P. A. (2021). Healthcare simulation standards of best practicetm simulation design. *Clinical Simulation in Nursing*, *58*, 14–21. https://doi.org/10.1016/j.ecns.2021.08.009.

Wenger, E. (1999). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press.

Williams, B., & Song, J. J. Y. (2016). Are simulated patients effective in facilitating development of clinical competence for healthcare students? A scoping review. *Advances in Simulation*, *1,* Article 6.(https://doi.org/10.1186/s41077-016-0006-1.

Wilson, W. J., Hill, A., Hughes, J., Sher, A., & Laplante-Levesque, A. (2010). Student audiologists' impressions of a simulation training program. *The Australian and New Zealand Journal of Audiology*, *32*(1), 19-30.

Woollard, J. (2011). *Psychology for the classroom: E-learning*. Routledge.

Wright, A., Moss, P., Dennis, D. M., Harrold, M., Levy, S., Furness, A. L., & Reubenson, A. (2018). The influence of a full-time, immersive simulation-based clinical placement on physiotherapy student confidence during the transition to clinical practice. *Advances in Simulation*, *3*, Article 3. https://doi.org/10.1186/s41077-018-0062-9.

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About the Journal

The International Journal of Work-Integrated Learning (IJWIL) publishes double-blind peer-reviewed original research and topical issues related to Work-Integrated Learning (WIL). IJWIL first published in 2000 under the name of Asia-Pacific Journal of Cooperative Education (APJCE).

In this Journal, WIL is defined as:

> *An educational approach involving three parties – the student, educational institution, and an external stakeholder – consisting of authentic work-focused experiences as an intentional component of the curriculum. Students learn through active engagement in purposeful work tasks, which enable the integration of theory with meaningful practice that is relevant to the students' discipline of study and/or professional development* (Zegwaard et al., 2023, p. 38*).

Examples of practice include off-campus workplace immersion activities such as work placements, internships, practicum, service learning, and cooperative education (co-op), and on-campus activities such as work-related projects/competitions, entrepreneurships, student-led enterprise, student consultancies, etc. WIL is related to, and overlaps with, the fields of experiential learning, work-based learning, and vocational education and training.

The Journal's aim is to enable specialists working in WIL to disseminate research findings and share knowledge to the benefit of institutions, students, WIL practitioners, curricular designers, and researchers. The Journal encourages quality research and explorative critical discussion that leads to the advancement of quality practices, development of further understanding of WIL, and promote further research.

The Journal is financially supported by the Work-Integrated Learning New Zealand (WILNZ; www.wilnz.nz), and the University of Waikato, New Zealand, and receives periodic sponsorship from the Australian Collaborative Education Network (ACEN), University of Waterloo, and the World Association of Cooperative Education (WACE).

Types of Manuscripts Sought by the Journal

Types of manuscripts sought by IJWIL is of two forms: 1) *research publications* describing research into aspects of work-integrated learning and, 2) *topical discussion* articles that review relevant literature and provide critical explorative discussion around a topical issue. The journal will, on occasions, consider good practice submissions.

Research publications should contain; an introduction that describes relevant literature and sets the context of the inquiry. A detailed description and justification for the methodology employed. A description of the research findings - tabulated as appropriate, a discussion of the importance of the findings including their significance to current established literature, implications for practitioners and researchers, whilst remaining mindful of the limitations of the data, and a conclusion preferably including suggestions for further research.

Topical discussion articles should contain a clear statement of the topic or issue under discussion, reference to relevant literature, critical and scholarly discussion on the importance of the issues, critical insights to how to advance the issue further, and implications for other researchers and practitioners.

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Reference
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