

**Search Strategy:**

- #1 – student
- #2 – DPT OR Doctor of Physical Therapy OR Physical Therapy
- #3 – #1 AND #2
- #4 – clinical education OR rotation OR experience
- #5 – learning
- #6 – team based OR collaborative OR group
- #7 – #5 AND (#4) AND (#6)
- #8 – individual OR self
- #9 – #5 AND (#4) AND (#8)
- #10 – success OR competency OR reasoning
- #11 – #3 AND #7 AND #9 AND #10
- #12 – DPT OR Doctor of Physical Therapy OR Physical Therapy OR Physiotherapy
- #13 – #1 AND #12
- #14 – #13 AND #7 AND #9 AND #10
- #15 – nursing OR occupational OR medic\* OR pharmacy
- #16 – #1 AND #15
- #17 – #16 AND #7 AND #9 AND #10

**Evidence Table:**

\*Per Portney & Watkins Table 16.1 (2009)

**Background Information:**

<b>Author (Year)</b>	<b>Study Design &amp; Level of Evidence*</b>	<b>Description</b>	<b>Relevance to Capstone Project</b>
Alpine et al. (2019) <sup>1</sup>	Retrospective, case series study (pilot)  4 – Since this was a pilot study, there was no 1:1 model control group. There was only a 2:1 model group and data was only collected on opinions about this model.	This study investigates student and CI perceptions of the 2:1 clinical model but does not compare it to the 1:1 clinical model. A questionnaire was used to collect qualitative data.	The most important student-reported benefits of the 2:1 model of clinical education included “enhanced opportunities for collaborative learning, the development of new skills, and the support of another student.” <sup>1</sup> Student-reported challenges included an unhealthy competitive environment, unequal individual time spent with the CI, and individual factors’ (personality, learning styles, level of knowledge, etc.) influence on learning.
Moore et al. (2003) <sup>2</sup>	Prospective, cohort study	This study directly compared student and CI perspectives on the 1:1, 2:1,	Advantages and disadvantages of the 1:1, 2:1, and 3:1 models were listed in tables. The authors state

	2b – Good quality individual cohort study with 3 clearly defined groups.	and 3:1 models of clinical education. However, a standardized outcome measure was not used.	that in most cases, the 2:1 model of clinical education produces the greatest benefits and fewest drawbacks. It allows for peer support and collaboration, which students found very valuable. The 3:1 model had many of the same benefits, but a lack of individual time with the CI was a major drawback. The 1:1 model had success but lacked the peer communication found in the other models. Finding the model most appropriate for use depends on many factors including patient caseload, personalities of the CI and students, and resources available at the clinical site.
Ladyshevsky (2004) <sup>3</sup>	Prospective, cohort study 2b – Individual cohort study. Limited due to small sample size.	This study compared the effects of peer-coaching vs. individual learning when conducting a session with a simulated patient. A limitation is that real patients were not used and that only one “patient” encounter was studied.	The peer-coaching group produced more hypotheses and clinical concepts about the simulated patient than the individual learning group, on average. The authors discussed the fact that while CIs play an important role in clinical education, “peer coaching can be viewed as a supplementary support mechanism <sup>3</sup> ” for “things that students do not feel comfortable discussing with their supervisor. <sup>3</sup> ”
Ladyshevsky (2002) <sup>4</sup>	Prospective, cohort study 2b – Individual cohort study with quantitative data analysis.	This study compared the effects of reciprocal peer coaching (RPC) vs. individual learning when conducting a session with a simulated patient. This study utilized outcome measures, so quantitative data analysis was performed. However, this study only used a single simulated patient encounter.	This paper discusses the utility of “creating critical cognitive conflicts <sup>4</sup> ” among students when paired together. These conflicts push students to “initiate strategies to resolve this disequilibrium <sup>4</sup> ” by finding solutions to clinical problems and making improvements upon their clinical skills. The author of this study found statistically significant differences between the RPC group and individual learning group in the “cognitive, psychomotor, and affective domains <sup>4</sup> ” across all outcome measures used.
Huang & Wang (2020) <sup>5</sup>	Prospective, cohort study 2b – Individual cohort study with quantitative data analysis.	The authors of this paper studied the use of team-oriented, problem-based learning (PBL) with senior nursing students during an emergency care simulation experience. Compared to a group of students only exposed to the traditional nursing curriculum, the students in the experimental group “rated more highly their own	PBL is defined as a style of teaching in which students are individually presented with case-based problems that they must use clinical decision making to solve. The authors state that a major limitation of this model is the lack of communication with peers about how best to approach the problems presented. A solution is presented in the form of traditional Team-Based Learning (TBL), which involves a large class being divided into smaller groups to participate in activities and discussions put forth by facilitators. This capstone

		professional nursing knowledge and skills, critical thinking and problem-solving abilities, lifelong learning ability, professional identity and commitment, maturity and capacity for collaboration and teamwork, and respect for lives and ethics. <sup>5</sup>	project would build off of this concept of TBL by encouraging peer discussion about real patients and problems within a real clinic, rather than scenarios in the classroom.
Burgess et al. (2019) <sup>6</sup>	Prospective, cohort study 4 – Could be considered a “poor quality cohort study” since there was no comparison group of students not participating in TBL sessions.	This study implemented 3 specific TBL sessions with first year medical students and collected their opinions on the learning format by having them attend focus groups at the end. The qualitative data indicated that the participants enjoyed this learning environment in terms of the knowledge gained and social connections made.	This study utilized TBL with small groups of 5-6 students. Each group participated in inter- and intra-group tasks and activities to facilitate learning. During qualitative data collection, students reported that the small group setting was useful because it allowed for students who are typically quiet and reserved to share their thoughts and opinions in discussion. The results also showed that the group environment created a sense of accountability among students. In terms of the capstone project, students may be held more accountable in aspects of patient care in the clinic if they must report back to a peer afterwards.
Burgess & McGregor (2018) <sup>7</sup>	Systematic Review 2a – Cohort studies were included in the review.	This systematic review included 19 articles in the final analysis. The articles focused on the use of teacher training programs with students in health-related fields, mainly medicine. The programs aimed to prepare students to become peer tutors. The authors emphasized the need for this review, as health professions programs are increasingly “placing emphasis on universities to prepare health professional graduate students with teaching skills.” <sup>7</sup>	This review built upon concepts mentioned in the papers above. Benefits of peer teaching were found: a rich learning experience, opportunities to reflect on personal knowledge, provide support to students, reduce the burden of teaching from clinicians, etc. <sup>7</sup> Objective data to support the benefits of peer teaching was scant due to the qualitative nature of the data, which is an inherent limitation to the review. Many studies in the review utilized learning strategies that relied on the “flipped classroom” <sup>7</sup> method, in which students learn independently prior to a class or meeting and come prepared to participate in activities. The “flipped classroom” <sup>7</sup> concept will be utilized in this capstone project because the pair of students will be working together to discuss an educational topic that will better prepare them to tackle a patient problem in the clinic.
Jacobs et al. (2015) <sup>8</sup>	Prospective, cohort study	This study implemented a peer mentorship program between nursing students. Third and fourth	Mentorship was provided in the following four domains: emotional support, academic subject knowledge in the chosen area of study, role modeling,

	4 – Could be considered a “poor quality cohort study” since there was no comparison group that did not receive peer mentoring.	semester students mentored first semester students during the didactic portion of a nursing program. Surveys and focus groups were used to collect data about the students’ experiences.	and goal setting. Positive experiences were noted by the mentees in all of these domains, and students reported higher grades after peer learning meetings occurred. In the full-time program, 76% of students who received mentoring successfully completed the semester, while only 36% of students who were not mentored finished. <sup>8</sup> Similar results were reported in the part-time program, with 83% of mentored students and 56% of non-mentored students completing the semester. <sup>8</sup> Although this study did not report further statistical analyses, the authors still suggested that peer mentorship could encourage retention of students in nursing programs.
Secomb (2008) <sup>9</sup>	Systematic Review 2a – Most of the studies included in the review were cohort studies with qualitative data collection.	This systematic review explored articles about peer learning with health science students during clinical placements. 12 studies met the inclusion criteria and were evaluated from cognitive, psychomotor, and affective points of view.	Results from this review echoed those listed in the articles above. The review also found that peer teaching and learning increased the students’ time management skills while in the clinic. Collaborative preparation prior to spending time in the clinic reduced the amount of time spent teaching by clinical instructors.

**Structure of the Peer Learning Intervention:**

<b>Author (Year)</b>	<b>Study Design &amp; Level of Evidence*</b>	<b>Description</b>	<b>Relevance to Capstone Project</b>
Sevenhuysen et al. (2015) <sup>10</sup>	Prospective, cross-over, cohort study 4 – Although there was an experimental Peer Assisted Learning (PAL) group and a traditional paired control group, cross-over of the groups may have confounded the results.	Provides valuable qualitative evidence about students’ perceptions of their level of clinical competency in the paired PAL model. The PAL model was the preferred method of active learning in this study over the traditional paired model of education.	This study provides evidence for the benefits of a structured peer learning model, rather than allowing for peers to interact in any manner they desire when collaborating about clinical education topics. Unfortunately, an in-depth description of the learning content in the PAL model was not provided. Unstructured feedback was solicited from students twice per week. “Mandated activities and frequencies <sup>10”</sup> were not favored, and flexibility in design was preferred.

Jelley et al. (2010) <sup>11</sup>	Prospective, cohort study 4 – Could be considered a “poor quality cohort study” since there was no 1:1 comparison/control group.	This study investigated the 2:1 model but did not have a 1:1 comparison group. Each PT student was paired with a PTA student, so collaborative education was studied.	This study used pre- and post- placement interviews along with entries made in journals provided to the participants as data collection strategies. The participants valued the journals because they “allowed for a greater breadth of understanding through triangulation of placement events. <sup>11</sup> ” Although this study had an interdisciplinary focus, both the PT and PTA students reported high levels of satisfaction with the paired approach to learning. The authors noted that external funding was provided to the health care sites to allow for the CIs to have extra time to administer the paired model, which was crucial to the study’s success. This financial constraint would not hinder at-home peer learning, which is being implemented in this capstone project.
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**Data Collection:**

<b>Author (Year)</b>	<b>Study Design &amp; Level of Evidence*</b>	<b>Description</b>	<b>Relevance to Capstone Project</b>
O’Connor et al. (2012) <sup>12</sup>	Retrospective, cohort study 4 – Could be considered a “poor quality cohort study” because all student participants had already experienced both the 1:1 and 2:1 models.	This study directly investigates student and CI perceptions on paired learning vs. individual learning. Student clinical competency was measured anecdotally and not with an outcome measure.	Some of the interview questions in this study could be used on the surveys administered to PT students. Ex.: “What were your initial thoughts/concerns about...being part of a pair of students? <sup>12</sup> ” “What were the positive/negative aspects... <sup>12</sup> ” “What was your experience of the assessment and learning process? <sup>12</sup> ” etc. This study used a “semi-structured individual interview format <sup>12</sup> ” to allow for more open responses. Students preferred the 2:1 model in early clinicals to utilize peer learning, while they desired the 1:1 model in later rotations to show independence. The relationships among students were said to be strongly influential on learning.
DeClute & Ladyshevsky (1993) <sup>13</sup>	Retrospective, cohort study 2b – Good quality individual cohort study.	This study directly investigates student and CI perceptions on 2:1 vs. 1:1 models of learning. The Evaluation of Clinical Competence (ECC) was used for evaluation.	Student clinical competence was measured by using the ECC form, which consists of 7 categories: patient evaluation, program planning, implementation of treatment, communication with patient/family, communication and management skills,

		Results showed that the 2:1 model produced significantly better proficiency scores in patient evaluation, program planning, implementation of treatment, and professional behavior at a p level of 0.02. Overall clinical competency scores were significantly different at $p=0.01$ .	documentation, and professional behavior. These could be areas to explore during the student pre- and post- intervention interviews to see the impact of peer learning in different areas of practice.
Matthewman (2017) <sup>14</sup>	Prospective, cohort study 4 – Could be considered a “poor quality cohort study” since there was no comparison group of students not using the RPC strategy.	This was a qualitative study that investigated the impact of RPC on a single cohort of students in an undergraduate business management program. Students formed two separate RPC relationships for a 12-week module and kept track of the content discussed in reflection journals. They met either synchronously via Skype, phone, or in-person, or asynchronously via email.	Definition of RPC: “a form of peer assisted learning that can encourage individual students to coach each other in turn so that the outcome of the process is a more rounded understanding and skillful execution of the task. <sup>14</sup> ” The importance of students providing “mutual feedback <sup>14</sup> ” is emphasized. In order to provide this feedback, the students must be comfortable sharing areas of weakness in clinical practice with their partners. The “cognitive developments <sup>14</sup> ” assessed in this study would be useful categories to include in the survey used in this capstone project. These categories include: Knowledge Exchange (new knowledge constructed from the knowledge base of both parties), Self-Efficacy and Self-Confidence (the extent to which RPC enhances self-worth, self-regulation, confidence, and overall efficacy), and Skills (the development of skills such as leadership, resilience, and stress management). An increase in self-reflection ability was also noted, which is critical during a clinical rotation to ensure that the student is progressing with skills and asking for help to strengthen weaker areas.
Pålsson et al. (2017) <sup>15</sup>	Quasi-experimental study 2b – Could be considered the same level as a “low quality RCT.”	This study investigated nursing students’ perceptions of their clinical performance after being exposed to peer learning. An intervention and control group were used, and several outcome measures were utilized to measure clinical competence and confidence.	Several outcome measures, specific to nursing, were used that measured students’ pre- and post-intervention perceptions of clinical competence and confidence. The following aspects education were studied: critical thinking, collaborative behavior, learning and development, satisfaction with provided care, self-efficacy, psychological empowerment, and structural empowerment. None of the outcome measures in these categories produced any significant

			<p>differences in scores between the peer learning and control groups except for the 9-item Nursing Self Efficacy Scale (<math>p = 0.002</math>). When studying the two groups independently, the peer learning group showed significant improvements in critical thinking, collaborative behavior, learning and development, satisfaction with provided care, self-efficacy, and psychological empowerment. On the other hand, the independent learning group significantly improved on the critical thinking, satisfaction with provided care, and psychological empowerment scales. It would be worth including a self-efficacy scale (ex. The General Self-Efficacy Scale<sup>16</sup>) on the pre- and post- test surveys used in the capstone project.</p>
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## Resources:

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