

ORIGINAL RESEARCH ARTICLE

Impact of an integrated clinical experience on Doctor of Physical Therapy students: a qualitative study

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Abstract

Purpose: Integrated Clinical Education (ICE) complements didactic material within educational programs, providing an in-person, hands-on experience in coordination with traditional instruction. Different models of ICE are described in the literature, which consists primarily of descriptions and program assessments of these experiences. The purpose of this study was to enhance the literature by applying rigorous methodology to gain a rich understanding of the student's perspective of the process and impact of ICE on Doctor of Physical Therapy (DPT) students working with older adults, a population not yet rigorously studied.

Methods: A convenience sample of 19 DPT students participated in this study. A descriptive phenomenological approach obtained the perspectives of DPT students engaged in this ICE. Researchers conducted six focus groups using a video chat format following the ICE.

Results: Five themes emerged from the thematic analysis of focus group transcriptions: transformation, circular learning, role of relationships, rollercoaster of emotions, and perceived perks for older adults through the students' perspective.

Conclusion: Findings are consistent with the literature and support ICE as a complement to didactic learning, especially for those skills that are challenging to teach in the classroom. This study added to the literature by identifying relationship building and circular learning as essential components of ICE. Students also identified and resolved implicit biases previously held about older adults. Further research is warranted to deepen an understanding of these findings, with a mixed-method approach to gather quantitative data to link the ICE process with outcomes.

Keywords: education; integrated clinical education; ICE; Doctor of Physical Therapy students

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The American Council of Academic Physical Therapy defines integrated clinical education (ICE) as a curriculum design model where students obtain experiences 'through the exploration of authentic physical therapist roles, responsibilities, and values that occur before the terminal full-time clinical education experience'.^{1(p. 757)} ICE complements didactic material, offering students an opportunity to engage with information in a meaningful way by applying skills and concepts through hands-on experiences. These opportunities are designed by faculty to meet specific learning objectives while preparing students for full-time clinical education

by promoting the 4 'Cs': confidence, communication skills, clinical reasoning, and clinical skill development.²

Various models of ICE exist in the literature.³⁻¹⁵ They vary by sequencing and placement within the curriculum, frequency, format, setting, and by who supervises the students. A commonality in ICE experiences is that they follow experiential learning practices by providing students with an early link to patients and the realities of clinical practice. Experiential activities enhance learning by allowing students to make connections between theory and practice, resulting in deeper insights into concepts taught in the classroom.¹¹

The current literature specific to ICE in physical therapy education consists of a position paper,¹¹ model descriptions,^{5,8} or program assessment data^{4,6,7,9,12,13} from surveys, group debriefings, exit interviews, or class discussions. A literature review revealed that students' thoughts fit into four overarching categories: positive impact on didactic learning, positive impact on skills application, positive impact on the patient, and ICE as a positive environment. Students reported that ICE was essential to learning,⁷ motivated them in their studies,⁴ provided context for didactic coursework,^{4,7,9} and helped deepen the understanding of didactic material.^{4,13} Students stated the experience improved their communication skills,⁶ clinical reasoning skills,^{6,9,14} and documentation skills⁶ and helped prepare them for full-time clinical experiences.^{4,6,12} There is an emotional component to ICE, as students felt they made a difference in the individuals' lives.⁶ Students saw the value of ICE,^{13,14} were comforted by its supportive environment,⁴ and noted increased confidence levels.^{4,6,9,12} A limitation of these program assessment outcomes is that rigorous quantitative or qualitative methods were not utilized.

A scoping review of the literature found that 10 of the 11 articles addressing ICE in physical therapy education presented with low methodological quality,² which stemmed from a lack of systematic collection and analysis of program assessment data, and bias within selected program assessment tools.² The ICE experiences described were based upon practice settings (outpatient,^{4,7,9} ICU,^{4,9} acute,^{4,7,9} inpatient rehabilitation,⁴ subacute,^{4,9} long term,⁷ schools,⁷ wellness,¹² or onsite clinic¹²) or specific diagnoses and were not exclusive to older adults.

Additional studies have used quantitative methods to evaluate the effect of ICE on students. In a quasi-experimental study, Mai et al.³ assessed whether the inclusion of ICE in a wellness setting helped students develop appropriate interpersonal skills. They concluded that the students were more confident with their interpersonal skills and displayed better interpersonal skills as rated by their clinical instructors. Using a cohort design, Reneker et al.¹⁰ found students' perceptions of older adults were more positive following an integrated group balance class.

To gain a richer understanding of the impact of ICE, Tovin et al.¹⁵ used a phenomenological approach to describe students' experiences with ICE embedded within two pediatric courses. The experience positively impacted student confidence, understanding of pediatric settings and diagnoses, and future practice interests. These results are supportive of ICE but are limited to pediatric settings. Further high-quality qualitative research is needed in populations other than children, to understand the impact on students. The purpose of this qualitative study was to gain a rich perspective and advance an understanding of the impact of ICE on Doctor of Physical Therapy (DPT) students working with older adults.

Methods

Research design

A descriptive phenomenological qualitative approach guided data collection and analysis.¹⁶ This approach allows for a deeper understanding of the meaning of a lived experience from the participants' perspectives. The Consolidated Criteria for Reporting Qualitative Research¹⁷ was used as a guideline to ensure a systematic approach to the design and reporting of this study.

Sample

A convenience sample was obtained from two cohorts of DPT students from Utica University who participated in four semesters of ICE. Seventy-two students from the cohorts graduating in 2020 and 2021 were notified about the study via e-mail and an announcement in class by one of the researchers (AH), who was not in charge of the ICE. Nineteen students were recruited to participate, and no incentives were offered. Demographic information was obtained by survey (Table 1). The mean age of the students who participated in the study was similar to the mean age of the DPT students as a whole, but there was a higher percentage of females who volunteered for the study (63%) than the student population as a whole (53%). Human subject approval was obtained through Utica University's Institutional Review Board.

Description of the ICE

This ICE was designed as a community wellness program for older adults and aligned with coursework for the DPT program. It took place at a local non-profit senior center that included a fitness center and gymnasium and offered several classes for older adults. Members of the senior center were 79% Caucasian, 70% female, and 53% over the age of 80. The DPT students participated in ICE for four one-credit courses that ran in consecutive semesters. Older adults were paid members of the senior center, and there was no additional cost to participate in the community wellness program. Faculty paired and matched one first-year student and one second-year student with an older adult. The students performed the *Senior Fitness Test*¹⁸ on older adults and used the results to design and implement individualized fitness plans. The students met with

Table 1. Participant demographics

Demographics	Participants (n = 19)	
Gender	Male	7 (36.8%)
	Female	12 (63.2%)
Class year	Class of 2020	7 (36.8%)
	Class of 2021	12 (63.2%)
Age	Range	22–29 years
	Median	24 years
	Mean	27.7 ± 2.7 years

the older adults weekly for 1 h for 13–14 weeks. Students were assigned to a different older adult and a different student peer each semester. They also worked on progressively more complex learning objectives each semester.

Data collection

Pilot study

Five open-ended interview questions were generated through researcher discussion. Questions were piloted with a purposive sample of two alumni who previously participated in the ICE. Questions and prompts were revised to facilitate more profound responses from the participants (Table 2).

Table 2. Focus group questions

Question 1	What is the value of the ICE experience?
Prompts	For yourself? The community? The individuals you worked with?
Question 2	How has the ICE experience impacted your learning experience?
Prompts	How about your classroom learning? Describe in which ways it changed your relationship with the content/material.
Question 3	How did the ICE experience impact the development of your clinical reasoning?
Question 4	How did the ICE experience impact your communication skills?
Prompts	With younger students? With patients? With other clinicians?
Question 5	How did the ICE experience impact your interactions and view of senior citizens?
Prompts	Did you adjust communication? Did you adjust clinical skills? Describe how the program influenced how you will approach seniors in your future practice.

Main study

Focus groups were conducted using a video chat format. No attempt was made to separate students by cohort, as all students had completed all four semesters of ICE. One cohort had already graduated, and the other was in their third year of the program. Two trained facilitators (SS and JB), unfamiliar to the students, conducted a series of focus groups until no new information was generated in the final focus group, and data collection was deemed complete. Six one-hour focus groups, ranging in size from two to five participants, were held. These focus groups were scheduled at times convenient to the participants, resulting in varying-sized groups. This variation did not impact the results as similar information was obtained from all groups. Focus group responses were audio-recorded and transcribed using a third-party transcription service, TranscriptionStar. Each transcript refers to the complete record of one focus group. There were a total of six, de-identified transcripts representing 19 participants.

Analysis

A thematic analysis process was utilized.¹⁹ Six researchers with varying degrees of exposure to the ICE were involved in data analysis. A rigorous process was used to analyze the data to ensure previously held assumptions did not bias the results. Researchers individually identified and then shared their assumptions about student perspectives before reading the transcripts (Tables 3 and 4). The analysis of the focus group transcripts was carried out independently of the questions. The first transcript was coded individually, and all researchers met to share their coding. The discussion resulted in a consensual codebook used with the second transcript. Coding was again carried out separately and then as a group, with revisions and

Table 3. Characteristics of researchers

Researchers	Credentials	Occupation at time of study	Gender	Experience/training	Relationship with participants
Julie Bush	OTD, MEd, OTR/L	Academic Fieldwork Coordinator for Occupational Therapy	Female	Completed qualitative research in a doctoral capstone project	None
Michelle Nunno-Evans	PT, DPT, DCE	Assistant Professor of Physical Therapy; Director of Clinical Education	Female	First time participating in qualitative research	Professor; Coordinator of the ICE program
Alice Hamilton	DPT	Physical Therapist	Female	First time participating in qualitative research	Previous student enrolled in ICE program, classmate of Class of 2020 cohort
Nancy Hollins	OT, PhD	Professor and Occupational Therapist	Female	Experienced in qualitative research	None
Gabriele Moriello	PT, PhD	Associate Professor and Physical Therapist	Female	Course work participating in qualitative research	Professor
Shannon Schoellig	OTD, MS, OTR/L	Assistant Professor and Occupational Therapist	Female	Completed qualitative research in doctoral capstone project	None

Table 4. Bias and assumptions of researchers

Researcher	Bias	Assumptions	Research interest
Julie Bush	Participated in interprofessional education at the wellness center and understood the process of the interaction between first- and second-year physical therapy students.	The students would articulate and understand older adults, the relationship between the community and the college, and the connection between integrated clinical education and their future career as a clinician.	Understanding the benefits of experiential learning to students and the need and value to cultivate these experiences.
Michelle Nunno-Evans	Coordinator for over 13 years of this program; Faculty member who supervises students during this experience.	The students and participants gain benefits from the program; students gain valuable clinical experiences to facilitate didactic learning, seniors find social, emotional, and physical benefits from the program; long lasting relationships between the participants and students.	Interested in providing evidence in the value of this experience for the students and community members committed to the program.
Alice Hamilton	Participated in integrated clinical education as a student.	Assumed students would gain mostly practical and soft skill experience and appreciate the value the program added to the community.	To help improve the program.
Nancy Hollins	First-hand experience neither with the program nor with the students involved.	The program was well-received by both students and seniors, and a valuable contribution to the community.	Approached by researchers to guide the analysis process given my experience with qualitative research procedures.
Gabriele Moriello	Faculty member who supervises students during this ICE experience.	Students would believe it helped their communication skills, allowed them to practice some of the skills they learned though it was just for health promotion and not specific musculoskeletal skills, their documentation skills improved, they bonded with the seniors.	As a faculty member, I anecdotally saw many benefits for the program.
Shannon Schoellig	Faculty member who supervises students for interprofessional education within this experience.	This program would prove to be a valuable educational component to the curriculum for student and senior participants based on observations made.	To provide qualitative data on the benefits of integrated clinical education on learning.

additions to the codebook. As the codebook developed, previously coded transcripts were reread, and additional coding was made. Four researchers were divided into pairs and coded the remaining transcripts, individually and then as pairs. The remaining two coders served as arbitrators when a pair could not reach a consensus. A whole group consensual discussion was carried out after coding the third and fourth transcripts and again after the fifth and sixth transcripts.

All researchers individually identified themes, wrote a short abstract of their understanding of each theme, and used quotations from the transcripts as support. These abstracts were used as a structure for whole group discussions until an agreement was reached on the final themes. Questions from the focus groups were reviewed and compared to the results of the thematic discussion as an external check to this process. In the final analysis, the literature reviewed for this study was brought into the discussion to compare similarities and differences.

Results

Five themes emerged from this analysis: transformation, circular learning, role of relationships, rollercoaster of emotions, and perceived perks for older adults through the students'

perspective. A description of each theme with supporting quotes is presented later. Table 5 includes additional quotes.

Transformation

Students reported they had undergone a transformation in four primary areas. First, the experience allowed students to apply knowledge and practice skills learned in the classroom, resulting in increased competence. As student 1 indicated, '...we learned in the classroom all these different tests and outcome measures; (the ICE) was the first place that I really got to apply them and actually practice with the real patients, so that was a good learning experience'.

Second, students indicated the ICE boosted their sense of competence. Student 2 suggested, 'It was a big thing going into our first clinical that we already knew how to do some of the things that were expected of us'. Students reported that exposure to individuals with multiple conditions decreased their fear of working with older adults. Students described situations in which they had to identify 'red flag' situations, such as atypical vital signs. Having the faculty supervisor present for support was invaluable for helping students 'feel more at ease and confident' in handling such situations (Student 9).

Table 5. Themes with additional supporting quotes**Transformation**

- 'I think (the ICE) helped me get the big picture of how things apply and how things will present in real life vs. just reading it or hearing it in class'.
- 'There' re some things that you really can't learn through a textbook. You have to figure out how to tailor your communication style towards different patients who have different beliefs, different backgrounds'.
- 'I felt like I sharpened my (clinical) skills...'

Circular Learning

- 'If there was something that came up at (ICE) that I hadn't learned yet in school, I could ask my professors about it. Or we would learn about it eventually and I'd be like "oh yeah, I saw that in the (ICE) program and it makes sense"'
- 'While that's still repetition, but it's ... a different kind, like a different point of view'.
- 'It's coming up with a plan for the day. And then adding what we're learning in school to that component (related to) the patient'.
- "'This is what we're going to do today," and later reflect on it with your professors. And say, "Yeah, that was really good. But maybe I would have done this differently"'

Role of Relationships

- '(The ICE) is mutual in both respect and understanding about what we do. And what we could do together'.
- 'I know especially for my senior, it was pretty much the highlight of their week... they really appreciate the time that we spend with each other and the bonds that we create'.

Rollercoaster of emotions**For the student**

- 'I love (ICE) to be honest. Everybody I worked with was very kind and very receptive'.
- 'I think it really made me feel more at ease and confident when it comes to learning red flags because you learn about red flags, and contraindications, and it just kind of sparks an anxiety ... that's the part of working with people that can be intimidating'.

For the older adult

- 'I think they (the older adults) were so appreciative of even the little tweaks you can do to their lives to help them'.
- 'I had one patient (who) was not motivated, she was just afraid to do anything. And you really had to get in her brain and be like, you can do this, you know there is nothing to be afraid of and we're always right here to help you'.

Perceived Perks for Older Adults

- 'Just with the elderly population and the high fall risk, if we can just be a little part of that and help one person fall less, then I think it's all worth it'.
- 'I think that the social point is really, really huge. The one patient I was working with, (the ICE) was her only source of community interaction for the whole week. We've really had to drill in her head that maybe she should get out more, ... and we actually got her more engaged in other community programs'.

Third, students reported a change of perspective toward older adults, several indicating they may possibly establish careers working with older adults. Student 19 commented, 'I underestimated what some ... seniors could actually do.... I just made assumptions before I actually assessed'.

Finally, students identified transformation in several specific skills. Most students talked about clinical reasoning as a skill they practiced. 'It's good to come in with a plan ...but sometimes that won't work with a patient. It's good to be able to think on the spot when you're with that patient' (Student 6). Students learned how to use their creativity to motivate the older adult. Student 15 noted, 'Creating goals that were meaningful for (the older adults and developing) fun exercise programs is something that I'm definitely going to translate into my practice'. Students reported improved communication skills, particularly the ability to adapt their communication style to different individuals (other students, professors, and older adults). Several students indicated the

experience forced them to interact and build rapport. Student 2 stated, 'I've always been kind of ...quiet and reserved, which is not what you need when you're working one-on-one with somebody'. Improved skills in documentation were frequently mentioned, with some students indicating that exposure to electronic documentation was helpful during their first clinical experiences. Other specific skills included interviewing, evaluating, charting progress, team building, working collaboratively with others, and leadership.

Circular learning

Students described the circular nature of learning, applying concepts learned in class to older adults and taking their perspectives from the hands-on experience back to the classroom, where new connections were made. Student 10 commented, 'I remember we would learn stuff in class, and then when I realized I could apply it to my senior, I would be more eager to go and read more into it... beyond what we learned in class'.

One feature of this ICE was the pairing of first- and second-year students, which benefited both cohorts. Second-year students modeled and mentored first-year students, and this responsibility encouraged second-year students to recall and apply learning in a circular manner. One student mentioned, ‘...when getting an underclassman, I remember going back through (class materials) just to make sure that when I teach ... about a concept or intervention, that I’m making sure I have a solid understanding of it just so that way I’m able to teach them and not confuse them in any way’ (Student 10).

The role of relationships

Students highlighted the social nature of the ICE. They perceived these relationships as influential in assisting them in adjusting their communication skills depending upon the audience, accepting and giving constructive feedback, establishing responsibility within their team role, and developing skills associated with respect, delegation, and collaboration.

Students perceived the relationships they formed with supervising faculty and peers as invaluable for learning, explicitly mentioning the ability to receive real-time feedback from faculty. An aspect related to the faculty–student relationship that students perceived to impact their learning directly was the low-risk environment. Student 3 noted, ‘It wasn’t a classroom kind of situation, we could go up to our professors ...and talk a little bit more on a colleague-to-colleague basis’. The program also assisted students in forming stronger bonds with peers, contributing to a more supportive environment, where they felt comfortable making errors while practicing new skills. Student 4 described the program as providing ‘low stakes, high reward’.

The relationships between the students and older adults were powerful. Student 7 noted that the ICE gave them ‘an hour to just, you know, exercise with them... but also just to get to know and build a relationship with them, and I think that (the older adults) value that as well’. These bonds led to engagement between older adults and students in ways not anticipated, such as meeting family members, expressing enjoyment in listening to their stories, and staying in touch after the program. Student 3 stated, ‘it was very beautiful to see that (relationship) happen, you know? Just to see that real connection’.

Rollercoaster of emotions

Students reported positive and negative emotions and perceived that older adults also experienced varied emotions. Positive emotions included enjoyment working with, and appreciation of, older adults and enjoyment of the experience itself. Students found the ICE rewarding. Negative emotions included fear of not knowing what to do and nervousness about dealing with unfamiliar situations.

Students learned how to respond to such emotions. Student 13 stated, ‘I know (now) to step back, take my time and just... try to be as normal as possible because I feel like if you’re nervous, the patient will be a little nervous’.

Students perceived the older adults’ emotions to be favorable, including placing value on the program, increased confidence in their abilities, enjoyment of the experience, comfort with the relationships with students, and appreciation of the services they received. Student 9 reported, ‘I think just seeing how excited (the older adults) were to meet you and know about you and work with you and everything was just a very positive experience’. Students perceived that older adults experienced fear and frustration when faced with unfamiliar activities. Students learned to manage individuals experiencing these negative emotions. Student 9 reported, ‘I remember my first semester I had a senior, she just had a rough day and just broke down and started crying. Instead of freaking out, (we) were like, all right, we got this, what can we do for you? You’re going to have to be prepared to handle all of those kinds of different scenarios’.

Perceived perks for older adults through the students’ perspective

Students observed both physical improvements and a strong social benefit. Students indicated the program provided something for the older adults to do and someone for them to talk to consistently. Student 4 noted, ‘(It’s) easy to recognize how important of a role we played in (the older adults) social and emotional health ... just interacting with us, the students, and other seniors ...was really, really beneficial’.

Discussion

This study captured a rich description of ICE from the students’ perspective when working with older adults, a population not yet methodologically studied in the literature. Five themes emerged: transformation, circular learning, role of relationships, rollercoaster of emotions, and perceived perks for older adults through the student perspective.

Students stated the experience transformed their clinical skills, creativity, communication skills, clinical reasoning skills, confidence, and prepared them for full-time clinical experiences, consistent with what is reported in the literature, despite the difference in ICE settings and populations.^{4,6,9,12,14} Students engaged with faculty and student mentors within a clinical setting, allowing for experiential learning to occur and for students to feel more prepared for their roles as physical therapists. The ICE transformed student perspectives and made students aware of their implicit biases, which is important since biases can result in the under prescription of physical activity for older populations.^{20–22}

Students reported the experience motivated them and provided context for didactic coursework, consistent with the literature.^{4,7,9} Students described how ICE created a motivating environment for learning, where they learned didactic course material, gained experiential learning from the ICE, and returned to coursework or completed further research beyond classroom topics. This circular pattern of learning suggests that the timing of ICE in the curriculum may be an essential consideration. ICE experiences allow learning to occur in the context of how it will be used, giving information relevance and meaning.^{23,24} Literature on adult learning indicates that new information is best learned when the learner perceives that information as relevant to something they value. Students tend to devalue irrelevant information, resulting in a surface-level understanding of the material.^{25,26} Regular contact with clients helps students integrate didactic knowledge and engage with coursework since it is immediately relevant to care.⁴

Students reported an emotional component to ICE, consistent with the existing literature.^{4,6,9} Students perceived their efforts to be beneficial to the older adults adding meaning and personal satisfaction to their participation. Experiencing positive emotions provides a supportive environment for learning while working through negative emotions, like fear of the unknown, prepares them for future practice. Some students noted the environment facilitated a positive learning experience by allowing them to make mistakes in a low-risk environment. It is understood that mistakes help students engage in active learning, and the experience of a mistake helps trigger memories of both the error and the corrected response.²⁷ In institutionalized learning environments, mistakes are often associated with negative consequences (i.e. poor grades) and can be sources of performance anxiety for students.²⁸ ICE may serve as a safe space where errors can be employed to help facilitate learning.

This study found that the relationships students made during the ICE were necessary for their learning, a finding not reported in the literature. Students described how mentorship of first-year students motivated them to learn, and collaboration with everyone exposed them to new ideas and approaches. The ICE fostered team-based relationships between students, which is essential to successful healthcare teams in a professional setting.²⁹ Additionally, students reported the personal connection they formed with the older adult gave purpose to their efforts and resulted in an emotional bond. Empathy and interpersonal skills are challenging to teach in the classroom, and ICE offers a model for students to practice both the art and science of physical therapy practice. Blurring the divide between the art and science of healthcare is pivotal in teaching students how to be caring providers, helps with resiliency, and protects against burnout.³⁰

A limitation of this study is the convenience sample. Students who volunteered may have a different perspective

than those who did not. Additionally, the nature of the qualitative design does not allow for generalizability of the results. Still, it is hoped that the results will contribute to understanding ICE as such experiences are developed. Sources of bias stem from the researchers' various affiliations with the program and the students. One of the researchers was a member of one of the cohorts involved in this study. It was this researcher's interest that initiated the study. Researchers facilitated interviews with participants unknown to them to minimize biases. All researchers acknowledged their biases before the start of data analysis and reflected on their biases throughout the process.

This study noted the impact of relationships, a finding not found in the literature. Further exploration of such relationships is warranted. It may also be useful to understand the perspectives of first-year as compared to second-year students informing the sequencing and timing of ICE within DPT programs. Considering the positive outcomes these students perceive from older adults, studying the perspective of older adults may also be useful in contributing to the literature on successful aging.

Conclusion

This study provided a rich description of students' perspectives engaged in an ICE with older adults, a population not previously studied. These findings support ICE as a complement to didactic learning, especially for those skills that are challenging to teach in the classroom. Findings provided further student insight into the importance of relationships, implicit biases, and circular learning. To provide additional guidance for educational programs, future research should consider using a mixed-method design to deepen an understanding of these findings while also collecting quantitative data linking the ICE process with outcomes.

Conflict of interest and funding

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Ethics statement

Ethical Approval: Utica University IRB #827.

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