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The Environment of Interprofessional Education in Graduate Education: Exploring Professional Programs of Occupational Therapy, Physician Assistant, and Physical Therapy

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The Environment of Interprofessional Education in Graduate Education: Exploring Professional Programs of Occupational Therapy, Physician Assistant, and Physical Therapy
A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

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Acknowledgment

Much like my research topic, this dissertation would not have happened without my team, I did not do this alone. I would like to thank my husband Jeff for being my best friend. My daughters Abbigale and Madeline for their love and faith in me. Janet and Karen, there are no words. Friends and family, I appreciate the gifts you gave in your unique way, and I love you all.

I am forever grateful to Dr. Ivey for her patience and direction.

Finally, I dedicate this document to the two precious people I lost while on this journey: my daughter Hannah and my daddy Bill. Though you did not get to see me finish, you kept me going.

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Abstract

The Environment of Interprofessional Education in Graduate Education: Exploring Professional Programs of Occupational Therapy, Physician Assistant, and Physical Therapy.

By Allison Ryan Kaczmarek, MPH

A dissertation proposal submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy in Health Related Sciences at Virginia Commonwealth University.

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Interprofessional education (IPE) is an educational approach of increasing popularity in professional schools for the preparation of a collaborative ready healthcare workforce. The accrediting bodies of professional education programs in occupational therapy (OT), physician assistant (PA), and physical therapy (PT) have incorporated standards for outcomes addressing IPE. Although they have endorsed the Health Professions Accreditors Collaborative (HPAC) consensus document on quality IPE, we do not have a contemporary snapshot of the IPE environments in the curriculum of their accredited programs. This dissertation, a collection of three distinct inquiries, has two aims: first, to provide a description of IPE as it currently exists in the curricular environments of all accredited entry-level programs of study leading to professional degrees in OT, PA, and PT; and second, to identify similarities and differences in the IPE environments among the three programs of study. This fills a knowledge gap for each profession on the contemporary IPE environments in the curriculum of their accredited programs and provides a baseline for planning quality IPE as defined by the HPAC consensus document endorsed by OT, PA, and PT accreditors.

Chapter two explores the current IPE environment in entry-level doctoral-degree and master's-degree occupational therapy programs accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) in the United States.

Chapter three surveys all entry-level master's programs accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) on the current environment of IPE within the curriculum.

Chapter four investigates the current environments in all entry-level physical therapist programs accredited by the Commission on Accreditation of Physical Therapy Education (CAPTE) in the United States.

In chapter five the data sets were combined and analyzed for similarities and differences among the three professions.

Although no statistically significant differences existed in our findings, our data suggests that the practice of IPE varies. Results tended to vary by institution more than profession. This data did demonstrate a strong presence of IPE in the curriculum and helped to highlight areas for improvement. Faculty workload, course schedules, and funding continue to be a hinderance in the development and sustainability for IPE. Future research should include examination of the relationship between program leadership and institutional leadership in developing, implementing, and sustaining an IPE plan; faculty/preceptor development and assessment in delivering IPE; mapping learning outcomes and learner assessment; and tracking student acquisition of IPE competencies.

Keywords: Interprofessional Education, Environment, Occupational Therapy, Physician Assistant, Physical Therapy, Quality Interprofessional Education, 3P Model

Vita

Allison Ryan Kaczmarek was born on January 1, 1964, in Sarasota, Florida. She received her Bachelor of Arts in Psychology from The University of Tampa in 1992 and her Master of Public Health from The University of Utah in 2000. Allison worked in public health research in the State of Florida for several years and taught as an adjunct at several Universities in the Tampa Bay Area before taking a fulltime teaching position with The University of Tampa. She taught baccalaureate pre-health students and advanced interprofessional education. In 2017 Allison joined the Physician Assistant Medicine Department at UT as the founding Director of Clinical Education.

Chapter 1

Interprofessional Education

Interprofessional education (IPE) is a pedagogical approach for the preparation of students involved in the delivery of healthcare to be collaborative ready upon entering the workforce. Healthcare in the United States is becoming more complex and costlier (Dzau, McClellan, McGinnis, & Finkelman, 2017) requiring collaborative team approaches to patient care (Lipstein et al., 2016). The World Health Organization (WHO) defines IPE as "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (WHO, 2010, p. 10). Students who learn about, from, and with other disciplines can develop effective team skills for improved patient care (Dow & Thibault, 2017). Education programs need to produce graduates ready to perform in team-based care across professions and IPE is a key element of the recommended solution (National Academy of Medicine, 2015).

Interprofessional Education Collaborative

More than 45 years ago in the United States, the Institute of Medicine (IOM) called for team-based education in the curriculum of health professions (Institute of Medicine, 1972). In the years since this initial publication, the discourse on the need to revamp the education of healthcare students has continued, largely through the Pew Health Professions Commission (O'Neil, 1998), the IOM (Greiner, Knebel, & Institute of Medicine (U.S.), 2003; Kohn, Corrigan, & Donaldson, 2000) and the Josiah Macy Foundation (Irby, 2018). An outcome of the dialogue on healthcare student education reform was the formation of the Interprofessional Education Collaborative (IPEC) in 2009. IPEC was initially formed by the American Association

of Colleges of Nursing, American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, American Dental Education Association, Association of Medical Colleges, and Association of Schools of Public Health. From 2016-2019, fifteen additional associations became members of IPEC. IPEC's mission is to collaborate with academic institutions in the preparation of collaborative ready health professionals. The goals and strategies to accomplish this include advancing interprofessional education promote IPE in the curriculum of healthcare professionals; and advance understanding and support of IPEC, IPE, and collaborative practice among key government agencies, university leaders, and health systems ("Vision & Mission," n.d.).

In 2011 a core panel of experts representing the IPEC founding members published core competencies for interprofessional collaborative practice (IPEC, 2011). The intent of this document was to guide curriculum development related to interprofessional education across the health professions. In 2016, IPEC released an expanded and updated version of the core competencies (Table 1) for interprofessional collaborative practice (IPEC, 2016).

Table 1

IPEC Four Core Competencies

Core Competency	Description
Competency 1 Values/Ethics for Interprofessional Practice:	Work with individuals of other professions to maintain a climate of mutual respect and shared values.
Competency 2 Roles/Responsibilities	Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations.

Competency 3 Interprofessional Communication	Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease.
Competency 4 Teams and Teamwork	Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population- centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable.

The 2016 update rearranges what was the four competency domains: values and ethics, roles and responsibilities, interprofessional communication, and teams and teamwork under a singular domain of Interprofessional Collaboration. The update expands the language of the four core competencies and their sub-competencies to incorporate population health concepts and encourage clinical, public health, community partners, and professionals from other disciplines to effectively work together and better address what is now the Quadruple Aim ("Institute for Healthcare Improvement," n.d.). These changes respond to the current culture of health care and the need to address goals of improved health and health equity across the lifespan (IPEC, 2016). The update also reflects changes in curriculum requirements of member accreditors, growth in IPEC membership, increased diversity of disciplines, and a need to support educational activities, shared taxonomy, related assessment, and evaluation.

Health Professions Accreditors Collaborative

The Health Professions Accreditors Collaborative (HPAC) was established in 2014 to provide a forum for accreditors from different disciplines to address the complexity of incorporating IPE and the national IPEC competencies into their curriculum. HPAC members

strive to support the accreditation process and maintain individual professional competency development while promoting interprofessional competency development through quality IPE (HPAC, 2019).

To support their 25 endorsing members, HPAC teamed with IPEC to develop and release a consensus document on quality IPE, *Guidance on Developing Quality Interprofessional Education for the Health Professions* (HPAC, 2019). The document provides consensus guidance for planning, implementing, and assessing quality IPE. To develop quality IPE, they recommend program utilization of consensus terminology and inclusion of four characteristics: rationale, outcome-based goals, deliberate design, and assessment and evaluation.

The **consensus terminology** and definitions stem from review of IPE literature published by members of the Health Professions Accreditors Collaborative (HPAC). About, from, and with are the key factors in the consensus definition that differentiates IPE from multi-professional education where students learn alongside each other in a parallel experience opposed to an interactive one (Freeth, 2005). When students learn *about* other professions, they gain knowledge about the different professions roles and responsibilities, scopes of practice, licensure requirements, learn to identify stereotypes to thus avoid barriers and enable effective collaboration and improve health outcomes (Woodnorth & Davidson, 2019). Quality IPE has students learning *from* students in other professions (Lairamore et al., 2019) and from practitioners or professionals in health systems and the communities students will one day serve. Learning from requires experiential learning and the active exchange of information developing competency in collaborative behaviors. Ultimately for the about and from to occur, students must

have opportunities to be *with* students from other professions either on campus, in the community, or at a health system (HPAC, 2019).

Rationale characteristics may include the context, expected competencies and learning outcomes, content, teaching approaches, use of a conceptual model for planning, mission, and vision. The rationale is the story within which the IPE curriculum is imbedded for the particular educational environment and is the framework for planning, implementing, and ongoing stakeholder communication. Achieving quality IPE begins with a framework that provides a conceptual model for longitudinal, sequenced learning activities that occur in the classroom, in clinical settings, and within extracurricular events. This model communicates an evaluation of needed and existing resources; learner, educator and context characteristics; planned education integrated into the span of existing curriculum for all stakeholder disciplines including shared outcome goals; and assessment and evaluation.

Outcome-based goal characteristics may include progression of learning assessments, timing of activities in relation to learner development, and use of 2016 IPEC competencies. In establishing outcome-based goals, it is important that program specific goals reflect an appropriate assessment for student level of learning and that assessments occur on a continuum from foundational to an identified expectation for program defined graduate competency. Developmental expectations across disciplines may vary and require alignment of charting of shared expectations in collaborative behavior along a continuum including developmental milestones.

Deliberate design includes learning modalities, required courses, elective courses, use of clinical sites, simulation, and formal and informal activities. Deliberate design requires that the

experiences be planned so that they correspond with student current developmental level and future practice (Reeves et al., 2016). Principles of adult learning, exchange of information, modality, facilitation style, timing, context of the experience, and included disciplines are all aspects of consideration when planning both single and series IPE experiences.

Assessment and evaluation may include learner assessment, IPE plan evaluation, and eventually competencies for IPE supervision/precepting (faculty support for facilitating IPE). Learner assessment needs to be activity and developmentally appropriate. It can serve as formative or summative feedback when evaluating achievement of program defined competency. For learner assessment to be robust, it should triangulate self-reported data, evaluator observations, and objective measures. IPE evaluation should include immediate evaluation of the individual experience and ongoing evaluation. The evaluation of the individual experience may include review of student evaluations, coordination issues, and achievement of instructional objectives. Ongoing evaluation of the program as a whole may include a review of the rationale in meeting the program identified learning outcomes and accreditation requirements.

Evaluation of educators in IPE currently exists in traditional student instructor evaluations. HPAC (2019) highlights that this must change but will take time and research to identify competencies needed for IPE educators/supervisors/preceptors. However, institutions can begin with professional development in IPE for educators/supervisors/preceptors and professional benefits such as tenure packet credit or offload.

Interprofessional Learning Continuum

The IOM has proposed a competency-based developmental model for IPE, the interprofessional learning continuum (IPLC). IPLC consists of three core stages for health

professionals: foundational education, graduate education, and continuing professional development (IOM, 2015). Foundational education is considered the entry point to a profession. This can occur as baccalaureate course work and pre-requisites for admission to graduate programs as well as curriculum early in a pre-licensure program. IPLC operationalizes graduate education as "any advanced formal or supervised health professions training taking place between completion of foundational education and entry into unsupervised practice" (IOM, 2015, p. 27). Continuing professional development for IPLC incorporates workplace learning that is both planned and unplanned occurring throughout the workday and includes interprofessional developmental activities. This approach goes beyond the traditional continuing education credit experiences making professional development onsite and experiential.

Environments of IPE in graduate programs

Current IPE literature describes IPE experiences in different institutions (Abu-Rish et al., 2012; Reeves et al., 2016a), student and faculty attitudes about IPE (Bennett et al., 2011; Coster et al., 2008; Eccott et al., 2012; Fair, 2017), pedagogy and theory in IPE (Brewer, 2016; Buhse & Della Ratta, 2017; Clark, 2006; D'Amour, Ferrada-Videla, San Martin Rodriguez, & Beaulieu, 2005), impacts on healthcare (Cox, Cuff, Brandt, Reeves, & Zierler, 2016), and implementation of IPE on campuses (Buring et al., 2009; Cooper H, Spencer-Dawe E, & Mclean E, 2005; Lawlis, Anson, & Greenfield, 2014; MacKenzie & Merritt, 2013). Recent articles have conducted broader investigations into IPE based on institutional characteristics such as affiliation with an academic health center (Clay et al., 2018; Greer, Clay, Blue, Evans, & Garr, 2014) and having an established IPE infrastructure (Congdon, 2016). These studies report robust IPE

experiences and growth towards meeting accreditation standards; however, there is limited information provided for specific professions accrediting bodies.

Two studies have investigated IPE within specific professions via surveys of their accredited schools. Blue et al. (2010) examined IPE practices within 126 medical schools in the U.S. identified by the AAMC in 2008. A survey was sent to the deans and sought a description of what was being offered at the school and institutional support and resources, as well as perceptions of the barriers to IPE at the school. Of the 48 schools (38%) who responded, only 66% indicated offering IPE experiences of which 77% were required. Academic calendars and scheduling were the most stated barriers. Institutional leadership and faculty attitudes were not large contributors to hindering IPE even though only 20.3% reported support for faculty development. Blue et al. concluded that the results suggested that IPE efforts of U.S. medical schools suffer from similar barriers as reported elsewhere and are clearly in the early stages of formal development. Palatta et al. (2015) modified the survey instrument used by Blue et al. to conduct a similar study of 63 dental schools in the U.S. Palatta's study expanded on an earlier investigation of the status of IPE in seven academic health centers that had dental schools associated with them (Rafter et al., 2006). Since publication of Rafter's data, Palatta found significant growth in IPE among dental schools which he credited to IPEC, the release of core competencies, and the addition of IPE to the Commission on Dental Accreditation standards. Of the 62 responses, 90% reported offering IPE experiences and the remaining 10% were in the planning stages. While growth had occurred, the authors concluded that it was slow and lacked presence as a cultural characteristic of dental education. Other investigations have examined specific specialties such as nutrition (Patton et al., 2018) and psychology (Ward, Zagoloff, Rieck,

& Robiner, 2018) reporting on attitudes of faculty and opportunities for inclusion in academic health centers IPE. Both studies identified faculty support for IPE and their belief that it is important for their students to be involved.

Allied health professions represent as much as 60% of the U.S. healthcare workforce ("ASAHP," n.d.) yet limited research exists on the IPE environments in allied health education. The American Council on Academic Physical Therapy (ACAPT) formed an IPE task force in 2013 to collect information on IPE initiatives from their member institutions (Wise, Frost, Resnik, Davis, & Iglarsh, 2015a). The exploration occurred prior to inclusion of IPE in accreditation standards and many of the responding programs reported activities that did not meet the WHO definition of IPE. Hughes et al. (2019) surveyed 1,466 faculty on their beliefs about IPE in Accreditation Council for Occupational Therapy Education (ACOTE) accredited OT programs. Physician assistant (PA) education has not benefited from any specialty specific investigation into IPE post the introduction of the IPEC competencies. The professions of OT, PA, and PT do not have a contemporary description of IPE in the curricular environments of their accredited graduate programs.

Purpose

The purpose of this study is to describe the current environment of interprofessional education in the curricula of entry level graduate OT, PA, and PT accredited professional programs. The accrediting bodies of these three disciplines are endorsing members of the HPAC consensus document on quality IPE. However, current literature does not provide a contemporary snapshot of the existing IPE environments across these accredited programs. This inquiry surveyed all accredited entry-level programs of study leading to professional degrees in

OT, PA, and PT in the United States on IPE as it currently exists in the curricular environments. Finally, the study identified similarities and differences *among* the three professions. The three papers in this study address a gap in the literature by informing the respective professional associations on the current environments of IPE in their accredited entry-level graduate professional programs of study.

Accreditation

The accrediting bodies of many graduate programs that prepare healthcare professionals, including the Accreditation Council for Occupational Therapy Education (ACOTE), the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA), and the Commission on the Accreditation of Physical Therapy Education (CAPTE), acknowledge the importance of IPE by including it as an accreditation standard (Zorek & Raehl, 2013a) and use the WHO definition of IPE. The preamble of the 2018 ACOTE adopted accreditation standards states that the graduate of an OT program must "be prepared to effectively communicate and work interprofessionally with all who provide services and programs for persons, groups, and populations" (ACOTE, 2018, p.2). Several B4 standards for both the entry-level doctoral and master's-degree programs contain the term interprofessional when describing outcomes for students as clinicians who are able to effectively consult, communicate, and develop discharge plans. These students must demonstrate knowledge of the principles of interprofessional team dynamics.

Accreditation standards for programs of study leading to a graduate degree in PA studies state that the curriculum must include instruction that prepares students to work collaboratively in patient centered teams that extend beyond the traditional physician-PA partnership (ARC-PA,

2010). Standard B1.08 explicitly states that opportunities for students to apply the principles of interprofessional practice in interprofessional teams within the curriculum must be provided (ARC-PA, 2010) and that there be documentation that assessment occurred.

The 2020 Standards and Required Elements for Accreditation of Physical Therapist Education Programs includes language incorporating both IPE and the interprofessional collaborative competencies. Education programs leading to a professional degree in PT require that both didactic and clinical curriculum include IPE that leads to development of interprofessional competencies. Programs are required to provide a narrative about the activities and the assessments describing the effectiveness in the preparation of graduates ready for team-based collaboration (CAPTE, 2020).

Accreditors evaluate their programs on IPE independent of partnering programs and of other programs in the same profession. The health professions accreditors collaborative (HPAC) was established in 2014 to provide a framework for addressing individual profession's needs while incorporating the IPEC competencies. ACOTE, ARC-PA, and CAPTE are all endorsing members of the HPAC consensus document on quality IPE.

Presage-Process-Product Model of Learning and Teaching (3P model)

The presage-process-product model (3P model) began as a tool to study teaching (Dunkin & Biddle, 1974), was adapted by Biggs to study how students approach learning, and expanded to a systems model of teaching and learning (Biggs, 1987, 1993). Biggs described education as a set of interacting ecosystems whose components interact to form a system in equilibrium. The components include "any identifiable component that affects learning" (Biggs, 1993, p. 74) such as students, teachers, institutions, learning outcomes, and administrators. The presage phase

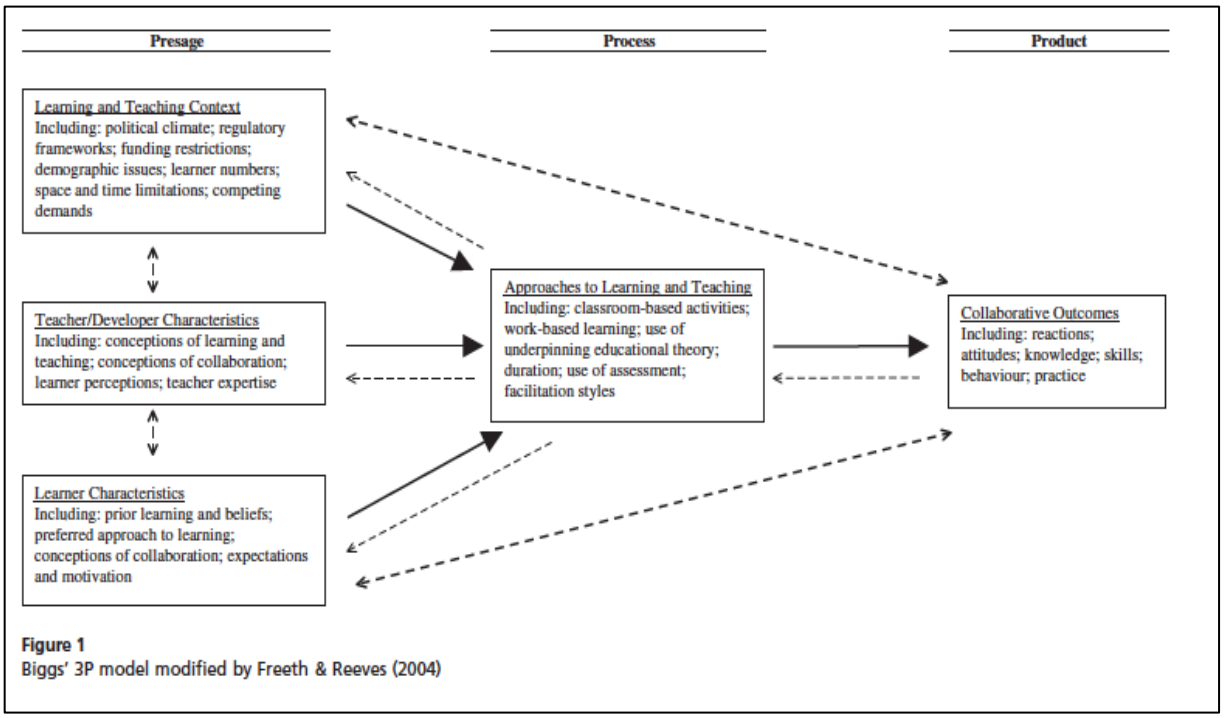
consists of components and factors present prior to learning taking place that influence planning and learning. For example, student presage factors include prior knowledge. The process phase considers components and factors present during learning and teaching such as the mode of delivery. The product phase considers the outcomes of the learning experiences.

Freeth and Reeves (2004) recognized the value of the 3P model systems approach for examining the many components influencing IPE and the IPE environment. They expanded the model creating the 3P model of learning to collaborate (Figure 1). The 3P model of learning to collaborate consists of three central components in the presage phase: learning context, teacher/program developer characteristics, and learner characteristics. The process factors include elements identified as important for generating IPE experiences. The product phase factors include collaborative competencies. Freeth and Reeves used this model to support their argument that "course developers and facilitators would benefit from greater analysis of presage, process, and product" (p. 44) factors that impact learning opportunities intended to develop collaborative practice. Their investigation provided what was at the time a contemporary snapshot of the factors influencing education for collaborative practice highlighting that local circumstances should drive educational planning and process planning should respond to presage factors. The 3P model of learning to collaborate can provide structure to identify the influencing factors present when planning IPE curriculum and to highlight how factors in different phases of the model interact. This structured approach facilitates identification, status, adaptability, and potential consequences of the factors related to formulating the rationale in planning IPE activities.

In the fifteen years since Freeth and Reeves first introduced the 3P systems model of learning to collaborate, it has been recommended as a tool for effectively evaluating IPE resources (Reeves & Barr, 2016), examining the relationship that occurs between and among different phases (Reeves & Freeth, 2006), and used in the development of curriculum (Anderson, Smith, & Hammick, 2016; Pardue, 2015). This descriptive inquiry used the model to guide survey development and data collection of IPE environments in OT, PA, and PT graduate programs of study. However, one component missing from this model is program evaluation, an important characteristic of quality IPE identified by HPAC (2019), so it was added as a fourth phase.

Figure 1

A 3P model of learning to collaborate



The four phases (presage, process, product, and evaluation) combine to create the structure to study the current environment of interprofessional education in the curricula of entry level graduate OT, PA, and PT accredited professional programs (Table 2).

Table 2

Conceptual Framework

Presage	Process	Product	Evaluation
Factors present prior to the IPE experience:	Factors present during the IPE experience:	Factors describing the outcomes of learning and measurement of those outcomes:	Factors that describe program evaluation of IPE:
Learner Characteristics	IPE Experiences	Learning Outcomes	Evaluation Process
Teacher/Program Developer Characteristics	Assessment of Student Outcomes		Evaluation Tools
Context Characteristics			

Dissertation Format

This dissertation employed a three-paper format, consisting of three distinct inquiries that inform on the IPE environment in graduate programs of study for OT, PA, and PT (Table 3). This resulted in research questions for the dissertation as a whole and research questions for each of the three papers.

Table 3

Summary of the Three Papers Contribution to the Dissertation Theme

Paper Title	Purpose	Contribution
Paper 1: Current Environment of Interprofessional Education in Occupational Therapy Curricula: A National Survey	To identify the current environment of interprofessional education in the curricula of all entry level OT professional programs accredited by ACOTE	To provide data on the current environment of interprofessional education in the curricula of entry level graduate OT professional programs accredited by ACOTE
Paper 2: Interprofessional Education: Current Environment in the Curriculum of ARC-PA Physician Assistant Programs of Education	To identify the current environment of interprofessional education in the curricula of PA professional programs accredited by ARC-PA	To provide data on the current environment of interprofessional education in the curricula of entry level PA professional programs accredited by ARC-PA
Paper 3: Current Environment of Interprofessional Education in CAPTE Physical Therapist Education: A National Survey	To identify the current environment of interprofessional education in the curricula of entry-level graduate PT professional programs accredited by CAPTE	To provide data on the current environment of interprofessional education in the curricula of entry level graduate PT professional programs accredited by CAPTE

Research Questions

The overarching research questions (DRQs) for this dissertation were:

DRQ1: What is the current environment of interprofessional education in the curricula of entry level graduate OT, PA, and PT accredited professional programs?

DRQ2: What are the similarities and differences between the three programs?

Papers one, two, and three examined the current environment of IPE in accredited entry-level programs of study of occupational therapy, physician assistant, and physical therapy education in the United States. The Research Questions (P_xRQs) for all three papers were:

P_xRQ1: What is the perceived effectiveness of institutional support for interprofessional education (IPE) for entry-level student programs?

P_xRQ2: What are the IPE experiences in the educational curriculum of entry-level student programs?

P_xRQ3: What are the learning outcomes for student IPE experiences in the educational curriculum of entry-level student programs?

P_xRQ4: What assessment methods/strategies are currently used for student IPE experiences in the educational curriculum of entry-level student programs?

P_xRQ5: What evaluation methods/strategies are currently used for program review of IPE in the educational curriculum of entry-level student programs?

The RQs were modified by inserting the professions name that is the subject of each paper. For example, P_1RQ5 (paper one) reads: What evaluation methods/strategies are currently used for program review of IPE in the educational curriculum of entry-level doctoral-degree-level and master's-degree-level occupational therapy student programs?

Study Design

This was a non-experimental design using web-based surveys to collect program demographics and descriptive data on interprofessional education in accredited graduate programs of study leading to licensure candidacy for OT, PA, and PT professions.

Instrument

The IPE-Curricular Environment Survey was used in the three inquiries. This survey was developed from surveys used to explore IPE in colleges of medicine and dentistry (Blue, Zoller, Stratton, Elam, & Gilbert, 2010; Palatta, Cook, Anderson, & Valachovic, 2015). A committee

consisting of educators representing occupational therapy, physician assistant, physical therapy, and a research specialist critically reviewed and evaluated each question from these surveys for inclusion prior to use in the development of the IPE-Curricular Environment Survey (IPE-CES). Twelve questions were used directly from the original survey, modifying only for language pertinent to each discipline based on peer reviewed literature, the respective accrediting body sites and publications, as well as the respective professional association websites. For example, PA program curriculum is reported as occurring in either the didactic or clinical phase while OT and PT programs report curriculum by year of attendance (refer to question 9 in Table A1). Eleven questions were added to investigate faculty training, faculty benefits, assessment, evaluation, IPE in program mission, IPE use in admissions, and tracking student IPE experiences. These questions were either modified from another survey (Appendix Table A1) or developed using language aligning with HPAC consensus document. A question on debriefing was specifically added to capture its current use in contemporary IPE environments (LeFlore, Anderson, 2009; Meny, de Voest, Salvati, 2019). The remaining questions in the survey address program, campus, and respondent demographics. Question order represents a phone conversation with Dr. Blue on lessons learned from administration of her survey (personal communication, January 11, 2018). All question structure and order remained the same for each inquiry to allow for data analysis.

Each question in the IPE-Curricular Environment Survey has been mapped to the phase in the theoretical framework for which it provided data (Table 4).

Table 4

IPE Environmental Framework Mapping of the Survey Instrument

Phase	Factor	Instrument Question
Presage: Factors present prior to the IPE experience	Learner Characteristics	Q9, Q28
	Teacher/Program Developer Characteristics	Q1, Q2, Q25, Q26, Q27, Q28
	Context Characteristics	Q3, Q4, Q5, Q6, Q22, Q23, Q24, Q28, Q29, Q30
Process: Factors present during the IPE experience	IPE Experience	Q7, Q8, Q10, Q11, Q12, Q13, Q14, Q15
	Assessment of Student Outcomes	Q17, Q18
Product: Factors describing the outcomes of learning and measurement of those outcomes	Learning Outcomes	Q16
Evaluation: Factors that describe program QA/QI of IPE	Evaluation Process	Q19, Q20
	Evaluation Tools	Q21

Note: This table maps each survey question to the factor and phase for which it provided data.

Presage factors in the IPE-CES (IPE-Curricular Environment Survey) are the factors present prior to learning taking place and influence planning. Questions asked to gather information and identify the environmental factors present in these programs cover student/learner year of study, teacher/developer experience in IPE, and the University/program support of IPE.

Process factors examined using the IPE-CES are the learning and teaching factors present during the IPE experiences in each program of study surveyed. The survey questions included gathering information on the duration of IPE involvement, phase placement, pedagogic approach, modalities, and collaborators.

Product factors categorized using the IPE-CES were identified with questions about the learning outcomes focused on during the IPE experience and methods used in the assessment of student outcomes.

Evaluation factors categorized using the IPE-CES were identified with questions about the presence of program evaluation of IPE by the program. These factors were not included in the 3P Model of learning to collaborate but are important (Anderson, Smith, & Hammick, 2016; Reeves & Freeth, 2006) and have been highlighted as necessary for meeting expectations for quality IPE (Health Professions Accreditors Collaborative, 2019).

Data Analysis

All data analysis was performed using IBM SPSS (Version 27) predictive analytics software. Descriptive statistics were run on all discrete survey questions for the papers comprising chapters two, three, and four.

Categorical variables were created and summarized as number and percentage of respondents. For role/position with the program the categories of Chair/Program Director, faculty, IPE, and other was used. IPE designation was used if the respondent specifically identified as this role. Length of time in IPE was redefined as “less than 1 year”, “1-2 years”, “3-4 years”, “5 or more years” (Levy, Mathieson, 2017). Program location was redefined from state to regions. All text fields were reviewed by committee and recoded into existing options or reported as other. Multiple response variables were created for questions asking respondents to select all that apply.

Chapter five analysis combined the three data sets to form one database. This data set was analyzed using descriptive statistics on all discrete survey questions to answer dissertation

research questions one and two. Additionally, for research question two, non-parametric statistics were used.

Structure on the organization of data for analysis is presented in Table 4. Each survey question is mapped to the phase defined in the theoretical framework for which it provided data. For example, survey question 7 asks about the types of in-person IPE activities that program students participate in. This provided information on the in-person IPE experience which occurs during the process phase for each program in each discipline.

Organization of the Remaining Chapters

The remaining chapters are organized as follows:

- Chapter 2: Paper 1; Current Environment of Interprofessional Education in Occupational Therapy Curricula: A National Survey
- Chapter 3: Paper 2; Interprofessional Education: Current Environment in the Curriculum of ARC-PA Physician Assistant Programs of Education
- Chapter 4: Paper 3; Current Environment of Interprofessional Education in CAPTE Physical Therapist Education: A National Survey
- Chapter 5: Conclusion; Current Environment of Interprofessional Education in Graduate Programs of Occupational Therapy, Physician Assistant, and Physical Therapist: Similarities and Differences

In his report as president of the Josiah Macy Jr. Foundation, George Thibault (2018) noted the great strides made in IPE and outlined future needs. He described the need to understand how education is being delivered in and across the varied health care disciplines. At the same time, HPAC and its members are striving for a balance in discipline specific

competencies with collaborative competencies in the achievement of quality IPE. This inquiry provides a contemporary snapshot of the IPE environments in OT, PA, and PT to these ends.

Chapter 2

Interprofessional Education in Occupational Therapy Curricula: A National Survey

Abstract

Purpose: The Accreditation Council for Occupational Therapy Education (ACOTE, 2018) includes in the current standards that all students in occupational therapy programs must be afforded opportunities to participate in interprofessional education (IPE) experiences. IPE is defined as "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (Interprofessional Education Collaborative, 2016, p. 8). As this was a new standard as of the 2011 standards in the education of occupational therapy (OT) professionals, it is unclear how programs are addressing this requirement within the curricula. ACOTE is an endorsing member of the IPE consensus document, Guidance on Developing Quality Interprofessional Education for the Health Professions, released in 2019. Considering the new standards and endorsement of the consensus document, the specific aim of this inquiry was to gather information on the current environment of IPE within the curricula of ACOTE accredited educational programs. Methods: During early fall 2020, an email with a link to our online survey was sent to 190 program directors of ACOTE accredited program in the US requesting that the person most knowledgeable of the program's IPE curricula complete the survey. Forty-two completed surveys were submitted (22% response rate). Results: All responding programs reported that they currently offer their students IPE activities that include learning with, from, and about students from at least one other profession but not all require it as an integrated component of their curriculum. The programs provided

information on the current IPE environment; planning; faculty benefits and development support; institutional support; barriers for development and sustainability of IPE; IPE student experiences; context, other professions, modalities, and settings; learning outcomes; student assessment; and program evaluation.

Key Words. Interprofessional Education, IPE, occupational therapist education, curriculum, environment, 3P model, HPAC consensus document

Interprofessional Education in Occupational Therapy Curricula: A National Survey

Interprofessionalism was included as an educational standard for occupational therapy (OT) education for the first time in 2011 (ACOTE, 2011). At this time, educational programs were required to facilitate the development of students who could effectively communicate and work interprofessionally with others. While the American Occupational Therapy Association (AOTA) has long placed high value on interprofessional collaboration, the 2011 Standards marked the movement of collaboration from being an ethos to a standard in the education of OT professionals.

Despite this being a new standard, interprofessional collaboration has a long history in both education and practice in OT. During his 1928 presidential address "Professional Training in Occupational Therapy," Thomas Kidner stated that greater outcomes for patients would be better realized with "more complete cooperation and a better understanding between the occupational therapy department and the other services" (Kidner, 1928, p. 188). Eleanor Slagle, founder of the first school dedicated to the training of occupational therapists, joined Kidner as an interprofessional champion supporting these ideals be incorporated in the training of professional occupational therapists (Slagle, 1931). Interprofessional collaboration remained within the culture and dialogue of professional occupational therapy until the 1960's when it found its way into two AOTA publications. "A Statement of Basic Philosophy, Principle, and Policy" asserted that relationships with other health professions was a qualification of OTs (otcentennial, nd). This was followed by the preamble of the 1965 Essentials which took this assertion further by clearly stating that "occupational therapists are being educated…to treat patients…in collaboration with qualified physicians" (p.1)

Outside the OT profession, the Institute of Medicine (IOM) began encouraging team-based education for U.S. health professions in 1972 (IOM, 1972). Leaders from multiple health professions gathered to discuss the state of healthcare and the many issues that could be addressed with the utilization of a team-based approach in the care of patients. In the 1980's the Pew Health Professions Commission was formed and released four reports from 1991 to 1998 addressing the changes necessary to health professions education in the United States. The final report included five recommendations and an outline of 21 competencies identified by the commission as necessary guides for updating the curricula in professional schools (O'Neil, 1998). Within the report, interdisciplinary competence was identified as "essential for the future" (p. 27) and was emphasized as the third recommendation as well as one of the 21 competencies. In the early 2000's a series of publications by the IOM (Greiner et al., 2003; IOM, 2001; Kohn, Corrigan, & Donaldson, 2000) highlighted issues negatively impacting healthcare in the U.S., such as safety, patient-centered care, quality of care, and equity in care. Together, the information in these reports reignited the discussions on the landscape of healthcare and the need to prepare health profession students who would be effective practitioners within the 21st century health system. In response, six national associations of schools of health professions formed the Interprofessional Education Collaborative (IPEC) in 2009 with the purpose of creating opportunities in education and identifying professional competencies for interprofessional learning, resulting in the publication of core competencies for interprofessional collaborative practice in 2011 (Table 5). Concurrently, interprofessional collaboration in both education and practice was identified by the World Health Organization (WHO) and its partners as a necessary strategy for addressing and meeting the need for a collaborative ready workforce (WHO, 2010).

Table 5

IPEC Four Core Competencies

Core Competency	Description
Competency 1 Values/Ethics for Interprofessional Practice:	Work with individuals of other professions to maintain a climate of mutual respect and shared values.
Competency 2 Roles/Responsibilities	Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations.
Competency 3 Interprofessional Communication	Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease.
Competency 4 Teams and Teamwork	Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population- centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable.

The Interprofessional Education Collaborative (IPEC) founding members were the American Association of Colleges of Nursing, American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, American Dental Education Association, Association of American Medical Colleges, and Association of Schools of Public Health. In 2016, the American Occupational Therapy Association joined IPEC, along with eight other associations: American Association of Colleges of Podiatric Medicine, American Council of Academic Physical Therapy, American Psychological Association, Association of American Veterinary Medical Colleges, Association of Schools and Colleges of Optometry, Association of Schools of Allied Health Professions, Council on Social Work

Education, and Physician Assistant Education Association. The purpose of the core competencies (Table 1) and sub-competencies is to "guide curriculum development" (IPEC, 2016, p. 8) in IPE within programs of study to prepare students for interprofessional collaborative practice (IPCP). IPEC defines IPE as "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (IPEC, 2016, p. 8). For occupational therapists, this is akin to the words spoken by Kidner in 1928.

Accreditation Standards

IPEC's four core competencies of values/ethics, roles/responsibilities, communication, team/teamwork, and their respective sub-competencies parallel the mission and visions of both AOTA and Accreditation Council for Occupational Therapy Education (ACOTE) in the "essentials" of a professional in occupational therapy. The first minimum standards for occupational therapy were adopted in 1923 and the Essentials (minimum standards) of an Acceptable School of Occupational Therapy (Reports of Officers, JAMA, 1935) were passed unanimously in 1935. The essentials in accreditation have evolved since 1935 and continue to respond to changes in practice, theoretical approaches, and populations served. AOTA clearly states a specific purpose of the accreditation process is to "accommodate new trends and developments in the practice of occupational therapy that should be incorporated into the education process" (AOTA, 2017). For example, while collaboration has been a part of the lexicon of OT since early in its inception, IPE and IPCP became required competencies for the first time in the 2011 ACOTE accrediting standards. Initially, neither AOTA nor ACOTE provided specifics regarding expectations on implementation of this requirement or evaluation

for meeting the standard. AOTA released a position paper in 2015 which included an acknowledgment of the ambiguity within the 2011 standards and provided guidance for programs to move forward in developing opportunities for students to learn and engage in activities that develop the skills necessary to be a collaborative ready practitioner (McLaughlin Gray et al., 2015). The position paper covered key concepts, provided standardized definitions for OT programs, reviewed the IPEC core competencies, and introduced commonly used assessment strategies as well as covered the design, implementation, and approaches to sustaining IPE. The new 2018 accreditation standards preamble states that the graduate must "be prepared to effectively communicate and work interprofessionally with all who provide services and programs for persons, groups, and populations" (ACOTE, 2018, p. 2). Principles of interprofessional team dynamics is stated as a content requirement (standard B.4.25) for expected student outcomes but components of interprofessional behavior can be found in standards B.2.0, B.4.19, and B.4.23 (ACOTE, 2018). The standards state that entry-level programs of study leading towards all degrees in occupational therapy are expected to develop learning opportunities and evaluation methods that document students achieving the outcomes related to interprofessional collaboration.

ACOTE is an endorsing member of the consensus document, *Guidance on Developing Quality Interprofessional Education for the Health Professions* (HPAC, 2019). The document provides guidance to institutions and program-specific leaders/faculty to assist in the development of quality IPE for their students. The document highlights the importance of institutional commitment to support the development, implementation, and evaluation of IPE plans. It also encourages endorsing member programs seeking to develop quality IPE plans to

include four characteristics: a program specific rationale for the plan and implementation; outcome-based goals that support achievement of objectives and interprofessional competencies; deliberate design for inclusion of interprofessional competencies and learning activities aligned with program specific competencies; learner assessment, instructor evaluation/support and program plan evaluation.

Numerous publications have examined occupational therapy student IPE experiences (Bondoc & Wall, 2015; Olson & Bialocerkowski, 2014; Ruebling et al., 2014; Schreiber & Goreczny, 2013; Thistlethwaite, 2016). These studies reported on student attitudes about IPE, teamwork, communication, and patient satisfaction. The most recent publication examined faculty perceptions around IPE (Hughes et al., 2019) but none published to date have examined the environment of IPE within the curricula specific to ACOTE accredited programs of doctoral-level or master's-level occupational therapy education.

The specific purpose of this inquiry was to explore the current environment of interprofessional education in the curricula of OT professional programs accredited by ACOTE.

This inquiry was guided by the following research questions:

Q1: What is the perceived effectiveness of institutional support for interprofessional education (IPE) for entry-level doctoral-degree-level and master's-degree-level occupational therapy student programs?

Q2: What are the IPE experiences in the educational curriculum of entry-level doctoral-degree-level and master's-degree-level occupational therapy student programs?

Q3: What are the learning outcomes for student IPE experiences in the educational curriculum of entry-level doctoral-degree-level and master's-degree-level occupational therapy student programs?

Q4: What assessment methods/strategies are currently used for student IPE experiences in the educational curriculum of entry-level doctoral-degree-level and master's-degree-level occupational therapy student programs?

Q5: What evaluation methods/strategies are currently used for program review of IPE in the educational curriculum of entry-level doctoral-degree-level and master's-degree-level occupational therapy student programs?

Research question one was designed to explore the perceived effectiveness of institutional support in the development, implementation, evaluation, and/or sustainability of the OT IPE curriculum. Questions two through five were designed to describe specific aspects of IPE as it currently exists in the curricular experiences of doctoral-degree-level and master's-degree-level programs of occupational therapy.

Study Design

This inquiry was a non-experimental design that used an online survey to collect program demographics and descriptive data on interprofessional education in ACOTE accredited entry level doctoral-degree and master's-degree occupational therapy programs. Areas of exploration in the survey included key student experiences, perceived barriers, administration, assessment, evaluation, and curricular delivery. To obtain this information, this inquiry used the IPE Curricular Environment Survey (Appendix B) which was administered via Qualtrics. Institutional IRB approval was obtained.

Participants

The study sample was a purposeful sample of all ACOTE accredited programs offering entry level doctoral-degree and master's-degree programming. ACOTE provides a list of all accredited programs on their web site. As of January 2020, ACOTE reported 36 accredited entry level doctoral programs, 128 entry level professional master's level programs, and 44 entry level professional master's level programs retaining accreditation for the master's program while transitioning to the doctoral level in 47 States, District of Columbia, Puerto Rico, and the United Kingdom. Inclusion criteria was current ACOTE accreditation in the United States of America with exclusion by non-accreditation status as listed on the ACOTE website at the time of survey dissemination and located outside of the United States of America resulting in 190 programs.

Recruitment and Study Procedures

Program directors were identified through a search of each program's website and emailed a recruitment letter (Appendix C). The letter included a description of the study and asked that information along with the online link for the IPE Curricular Environment Survey was sent to the individual most intimately familiar with IPE within their occupational therapy curriculum. This step intended to address the limitation intrinsic in self-administered questionnaires regarding the respondent not having the characteristics and other relevant information intimate with the subject (Isaac & Michael, 1995; Polit & Beck, 2012)

Respondents were given two weeks to submit their surveys. On Tuesday of week two a reminder email was automatically generated by Qualtrics and data collection ceased Friday of the same week.

Instrument

The instrument used for this study was developed as part of a larger study examining IPE in OT, PA, and PT environment. It was modified from several surveys used to explore IPE in colleges of medicine and dentistry, academic health centers in the US, and campuses with established IPE infrastructure (Blue et al., 2010; Clay et al., 2018; Congdon, 2016; Palatta et al., 2015). Eighteen questions were used directly from the original source surveys, modifying only for language pertinent to OT education. Thirteen questions were added to investigate faculty training, faculty benefits, assessment, evaluation, IPE in program mission, IPE use in admissions, and tracking student IPE experiences. These questions were either modified from another survey (Appendix A) or developed using language aligning with the HPAC consensus document. A question on debriefing was specifically added to capture its current use in contemporary IPE environments (LeFlore & Anderson, 2009; Meny et al., 2019). Nine questions were included exploring respondent opinion on institutional effectiveness in supporting the development, implementation, evaluation, and/or sustainability of the IPE curriculum. These questions were developed using the examples of institutional commitment and leadership provided in the HPAC consensus document (HPAC, 2019). Guidance for content modification of the instrument came from the AOTA position paper, "Importance of Interprofessional Education in Occupational Therapy Curricula" (McLaughlin Gray et al., 2015), the "Blueprint for Entry-Level Education" (Blueprint for Entry-Level Education., 2010), and the "2018 Accreditation Council for Occupational Therapy Education (ACOTE) Standards and Interpretive Guide (ACOTE, 2018).

In addition to questions exploring the IPE environment, demographic information about the respondent, the program, and the school was also collected. The operational definition of IPE

published in the HPAC consensus document was included in the emails and added to the top of the IPE Curricular Environment Survey for easy reference. The survey questions were field tested with a convenience sample of three respondents resulting in a few minor adjustments to wording and to the format of questions in Qualtrics.

Analysis

Surveys are intended to gather information about a phenomena, in this instance IPE, within a population (Polit & Beck, 2012); data were analyzed with descriptive statistics using IBM SPSS Statistics (Version 27) predictive analytics software.

Categorical variables were created and summarized as number and percentage of respondents. For questions allowing "select all that apply", multiple response variables were created in SPSS and reported as number and percentage of cases. Respondents' role/position with the program were recoded and reported as Chair/Program Director, faculty, AFWC, or IPE. IPE designation was used if the respondent specifically identified as this role. Respondent self-reported length of time involved in IPE was redefined as "< 1 -5 years", "5-10 years", and ">10 years". Program location was collected as State and redefined to the regions published by U.S. Census Bureau (n.d.). All text fields were reviewed and recoded into existing options or reported as other.

Results

Respondent and Program Demographics

In total, 190 emails were sent, six bounced back, 54 surveys were started, and 42 completed resulting in a 22% response rate. The majority of respondents (64%; n = 27) identified as chair/program director with 6 – 10 years (35%; n = 17) experience in IPE. More than half

(65%; n = 27) of the respondents are in public institutions located in the south (45%; n = 19) and not affiliated with an academic health center (55%; n = 23). Most programs delivered in traditional face-to-face format (84%; n = 37) (note: this question asked to select delivery prior to COVID-19). Programs also reported delivery as hybrid (25%; n = 11) and web based (7%; n = 3) with 21% (n = 9) adding in text response that due to COVID they have moved to "on-line" with plans to return to traditional when permitted. The text responses were an additional comment provided by the programs. All responding programs reported that they currently offer their students IPE activities that include learning with, from, and about students from at least one other profession.

The IPE Environment

Planning

The academic home for IPE learning activities was cited predominately (50%; n=21) as within an interprofessional curriculum committee followed by individual faculty (33.3%; n = 14) and the OT department (31%; n = 13). Ultimate responsibility for coordinating IPE for the programs falls to individual faculty (50%; n= 21) and department committee (21.4%; n = 9) with no funds (56.1%; n = 23) in the program budget for the activities.

Faculty

Participation in IPE supports faculty annual evaluation (62%; n = 26), tenure and promotion (64%; n = 27), and recognition (45%; n = 19). Other benefits reported were startups for projects, release time, and opportunities to work with faculty from other departments. Only five (12%) of the responding programs reported no benefits for faculty participation in IPE.

Support for faculty development was reported 33 times as provided by the university (20%), the program (12%), IPE center (34%), or another professional school (7%). Support for clinical/field preceptors was reported by 55% of respondents as not provided.

Institutional Support

Nine questions investigated respondents' opinion on institutional efficacy in supporting their IPE curriculum. Responses for these questions are in Table 6. Majority of program respondents reported that their institutions are slightly to somewhat effective in supporting the development, implementation, evaluation, and/or sustainability of their IPE programs. Programs reported that their institutions are not effective or only slightly effective in designating leadership with sufficient protected time for IPE (52%; n = 22); identification and development of solutions for institutional policies that may hinder interprofessional collaboration (67%; n = 28); and their institutions are not effective at all (59%; n = 24) with developing financing models for IPE in concert with individual program models.

Table 6

Institutional Support

	Not effective		Slightly effective		Somewhat effective		Very effective		Extremely effective	
Area of support	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Strategic direction	2	4.88	10	24.39	14	34.15	10	24.39	5	12.20
Allocating resources for IPE plans	9	21.95	10	24.39	11	26.83	8	19.51	3	7.32
Logistical support	7	16.67	13	30.95	14	33.33	6	14.29	2	4.76
Designating dedicated leadership	10	23.81	12	28.57	7	16.67	6	14.29	7	16.67

Joint oversite and planning	8	19.05	14	33.33	12	28.57	7	16.67	1	2.38
Developing finance models	24	58.54	6	14.63	5	12.20	5	12.20	1	2.44
Supporting policies for IPE	12	28.57	16	38.10	8	19.05	4	9.52	2	4.76
Faculty development	6	14.63	16	39.02	11	26.83	6	14.63	2	4.88
Faculty recognition	8	19.51	11	26.83	12	29.27	8	19.51	2	4.88

Note: Total responses for each question does not equal N as not all respondents answered every question.

Barriers

Course schedules were identified by 73% (n = 30) of the responding programs as a major barrier. The most reported moderate barrier was funding (39%; n = 16), with readiness of students the most reported slight barrier (49%; n = 20). More than 50% of responding programs reported lack of student prior knowledge of IPE (59%; n = 24), student interest (51%; n = 21), and lack of community partners (50%; n = 20) as no barrier at all. See results in Table 7.

Table 7

Level of Potential Barrier Impact on IPE

	No barrier		Slight barrier		Moderate barrier		Major barrier		NA	
Potential Barrier	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Classroom Space	14	34.15	13	31.71	9	21.95	5	12.19	0	0.00

Course Schedules	0	0.00	6	14.63	5	12.19	30	73.17	0	0.00
Readiness of Students	5	12.19	20	48.78	15	36.59	1	2.44	0	0.00
Student Interest	21	51.22	14	34.15	6	14.63	0	0.00	0	0.00
Lack of student prior IPE knowledge	24	58.54	15	36.59	1	2.44	1	2.44	0	0.00
Participation from other professions	14	34.15	17	41.46	9	21.95	1	2.44	0	0.00
Appropriate mix of professions	14	34.15	17	41.46	8	19.51	1	2.44	1	2.44
Faculty time/workload	3	7.14	11	26.19	15	35.71	13	30.95	0	0.00
Faculty development	9	21.95	13	31.71	14	34.15	3	7.32	2	4.88
Faculty Interest	15	36.59	14	34.15	12	29.27	0	0.00	0	0.00
Funding	8	19.51	4	9.76	16	39.02	10	24.39	3	7.32
Institutional support	16	38.10	14	33.33	7	16.67	5	11.90	0	0.00

No Academic Medical Health Center	16	39.02	8	19.51	7	17.07	6	14.63	4	9.76
Lack of community partners	20	50.00	13	32.50	4	10.00	1	2.50	2	5.00

Note: Total responses for each question does not equal N as not all respondents answered every question.

IPE Experiences

All responding programs report that IPE is included in their curriculum; however only 96% (n = 40) report that these experiences are a required part of the curriculum. The students also participate in IPE as an elective for credit (10%; n = 4) or as extracurricular activities for no academic credit (31%; n = 13). IPE is primarily integrated into didactic course work (76%; n = 32), one-time events (38%; n = 16), clinical/field work (26%; n = 11), its own course (21%; n = 9), online learning (19%; n = 8), or a sequenced series (19%; n = 8). The most cited professions that OT students interact with during IPE experiences are physical therapy (83%; n = 35), nursing (79%; n = 33), speech-language pathology (52%; n = 22), pharmacy (43%; n = 18), physician assistant (41%; n = 17), and medicine (41%; n = 17). The settings for IPE are small group classroom (79%; n = 33), large group such as a lecture hall (69%; n = 29), simulation center (62%; n = 26), and web-based (31%; n = 13). Other settings include clinics such as student run (26%; n = 11) and community (24%; n = 10). In-person modes of delivery include case-based discussions (83%; n = 34), small group exercises (83%; n = 34), simulation/standardized patients (66%; n = 27), community service/service-learning projects (56%; n = 23), lectures (44%; n = 18), and shared clinical duties in a patient care setting (37%; n

= 15). OT students also participate in on-line IPE activities including video conference discussions (47%; n = 18), simulations (40%; n = 15), chat room discussions (37%; n = 14), and a variety of planned interactions (37%; n = 15). Seven (21%) programs report that their students do not participate in on-line IPE. All programs reported content focus for IPE activities include roles/responsibilities of other professions (100%; n = 42). Team skills (83%; n = 35), patient care planning (79%; n = 33), patient evaluation (64%; n = 27), ethics (50%; n = 21), and patient safety/error reduction (48%; n = 20) are also content focus for IPE activities. OT programs used debriefing for IPE activities with all disciplines involved (90%; n = 38) and with just OT students (30%; n = 12) depending on the activity.

Learning Outcomes

The learning outcomes reported by responding programs as identified for their students IPE activities are roles/responsibilities of other professions (95%; n = 40), communication (86%; n = 33), team skills (81%; n = 34), values/ethics (52%; n = 22), and leadership (45%; n = 19). Additional write-in responses included conflict resolution and mutual respect.

Student Assessment

The most reported form of assessment was pre/post surveys (71%; n = 30) for IPE activities. Reflective writing (57%; n = 24), group participation (50%; n = 21), group project (43%; n = 18), simulation/standardized patient exercise rubric (38%; n = 16), and peer assessment (24%; n = 10) were also identified. Two programs reported using no assessment and all other forms of assessment reported represented less than 12%.

Tracking students for mastery of program defined IPE competencies was reported by 47% (n = 20) of the programs. Others reported they are in the process of developing plans for

tracking competencies, that the process is in place for some but not all, and I don't know (9%; n = 4). Tracking individual student mastery of IPE was not reported by 44% (n = 19) of the responding programs.

Program Evaluation of IPE

Programs reported they evaluate their plans in a formative manner for each IPE experience (71%; n = 30), annually as a whole (38%; n = 16), and seventeen percent (n = 7) report they do not formally evaluate their IPE plan.

Most programs report not using an evaluation framework (59%; n = 24). Kirkpatrick's four-point typology of education outcomes is used by 7% (n = 3) of the responding programs, 22% (n = 9) report not knowing, 12% (n = 5) vary their evaluation or are in development.

Discussion

ACOTE standards require educational curriculum of entry-level doctoral-degree-level and master's-degree-level occupational therapy student programs to include IPE for all students. ACOTE is an endorsing member of the HPAC consensus document which provides an outline of recommendations for institutions and programs for developing quality IPE. These recommendations include institutional support, outcome-based goals, deliberate design, and evaluation/assessment. This inquiry focused on these recommendations to explore and inform occupational therapy education on the current environment of IPE in its accredited programs.

The 2018 accreditation standards require IPE. While 100% of responding programs reported that their students were offered IPE activities that include "learning with, from, and about students from at least one other profession", 90% (n = 38) report the experiences as a categorized required part of the curriculum. This distinction in IPE definition is important to

support active learning and an exchange of information between learners to enhance development of collaborative behaviors (HPAC, 2019). In their survey of OT educators, Hughes et al. (2019) found that 71.6% (n = 312) of the respondents reported regular inclusion of IPE in the curriculum with a majority (77.2%, n = 328) expressing a desire for more emphasis of IPE.

Our data suggests that programs are of the opinion that their institutions are only somewhat effective in supporting the development, implementation, evaluation, and/or sustainability of their IPE programs. Institutions are perceived as least effective in developing financing models for IPE; designating IPE leadership with sufficient protected time, responsibility, and accountability for IPE at the institutional level; and supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration. Many of the examples given within each of the efficacy questions were identified as barriers by respondents: course schedules, funding, faculty time/workload, and faculty development. Comments included in the survey stressed "the interest is present among faculty and programs, but the institutions are not supportive." While some programs identified these institutional barriers, other programs shared that recent changes in administration have resulted in college committees being formed to address IPE. Institutional support is a key factor in the rationale characteristic of quality IPE as outlined in the HPAC document. Some programs mentioned a desire to have IPE added to the strategic plans at their institutions and most (69%, n = 29) said that interprofessional or similar language appears in official institutional documentation.

A second characteristic of quality IPE is a deliberate design to delivery of the curriculum. The data suggests that entry-level doctoral-degree-level and master's-degree-level occupational

therapy students attending responding programs are experiencing IPE as a required, integrated part of their curriculum with a variety of professions in multiple settings. Some programs have gone beyond their campuses to achieve this by forming associations with health science programs at other institutions. This could be why non-affiliation with a health center did not score high as a barrier and why a diversity of collaborating professions was reported. For the profession, this aligns with recommendations for quality IPE. Mode of delivery includes both in-person and on-line experiences. The on-line experiences existed prior to COVID in many institutions.

The content focus of the IPE experiences reflects student future practice and acquisition of skills for that practice. Programs reported that their students are learning about their own roles while also developing awareness of that role within the structure of an interprofessional team.

IPEC competencies and versions of the sub-competencies were identified as the learning outcomes for these activities. The greatest emphasis was placed on roles/responsibilities, communication, and team skills. In a previous survey (Hughes, 2019) faculty ranked ethics as the most important IPEC competency for their students and communication second. The authors commented that these were the two most difficult to assess as the others tend to be more procedural in nature. This survey did not explore mapping of learning outcomes to assessments strategy. However, accreditation bodies require evidence of standards compliance and now that IPE is a standard, mapping results of student assessment may play a role in defining program learning outcomes for IPE.

The HPAC consensus document addresses the need for quality IPE plans to include a coordinated strategy for assessment and evaluation. They suggest this must include student

(learner) assessment, faculty assessment, and evaluation of the plan itself. Responding programs include assessment of student learning outcomes in a variety of ways but 55% do not currently have a mechanism in place to track individual learners' mastery of program defined interprofessional competencies.

Formal evaluation of IPE plans does occur, but few programs could articulate use of a framework. Quality IPE encourages that a robust evaluation strategy be developed to include outcome data, costs, benefits, and stakeholder perceptions. The plan should be developed to serve quality improvement in achieving outcomes. Many programs discussed informal evaluation in the form of committees and student surveys, but this was primarily done case (activity) by case (activity).

The current survey did not include questions on assessment of faculty participation in IPE. In the consensus document, HPAC acknowledged that evaluation and assessment of faculty engaged in IPE is important, but it is evolving. Therefore, for the purposes of this inquiry the decision was made to focus on identifying the presence of a program to support faculty and preceptor development in IPE. Our data suggest that faculty involvement with IPE benefits include recognition and support for tenure & promotion but that there is limited development for them and little if any for preceptors.

Conclusion

Limitations

Limitations and areas of concern in this research included subject expertise, recruitment, response error, mode, and COVID-19. To increase the likelihood that the survey would be

completed by the IPE expert in the OT program, a two-step recruitment process was employed. This approach had proved successful in similar research (Blue et al., 2010; Palatta et al., 2015).

This research used an internet self-administered questionnaire, which controlled for bias on the part of the administrator but removed the ability to clarify. Responders were asked how long they personally had been involved with IPE which may not represent the program's experience in implementing IPE. Future research should include responder and program length of time involved with IPE.

COVID-19 caused a lot of programs to move to remote delivery of content. While this mode of distribution may have allowed more people to receive the original email invitation, distribution during COVID-19 may have impacted response rate and responder representation of IPE in the curriculum. Research conducted by de Koning et al. (2021) investigated research conducted pre-COVID and post-COVID (defined as after January 2020) identifying reduced response rates post-COVID. This phenomenon is called survey fatigue due to the significant increase in surveys and other on-line strategies to gather data during this time coupled with the move to on-line education.

Future Research

All responding programs are providing opportunities for interprofessional collaboration to their students but not all require it as an integrated component of their curriculum. Based on our analysis future research should include examination of the relationship between program leadership and institutional leadership in developing, implementing, and sustaining an IPE plan; faculty/preceptor development and assessment in delivering IPE; and tracking student acquisition of IPE competencies. Quality IPE requires investment from all stakeholders to all stakeholders.

Chapter 3

Interprofessional Education: Current Environment in the Curriculum of ARC-PA Physician Assistant Programs of Education

Abstract

Purpose: Accreditation standards for programs of study leading towards a degree in Physician Assistant (PA) studies state that the curriculum must include instruction that prepares students to work collaboratively in patient centered teams that extend beyond the traditional physician-PA partnership. The Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) has endorsed a consensus document providing guidelines for the development of quality interprofessional education (IPE) for health professions (HPAC, 2019). A comprehensive description of the contemporary curricular environment of IPE in PA education does not exist. The purpose of this inquiry is to gather information to provide a contemporary snapshot of the current IPE environment in the curriculum of ARC-PA accredited programs leading to a degree in PA Studies. Methods: Using the Bigg's model on learning as modified for IPE and the HPAC consensus document as a guide, a survey was developed and emailed to accredited programs. Response rate was 22%. Descriptive statistics were used to describe results. Results: PA students are experiencing IPE integrated in their curriculum, during didactic and clinical phases, in a variety of settings, with multiple other professions, in combinations of differing modalities, reflecting future practice.

Key Terms: Physician Assistant, IPE, IPE environment, Bigg's 3 P, HPAC consensus document

Interprofessional Education: Current Environment in the Curriculum of ARC-PA Physician Assistant Programs of Education

Introduction

Interprofessional education (IPE) is "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (WHO, 2010). An article published in 1977 investigating IPE in physician assistant (PA) education (McCally, Sorem, & Silverman, 1977) operationalized IPE as "to prepare students for collaborative service relationships" (Szasz, 1974). In this inquiry, a phone survey was conducted with 45 PA programs in the United States of which 80% reported IPE as a recognized concept or activity in their program and 50% reported the presence of a designee responsible for organizing IPE. In the years since this publication, many advances have been made in the area of IPE.

In the 1980's the Pew Health Professions Commission was formed and released four reports from 1991 to 1998 addressing the changes necessary to health professions education in the United States. The final report included five recommendations and an outline of 21 competencies identified by the commission as necessary guides for updating the curricula in professional schools (O'Neil, 1998). Within the report, interdisciplinary competence was identified as "essential for the future" (p. 27) and was emphasized as the third recommendation as well as one of the 21 competencies. In the early 2000's a series of publications by the IOM (Greiner et al., 2003; IOM, 2001; Kohn, Corrigan, & Donaldson, 2000) highlighted issues negatively impacting healthcare in the U.S., such as safety, patient-centered care, quality of care, and equity in care. Together, the information in these reports reignited the discussions on the landscape of healthcare and the need to prepare health profession students to be effective

practitioners within the 21st century health system. Taking the lead, six national associations of schools of health professions formed the Interprofessional Education Collaborative (IPEC) in 2009 with the purpose of creating opportunities in education and identifying professional competencies for interprofessional learning. The product of this venture was the publication of core competencies for interprofessional collaborative practice (IPEC, 2011). In 2016, the Physician Assistant Education Association (PAEA) along with eight other associations joined IPEC and contributed to the release of an expanded version of the core competencies (Table 8). The 2016 updates incorporate population health concepts and are intended to "guide curriculum development" (IPEC, 2016, p. 8) in IPE within programs of study to prepare students for interprofessional collaborative practice (IPCP).

Table 8

IPEC Four Core Competencies

Core Competency	Description
Competency 1	Work with individuals of other professions to maintain a climate of mutual respect and shared values. (Values/Ethics for Interprofessional Practice)
Competency 2	Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations. (Roles/Responsibilities)
Competency 3	Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease. (Interprofessional Communication)
Competency 4	Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population- centered care and population health programs and policies that are safe,

> timely, efficient, effective, and equitable. (Teams and Teamwork)

Current accreditation standards for programs of study leading towards a degree in Physician Assistant studies state the curriculum must include instruction that prepares students to work collaboratively in interprofessional patient centered teams that extend beyond the traditional physician-PA partnership (ARC-PA, 2020). Standard B2.10 requires that content on roles and responsibilities of other professionals as well as opportunities for students to apply the principles of interprofessional practice in interprofessional teams must be provided within the curriculum (ARC-PA, 2020, p. 36). Documentation of compliance with this standard includes record of evaluation methods related to these skills.

ARC-PA is an endorsing member of the consensus document, *Guidance on Developing Quality Interprofessional Education for the Health Professions* (HPAC, 2019). The document provides guidance to institutions and program-specific leaders/faculty to assist in the development of quality IPE for their students. The document highlights the importance of institutional commitment to support the development, implementation, and evaluation of IPE plans. It also encourages endorsing member programs seeking to develop quality IPE plans to include four characteristics: a program specific rationale for the plan and implementation; outcome-based goals that support achievement of objectives and interprofessional competencies; deliberate design for inclusion of interprofessional competencies and learning activities aligned with program specific competencies; learner assessment, instructor evaluation/support and program plan evaluation.

Both PAEA and ARC-PA are heavily engaged in ensuring PAs are prepared to be collaborative ready clinicians upon graduation from an accredited program. The only resource for profession specific data on the contemporary IPE curricular environment of PA programs is the PAEA Curriculum Report 5 – Didactic document (Physician Assistant Education Association et al., 2020). This report was generated from a survey administered by PAEA in 2019 to 242 member programs. Section eight of the report presents data on interprofessional education in the didactic curriculum; no data is currently reported for clinical phase curriculum (Physician Assistant Education Association et al., 2017). The four areas explored were percentage of didactic curriculum devoted to IPE, other health professions the PA students routinely interact with, settings (classroom and laboratory) for IPE, and regular extracurricular IPE activities.

Given the 2019 consensus document, a more detailed inquiry is needed to inform PA educators on program IPE environments and the HPAC recommendations for quality IPE. PAs work with multiple professions (NCCPA, 2018) in interprofessional collaborative practice; the profession needs to know how PA students are being educated in the competencies of a collaborative ready workforce.

The purpose of this inquiry was to gather information to provide a contemporary snapshot of the current IPE environment in the curriculum of ARC-PA accredited programs.

Methods

This inquiry was a non-experimental design using an online survey to collect program demographics and descriptive data on interprofessional education in ARC-PA accredited entry level physician assistant programs. Areas of exploration in the survey included collaborative partners for IPE, the pedagogical experience, institutional support, assessment methods,

outcomes, and topics being taught in IPE. To obtain this information, this inquiry used the IPE Curricular Environment Survey (Appendix A) distributed via Qualtrics. IRB approval was granted.

Participants

The study sample was a purposeful sample of all ARC-PA accredited programs. ARC-PA provides a list of accredited programs on their web site. As of 9:00 p.m. on 07/07/2020 ARC-PA reported 260 entry level programs with accreditation status listed as continued (175), accreditation-provisional (68), and accreditation-probation, provisional (17). Inclusion criteria was current ARC-PA accreditation in the United States of America and exclusion by location outside of the United States of America. All 260 were included.

Recruitment and Study Procedures

The director of each program was identified through links for accredited programs located on the ARC-PA website and a search of the program web site. Once identified, they were emailed a recruitment letter (Appendix B). The letter included a description of the study and asked that information along with the online link for the IPE Curricular Environment Survey be sent to the individual most intimately familiar with IPE within their physician assistant education curriculum. This step is intended to address the limitation intrinsic in self-administered questionnaires regarding the respondent not having the characteristics and other relevant information intimate with the subject (Isaac & Michael, 1995; Polit & Beck, 2012).

Respondents were given three weeks to submit their surveys. On Tuesday of weeks two and three a reminder email was sent, and data collection ceased Friday of week three.

Instrument

The instrument used for this study was developed as part of a larger study exploring IPE in the environments of OT, PA, and PT graduate programs of study. It was modified from several surveys used to explore IPE in colleges of medicine and dentistry, academic health centers in the US, and campuses with established IPE infrastructure (Blue AV et al., 2010; Clay et al., 2018; Congdon, 2016; Palatta et al., 2015). Each question from these surveys was critically reviewed and evaluated for inclusion prior to use in the development of the IPE-Curricular Environment Survey (IPE-CES). Eighteen questions were used directly from the respective original survey, modifying only for language pertinent to PA education. Thirteen questions were added to investigate faculty training, faculty benefits, assessment, evaluation, IPE in program mission, IPE use in admissions, and tracking student IPE experiences. These questions were either modified from another survey (Appendix Table A1) or developed using language aligning with the HPAC consensus document. A question on debriefing was specifically added to capture its current use in contemporary IPE environments (LeFlore, Anderson, 2009; Meny, de Voest, Salvati, 2019). Nine questions were included exploring respondent opinion on institutional effectiveness in supporting the development, implementation, evaluation, and/or sustainability of the IPE curriculum. These questions were developed using the examples of institutional commitment and leadership provided in the HPAC consensus document (HPAC, 2019). Guidance for content modification of the instrument came from expert consultation, the HPAC document, ARC-PA, PAEA, NCCPA, and AAPA web sites as well as peer reviewed publications on the education of PA students.

In addition to questions exploring the IPE environment, demographic information about the respondent, the program, and the school was gathered. The operational definition of IPE published in the HPAC consensus document was included in the emails and added to the top of the IPE Curricular Environment Survey for easy reference. The survey questions were field tested with a convenience sample of three respondents. No adjustments were necessary.

Analysis

Data were analyzed with descriptive statistics using IBM SPSS Statistics (Version 27) predictive analytics software. Categorical variables were created and summarized as number and percentage of respondents. For role/position with the program the categories of Chair/Program Director, faculty, IPE, and other was used. IPE designation was assigned if the respondent specifically identified as this role. Respondents self-reported length of time in IPE was redefined as “less than 1 year”, “1-2 years”, “3-4 years”, “5 or more years” (Levy, Mathieson, 2017). Program location was redefined to the regions published by PAEA. All text fields were reviewed and recoded into existing options or reported as other.

Bigg’s (Biggs, 1993) 3P model of learning and teaching has been used in the evaluation (Anderson, Smith, & Hammick, 2016; Freeth & Reeves, 2004) and program development (Pardue, 2015) of IPE curriculum. In their 3P model of learning to collaborate, Freeth and Reeves (2004) include elements identified as central to generating IPE experiences. The three phases of presage, process, and product consider all factors contributing to the development, delivery, and sustainment of an IPE curriculum. This model guided analysis of survey data. However, one element missing in the model is evaluation, an important characteristic of quality IPE identified in the HPAC consensus document. Evaluation was added as a fourth phase.

All survey questions were mapped to the framework and phases for which they provided data (Table 2).

Table 9

IPE Environmental Framework Mapping of the Survey Instrument

Phase	Factor	Instrument Question
Presage: Factors present prior to the IPE experience	Learner Characteristics	Q9, Q28, Q39
	Teacher/Program Developer Characteristics	Q1, Q2, Q25, Q26, Q27, Q28
	Context Characteristics	Q3, Q4, Q5, Q6, Q7, Q8, Q22, Q23, Q24, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38
Process: Factors present during the IPE experience	IPE Experience	Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15
	Assessment of Student Outcomes	Q17, Q18
Product: Factors describing the outcomes of learning and measurement of those outcomes	Learning Outcomes	Q16
Evaluation: Factors that describe program QA/QI of IPE	Evaluation Process	Q19, Q20
	Evaluation Tools	Q21

Note: This table maps each survey question to the factor and phase for which it provided data.

Results

Respondent and Program Demographics

Surveys were sent to 260 programs; 61 surveys were started with 57 (22%) finishing. The response rate is low however demographics of respondent programs were like those reported by PAEA (2020) with a slight difference in the representation by geographic region. The

Respondents were primarily program directors (60%; n = 35) with 49.1% (n = 28) reporting less than 6 years' experience in IPE. The majority of respondent institutions were private (67%; n = 38), located in the Midwest (32%; n = 18), and at an academic non-health center (54%; n = 31). Prior to COVID-19 the programs were primarily delivered as traditional face to face interactions (77.2%; n = 44). This question allowed for selection of all that apply and at the time of data collection, the responding programs reported hybrid (38.6%; n = 22), web based (8.8%; n = 5), and a movement to various combinations of content delivery with plan for returning to traditional when permitted. Three (5%) programs reported being in the planning/development stages of IPE and were routed by the survey to bypass questions about IPE activities.

PA IPE Environment

Presage

Learner Characteristics. Of the responding programs, 39.6% (n = 21) reported that students engage in IPE during the didactic phase of their curriculum and 62.3% (n = 33) report participation in both the didactic and clinical phases. Comments included that IPE exists more formally in the didactic phase and that not all students experience IPE in their rotations. Barriers associated with learners such as readiness (75.9%, n = 41), student interest (90.7%, n = 49), and lack of prior knowledge of IPE (92.6%, n = 50) were identified as slight to no barrier at all. No program identified lack of prior knowledge as a major barrier. Barriers are reported in Figure 2.

Program identified characteristics related to IPE were reported as considerations in the admissions process by 65.4% (n = 34) of the respondents. These programs focus in the themes of team skills and communication along with knowledge and experience in IPE when evaluating applicants. The process of gathering information about applicants varied including use of a

rubric, interview questions, activities, supplemental application questions, and part of the holistic interview process.

Teacher/Program Developer Characteristics. The most common benefits identified for faculty participating in IPE by the responding programs were support of annual evaluation (52.9%, n = 27) and tenure and promotion (45.1%, n = 21). In contrast, 21.6% (n = 11) of the programs reported no recognition and only 9.8% (n = 5) reported release time for IPE participation.

When asked about the presence of a program to support faculty development in IPE, 37.3% (n = 19) said they had none and 10% (n = 5) didn't know. The remaining programs reported faculty development in IPE as provided by the university (27.5%, n = 14), the program (17.6%, n = 9) or an IPE center (7.8%, n = 4). Clinical faculty development in IPE is lacking (69.2%, n = 36) and when provided, it is primarily done by the program (9.6%, n = 5).

Barriers identified for faculty included time/workload with 70.4% (n = 38) ranking this as moderate to major barrier. Faculty development (66.6%, n = 36) and interest (63.0%, n = 34) were both ranked as slight to moderate in regard to barriers for IPE. Faculty interest was ranked as a non-barrier by 31.5% (n = 17) of the respondents.

Context Characteristics. IPE activities that include learning with, from, and/or about students from at least one other profession were reported by 95% (n = 54) of the respondent and 5% (n = 3) identified as in the planning/development stage. Interprofessional learning activities are primarily required (84.9%, n = 45) as part of an academic program of study. Some programs include extracurricular activities with no academic credit (15.1%, n = 8), electives for academic

credit (1.9%, n = 1), and as either required by the institution or embedded in courses not designated as IPE (5.7%, n = 3).

When asked about the academic home of IPE, respondents were given the opportunity to select all that apply. Respondents reported the presence of an interprofessional curriculum committee (51.9%, n = 27) and a university-based office or IPE center (28.8%, n = 17). The department (38.5%, n = 20), individual faculty (17.3%, n = 9), specific college (15.4%, n = 8), and a coalition (1.9%, n = 1) were also identified. Ultimate responsibility for coordinating IPE overwhelmingly fell on individual faculty (44%, n = 23) and a department committee (33%, n = 17). Program budgets do not specify funds for IPE learning (65.4%, n = 34), 8% (n = 4) of respondents identified sources outside of the department.

When rating potential barriers to development, implementation, or maintenance of IPE, respondents rated institutional support (88.9%, n = 48) as none at all to slight. The respondents also rated funding (66.7%, n = 36), lack of community partners (83.3%, n = 45), and appropriate mix of professions (63.6%, n = 35) as none at all to slight barriers. Responses were more distributed when rating classroom space, course schedules, participation from other professions, and presence of a medical health center as potential barriers.

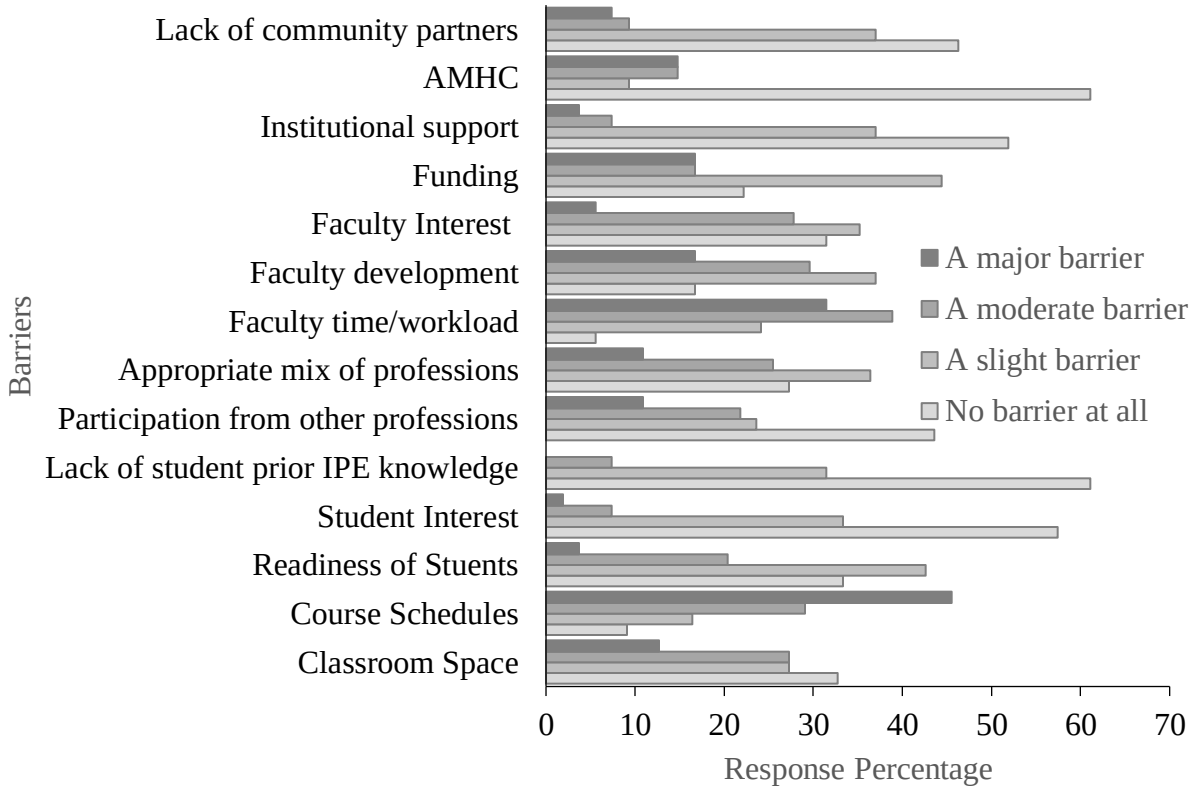
All 57 responding programs saw survey questions exploring their opinion on institutional effectiveness in supporting the development, implementation, and/or sustainability of their IPE plan. Response rates varied on the nine questions and are reported in Figure 3. Programs reported that their institutions are somewhat effective with supporting IPE plans in six of the nine areas explored. However, responding programs believed their institutions are not effective at all with developing finance plans to support IPE (49.1%, n = 26), facilitating joint IPE planning and

oversight for stakeholders (28.3%, n = 15), and only slightly effective with designating a dedicated leader with sufficient protected time (24.5%, n = 13).

Course schedules is the single context specific potential barrier identified as major (45.5%, n = 25) by the responding programs.

Figure 2

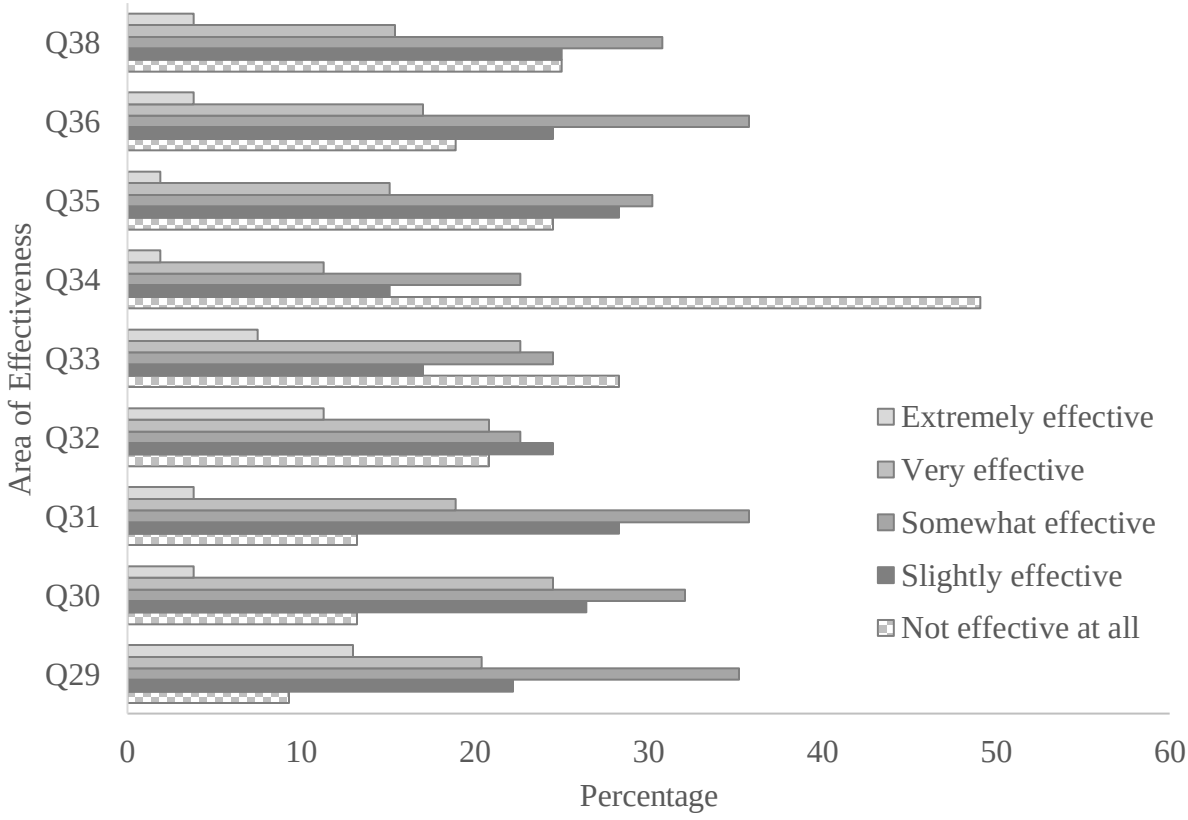
Barriers to the development, implementaiton and/or maintenance of IPE



Note: AMHC = No presence of an Academic Medical Health Center

Figure 3

Institutional Effectiveness with supporting the IPE plan



Note. This figure reports on the responses for the following nine survey questions about institution effectiveness. Q29. In your opinion, how effective is your institution with providing strategic direction and approach, through a compelling vision to "set the tone at the top" led by academic and institutional leaders (e.g., Presidents, Chancellors, Vice-Chancellors, Provosts, Councils of Deans)? Q30. In your opinion, how effective is your institution with allocating resources to develop, implement, evaluate, and sustain program IPE plans (e.g., dedicated faculty time to IPE, staff, space and finances) at the institutional and education and/or training program levels? Q31. In your opinion, how effective is your institution with providing logistical support

and management with the alignment of academic calendars, scheduling, classroom and facilities planning and design, common affiliation agreements with health systems? Q32. In your opinion, how effective is your institution with designating a dedicated leader and/or team of leaders given sufficient protected time, responsibility, and accountability for IPE at the institutional level? Q33. In your opinion, how effective is your institution with facilitating joint IPE curricular planning and oversight involving faculty and administrative leaders from participating education and/or training programs? Q34. In your opinion, how effective is your institution with developing financing models, including tuition-attribution for IPE in concert with individual program models? Q35. In your opinion, how effective is your institution with supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration? Q36. In your opinion, how effective is your institution with supporting efforts in providing faculty development related to the planning, implementation, and assessment/evaluation of IPE activities in classroom, simulation and clinical/experiential education settings? Q38. In your opinion, how effective is your institution with formally recognizing faculty effort toward successful implementation of IPE (e.g., job expectations, the promotion/tenure process)?

Process

IPE Experience. This information was provided by the 54 (94.7%) respondents who answered yes when asked if their students are currently offered IPE activities. Many of the questions allowed for multiple responses which is reflected in the response rates.

The IPE activities for PA students are primarily categorized as required (90.6%, n =48) by the responding programs and occur during both the didactic and clinical phases. The activities

are integrated in didactic (75.5%, n = 40) and clinical (41.5%, n = 22) coursework as part of the program of study (64.2%, n = 34), a one-time event (17%, n = 9), its own course (7.6%, n = 4), a sequenced series (39.6%, n = 21), and online-learning (15.1%, n = 8). Respondents reported 28 different professions as included in their students' learning activities. Nursing (83%, n = 44), Physical Therapy (66%, n = 35), Pharmacy (60.4%, n = 32), Occupational Therapy (56.6%, n = 31), and Medicine (56.6%, n = 30) were reported by more than 50% of the respondents.

The settings for IPE activities are classroom (88.7%, n = 47), lecture hall (62.3%, n = 33), simulation center (54.7%, n = 29), web-based (32.1%, n = 17), and clinic/hospital based (88.7%, n = 47).

In-person activities include small group exercises (92.5%, n = 49), case-based discussions (79.2%, n = 42), simulation/standardized patient exercise (71.7%, n = 38), lectures (66%, n = 34), shared clinical duties (49.1%, n = 26), and service (45.3%, n = 24). On-line activities are simulations (40%, n = 20), discussions (70%, n = 35), mock EMR (14%, n = 7), and IP gaming (8%, n = 4). Seventeen (34%) programs reported that their students do not participate in on-line IPE.

Roles and Responsibilities of other professions (100%, n = 53) was reported by all of the respondents as content focus for IPE learning activities. Other content includes team skills (88.7%, 47), patient care planning (73.6%, n = 39), patient evaluation (69.8%, n = 37), and patient safety/error reduction (66%, n = 35).

Debriefing is used by 96.2%(n = 51) of the respondents in their activities. Three programs reported the use of debriefing as in development, three responded they do not use debriefing, and one did not know.

Product

Learning outcomes. Fifty-one of the respondents replied to the question on learning outcomes for IPE. All 51 report outcomes related to roles/responsibilities (100%), other outcomes reported were team skills (94.1%, n = 48), communication (92.2%, n = 47), values/ethics (62.7%, n = 32), leadership (41.2%, n = 21), and one program added risk reduction.

Assessment of student outcomes. Pre/post surveys (82.7%, n = 43) were the most common reported assessment of students. Programs also use group participation (75%, n = 39), reflective writing (63.5%, n = 33), simulation/standardized patient exercise rubric (40.4%, n = 21), group project (34.6%, n = 18), peer assessment (15.4%, n = 8), and a written exam (9.6%, n = 5). Three programs (5.8%) use no assessment.

Evaluation

Program evaluation of the experience. Forty-five percent (n = 24) of the respondents' report having a mechanism in place or in development to track individual learners' mastery of program defined competencies and four respondents didn't know.

IPE plan evaluation is formative (66%, n = 35), summative (41.5%, n = 22), and can vary depending on the activity. Some programs report that it occurs at the institution level or by a committee. Other programs either do not formally evaluate their IPE plan (11.3%, n = 6) or don't know (5.7%, n = 3).

Evaluation tools. When asked if programs use an evaluation framework, most do not (57.7%, n = 30) or didn't know (23.1%, n = 12). Frameworks used include Bigg's 3P modified for IPE (3.9%, n = 2), Kirkpatrick's four-point typology of education outcomes (5.8%, n =3), or program developed rubrics/framework (9.6%, n = 5).

Discussion

The main purpose of this inquiry was to gather information to inform PA programs about the current IPE environment beyond that provided in the PAEA curriculum report. The PAEA report currently includes IPE data on the other health profession students who participate, classroom and laboratory settings where activities occur, and regular extracurricular activities.

All responding programs are either actively engaged in IPE with their students or in the planning and pre-implementation stages. This is not surprising given that IPE is an accreditation standard and a professional competency for physician assistants (ARC-PA.org, AAPA.org).

Levy and Mathieson (2017) included enablers and barriers when they surveyed PA educators on attitudes toward IPE. The educators in their survey reported accreditation standards as a top reason for implementing IPE in their programs. ARC-PA Accreditation standard B2.10a states that instruction of PA students must include content on the roles and responsibilities of various health care professionals which was reported by 100% of responding programs as content focus for IPE activities and student learning outcome assessment. Programs do go beyond the standards to include other IPEC competencies as learning outcomes which aligns with the HPAC consensus document guidelines for including outcome-based goals in quality IPE plans.

The top two barriers identified in Levy and Mathieson's study are still a problem. PA faculty continue to report issues with scheduling conflicts (our question on course schedules) and insufficient time (our question was faculty time/workload). The American Interprofessional Health Collaborative (2020) surveyed self-identified leaders of IPE who reported similar issues

with faculty time and burnout. PA faculty value IPE and want to participate but a change in advocacy on the areas of faculty effort needs to occur for sustainability of IPE initiatives.

Deliberate design of IPE experiences is another characteristic of quality IPE. Our data indicates an alignment with the HPAC guidelines for deliberate design. PA students are experiencing IPE integrated in their curriculum, during didactic and clinical phases, in a variety of settings, with multiple other professions, in combinations of differing modalities, reflecting future practice. PA programs have students engaged in group projects, community service activities, attending professional conferences with other health care profession students, and working on clinical skills in simulation labs.

Our data suggests that content focus during IPE activities is designed to reflect areas related to future practice including shared decision making, cultural considerations, quadruple aim, social determinants of health, in addition to clinical skills. Some programs are still reporting independent learning such as reading assignments and watching movies or shared courses. The HPAC document recognizes that these approaches have merit as one-time events but without knowledge of the learning outcomes and assessments used in these events it is difficult to ascertain if learning about, with, or from the other professional students occurred.

Learner assessment is not consistent across programs or across phases within programs. Respondents shared that didactic courses tend to have more formalized assessment and that not all students experience IPE in the clinical phase. Pre/post testing, reflections, feedback from faculty/students/SPs, and debriefing are common. Guidelines suggest that assessment should be longitudinal in nature, assess reactions, changes in attitudes, changes in skill, changes in attitude and understanding of other professions, and ultimately demonstration of collaborative behavior

(HPAC, 2019). There are validated tools available to programs and recently a guide was developed for assistance in the selection of an appropriate IPE assessment tool depending on the purpose and outcome being measured (Almoghirah, Nazar, & Illing, 2021). An area in need of development is tracking of individual student mastery of program defined interprofessional competencies over time.

It is our opinion that there was a disconnect with respondents and interpretation of questions regarding IPE plans. Responses to questions asked about IPE plan evaluation and evaluation frameworks referenced "skill assessment rubrics" and "evaluated by students after the event" and imply that the focus was on events not the curriculum. With an emphasis on rationale and developing IPE plans in the HPAC document, this is an area that requires further investigation.

Limitations

Limitations and areas of concern in this research include subject expertise, recruitment, response error, mode, and COVID-19. To increase the likelihood that the survey would be completed by the IPE expert in the PA program, a two-step recruitment process was employed. This could be a limitation, however this approach proved successful in similar research (Blue et al., 2010; Palatta et al., 2015).

This research used an internet self-administered questionnaire, which controlled for bias on the part of the administrator but removed the ability to clarify. Responders were asked how long they personally had been involved with IPE which may not represent the program's experience in implementing IPE. Future research should include responder and program length of time involved with IPE.

COVID-19 caused a lot of programs to move to remote delivery of content. While this mode of survey distribution may have allowed more people to receive the original email invitation, distribution during COVID-19 may have impacted response rate. Research conducted by de Koning et al. (2021) investigated research conducted pre-COVID and post-COVID (defined as after January 2020) identifying reduced response rates post-COVID. This phenomenon is called survey fatigue due to the significant increase in surveys and other on-line strategies to gather data during this time coupled with the move to on-line education.

Conclusion

Our data suggest that programs are implementing experiences in both didactic and clinical phases of education especially where they apply to the ARC-PA language in the accreditation standards. Until now PA programs relied on PAEA curriculum report to understand the IPE environment in PA education. With the advent of the HPAC document, our research has served to identify the presence of gaps in curricular plans for PA education. These gaps provide guidance for future research and areas of program improvement. This inquiry introduced a theoretical model and a tool for program use in the evaluation of their current environment for IPE, development of an IPE plan, and ongoing evaluation. PAs by definition are collaborators and PA educators must be supported and remain current in best practices for developing collaborative ready providers in the current environment.

Chapter 4

Current Environment of Interprofessional Education in CAPTE Physical Therapist Education: A National Survey

Abstract

Purpose: Interprofessional education (IPE) is in the forefront of pedagogy to prepare students as collaborative ready healthcare professionals. The current Standards and Required Elements for Accreditation of Physical Therapist Education Programs require all entry-level physical therapy education curriculum include both didactic and clinical experiences that foster interprofessional competencies in students. The Commission on Accreditation in Physical Therapy Education (CAPTE) is an endorsing member of the IPE consensus document, Guidance on Developing Quality Interprofessional Education for the Health Professions, released in 2019. Data has not been collected on IPE in physical therapist education programs since the 2015 publication by a task force assembled by the American Council on Academic Physical Therapy (ACAPT). Considering the new standards and endorsement of the consensus document, the purpose of this study is to provide a comprehensive, contemporary description of the IPE environment within all accredited entry-level Doctor of Physical Therapy (DPT) education programs in the United States (US). Methods: During early fall 2020, an online survey was sent to 244 CAPTE accredited entry-level DPT education programs in the US and asked program directors to have the person most knowledgeable of the program's IPE curricula to complete the survey. Results: Sixty-two programs submitted completed surveys (26% response rate). Sixty-one of the programs identified as actively participating in IPE where their students are learning with, from, and about at least one other profession. These programs answered questions about the

IPE experiences, learning outcomes, student assessment, and IPE plan assessment. One program identified as in the process of establishing their IPE curriculum, so they contributed to barriers and institutional support data only. PT students participate in IPE activities during both didactic and clinical experiences. This data did demonstrate a strong presence of IPE in the curriculum and helped to highlight areas for improvement. Faculty workload and course schedules continue to be a hinderance in the development and sustainability for IPE. Future research is needed in the areas of program IPE plan development and assessment, mapping of learning outcomes to a continuum of learning, and best practices in assessment of learner acquisition of competencies along a continuum.

Key Words. Interprofessional Education, IPE, physical therapist education, curriculum, environment, 3P model, HPAC consensus document

Current Environment of Interprofessional Education in Curricula: A Survey of CAPTE Entry-level Physical Therapist Education Programs

BACKGROUND AND PURPOSE

In 2009, the traditional 1:1 paradigm of the physical therapist and patient was transformed to one of the PT as an effective member of an interprofessional collaborative patient centered team (Kigin, Rodgers, & Wolf, 2010). Included in this call for transformation which occurred during the Physical Therapy and Society Summit (PASS) meeting was a need to rethink and evolve the professional education of physical therapists beyond self-contained silos.

The same year that the physical therapy profession was exploring education transformation at PASS, six national associations of schools of health professions (American Association of Colleges of Nursing, American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, American Dental Education Association, Association of American Medical Colleges, and Association of Schools of Public Health) united and formed the Interprofessional Education Collaborative (IPEC). After decades of reports on the need for change in the education of healthcare students (Commission & Regulation, 1995; Institute of Medicine (U.S.) & Committee on Quality of Health Care in America, 2001; IOM, 1972; Kohn et al., 2000) these professions sought to create a unified action plan for widespread implementation of interprofessional team-based opportunities (IPEC, 2011) grounded in competencies for interprofessional collaborative practice that could serve as a foundation for curriculum development in the preparation of collaborative team-based practitioners. Concurrently, interprofessional collaboration in both education and practice was identified by the

World Health Organization (WHO) and its partners as a necessary strategy for addressing and meeting the need for a collaborative ready workforce (WHO, 2010).

The Journal of Physical Therapy Education dedicated its winter 2010 issue to topics showcasing innovations in the development and delivery of interprofessional education (Solomon, 2010). Moving forward with a commitment to establish the physical therapy profession in the forefront of IPE, the Board of Directors of the American Council of Academic Physical Therapy (ACAPT) met in 2013 and appointed a four-member committee tasked with exploring interprofessional education (IPE) initiatives in PT education programs (ACAPT, 2013). Within a year of the formation of this committee, ACAPT and American Physical Therapy Association (APTA) formally endorsed the IPEC Core Competencies during their respective 2014 annual board meetings (ACAPT, 2014; APTA, 2014).

In 2016, the American Council of Academic Physical Therapy joined IPEC, along with eight other associations: American Occupational Therapy Association, American Association of Colleges of Podiatric Medicine, Physician Assistant Education Association, American Psychological Association, Association of American Veterinary Medical Colleges, Association of Schools and Colleges of Optometry, Association of Schools of Allied Health Professions, and the Council on Social Work Education. The purpose of the core competencies (Table 10) and sub-competencies is to "guide curriculum development" (IPEC, 2016, p. 8) in IPE within programs of study to prepare students for interprofessional collaborative practice (IPCP). IPEC defines IPE as "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (IPEC, 2016, p. 8).

Table 10

IPEC Four Core Competencies

Core Competency	Description
Competency 1	Work with individuals of other professions to maintain a climate of mutual respect and shared values. (Values/Ethics for Interprofessional Practice)
Competency 2	Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations. (Roles/Responsibilities)
Competency 3	Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease. (Interprofessional Communication)
Competency 4	Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population- centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable. (Teams and Teamwork)

The Commission on Accreditation of Physical Therapy Education (CAPTE) added language related to IPE and the IPEC Core Competencies to the Standards and Required Elements for Accreditation of Physical Therapist and Physical Therapist Assistant Education Programs (SRE) in 2016. These standards and required elements mandated that by January 1, 2018 all CAPTE programs for physical therapist (PT-SRE 6F, 7D7, and 7D39) education must have IPE curricula in both didactic and clinical learning experiences directed towards the IPEC Core Competencies (CAPTE PT Standards, 2017).

The ACAPT four-member committee survey of their membership on current and projected IPE initiatives yielded 106 (50.7%) responses (Wise et al., 2015). IPE was reported as

a focus in the curriculum (58.5%) occurring in the classroom phase (63.2%) and in clinical experiences (50%). Other areas investigated were outcomes, terminology, design, modalities, faculty support, implementation, challenges, and institution support. The investigation revealed a need for future research in areas of faculty support, partnerships, and assessment.

CAPTE is an endorsing member of the consensus document, *Guidance on Developing Quality Interprofessional Education for the Health Professions* (HPAC, 2019). This document guides members of The Health Professions Accreditors Collaborative (HPAC) in the development of highly effective IPE environments. The HPAC document recommends programs utilize consensus terminology, learning models, and inclusion of four characteristics: rationale, outcome-based goals, deliberate design, and assessment and evaluation. These recommendations address some of the needs identified in the ACAPT study and more recent publications citing the varied methods of IPE implementation which make it difficult to generalize findings (Arth et al., 2018).

The purpose of this inquiry was to provide a current and relevant description of the implementation of IPE in the curricular environments of accredited physical therapy education programs and provide follow-up to the IPE initiatives published by the ACAPT four-member committee (Wise et al., 2015a).

This inquiry was guided by the following research questions:

Q1: What is the perceived effectiveness of institutional support for interprofessional education (IPE) in professional (entry-level) physical therapist education programs?

Q2: What are the IPE experiences in professional (entry-level) physical therapist education programs?

Q3: What are the learning outcomes for student IPE experiences in professional (entry-level) physical therapist education programs?

Q4: What assessment methods/strategies are currently used for student IPE experiences in professional (entry-level) physical therapist education programs?

Q5: What evaluation methods/strategies are currently used for program review of IPE in professional (entry-level) physical therapist education programs?

Research question one is designed to explore the perceived effectiveness of institutional support in the development, implementation, evaluation, and/or sustainability of the Physical Therapist IPE curriculum. Questions two through five are designed to describe specific aspects of IPE as it currently exists in the curricular experiences of doctoral-degree-level programs of physical therapist education.

Study Design

This inquiry was a non-experimental design that used an online survey to collect program demographics and descriptive data on interprofessional education in CAPTE accredited entry-level physical therapist education programs. Areas of exploration in the survey include IPE student experiences, perceived barriers, administration, assessment, and curricular delivery. To obtain this information, this inquiry used the IPE Curricular Environment Survey (Appendix A) which was distributed via Qualtrics. IRB approval was obtained.

Participants

The study sample was a purposeful sample of all CAPTE accredited programs. CAPTE provides a list of all accredited programs on their web site. As of 4:00 p.m. on February 6, 2020 CAPTE reported 241 institutions supporting 255 accredited professional (entry-level) physical

therapist education programs in the United States. Inclusion criteria was current CAPTE accreditation in the United States of America and exclusion was PTA programs and programs located outside of the United States of America.

Recruitment and Study Procedures

The director of each program was identified through a link of accredited programs on the CAPTE website. This produced 244 unique contacts, and each was emailed a recruitment letter (Appendix B). The letter included a description of the study and asked that information along with the online link for the IPE Curricular Environment Survey was sent to the individual most intimately familiar with IPE within their physical therapist education curriculum. This step was intended to address the limitation intrinsic in self-administered questionnaires regarding the respondent not having the characteristics and other relevant information intimate with the subject (Isaac & Michael, 1995; Polit & Beck, 2012).

Respondents were given two weeks to submit their surveys. On Tuesday of week two a reminder email was automatically generated by Qualtrics and data collection ceased Friday of the same week.

Instrument

The instrument used for this study was developed as part of a larger study examining IPE in OT, PA, and PT professional academic environment. It, the IPE-Curricular Environment Survey (IPE-CES), was modified from several surveys used to explore IPE in colleges of medicine and dentistry, academic health centers in the US, and campuses with established IPE infrastructure (Blue et al., 2010; Clay et al., 2018; Congdon, 2016; Palatta et al., 2015). A committee consisting of educators representing occupational therapy, physician assistant,

physical therapy, and a research specialist critically reviewed and evaluated each question from these surveys for inclusion prior to use in the development of the IPE-CES. Eighteen questions were used directly from the original surveys, modifying only for language pertinent to PT education. Thirteen questions were added to investigate faculty training, faculty benefits, assessment, evaluation, IPE in program mission, IPE use in admissions, and tracking student IPE experiences. These questions were either modified from another survey (Appendix Table A1) or developed using language aligning with the HPAC consensus document. A question on debriefing was specifically added to capture its current use in contemporary IPE environments (LeFlore & Anderson, 2009; Meny et al., 2019). Nine questions were included exploring respondent opinion on institutional effectiveness in supporting the development, implementation, evaluation, and/or sustainability of the IPE curriculum. These questions were developed using the examples of institutional commitment and leadership provided in the HPAC consensus document (HPAC, 2019). Guidance for content modification of the instrument came from CAPTE and the ACAPT publication (CAPTE_PTStandardsEvidence.pdf, n.d.; Wise et al., 2015) and the HPAC consensus document (HPAC, 2019).

In addition to questions exploring the IPE environment, demographic information about the respondent, the program, and the school was also collected. The operational definition of IPE published in the HPAC consensus document was included in the emails and added to the top of the IPE Curricular Environment Survey for easy reference. The survey questions were field tested with a convenience sample of three PT education specialists resulting in a few minor adjustments to wording and to the format of questions in Qualtrics.

Analysis

Surveys are intended to gather information about a phenomena, in this instance IPE, within a population (Polit & Beck, 2012); data were analyzed with descriptive statistics using IBM SPSS Statistics (Version 27) predictive analytics software.

Categorical variables were created and summarized as number and percentage of respondents. For questions allowing "select all that apply", multiple response variables were created in SPSS and reported as number and percentage of cases. Respondents' role/position with the program were recoded and reported as Chair/Program Director, faculty, AFWC, or IPE. IPE designation was used if the respondent specifically identified as this role. Length of time in IPE was redefined as "< 5 years", "5-10 years", and ">10 years". Program location was collected as State and redefined to the regions published by U.S. Census Bureau (n.d.). All text fields were reviewed and recoded into existing options or reported as other.

Results

Respondent and Program Demographics

In total, 244 emails were sent, 1 bounced, 68 were started, and 65 submitted. Three of the 65 submitted were incomplete and removed from analysis leaving 62 surveys representing a response rate of 25.5%. Thirty-four of the respondents (54.8%) identified as faculty and 16 (25.8%) reported less than 5 years of experience in IPE. Most respondents identify their institutions as public (55%; n = 34), located in the south (46%; n = 28), and not in an academic health center (63%; n = 39). Most programs are delivered in a traditional face-to-face format (77%; n = 48) (note: this question asked to select delivery prior to COVID-19). Programs also reported delivery as hybrid (53%; n = 33), web based (5%; n = 3) and 23% (n = 14) specifically

mentioned moving to remote learning due to COVID. All but one program currently offers their students IPE activities that include learning with, from, and/or about students from at least one other profession (98%; n = 61). Fifty-two percent (n = 32) are university-led IPE activities and 47% (n = 29) are department/program led. One program is currently in the planning/development stage for adding an IPE program/experience.

The IPE Environment

Planning

The academic home for IPE learning activities exists within the PT department (51%; n = 25) and with individual faculty (45%; n = 22). Ultimate responsibility for coordinating IPE for the programs falls to individual faculty (89%; n= 39) with no funds (60%; n = 37) in the program budget for the activities. Individual programs reported that PT faculty are active in committees that plan, coordinate, and promote IPE on their campuses. The following are a few comments that were shared:

> "We do have an IPE committee but this does not drive the activities. It drives collaboration. Committee is building base of resources."
>
> "Committee made up of faculty and staff at the school level, rather than department"
>
> "PT member of the IPE University Committee"

Faculty

Participation in IPE supports faculty annual evaluation (61%; n = 37), recognition (51%; n = 31), and tenure and promotion (48%; n = 29). Other benefits reported were payment for performing additional activity, release time, and personal reward. Three programs specifically noted that IPE was part of the expected workload for faculty. Nine (15%) programs reported no

benefits for faculty participation in IPE and one program stated that there was only verbal recognition for participation in IPE.

Support for faculty development is provided by the university (28%; n = 17) and the IPE center (23%; n = 14). Other forms of support mentioned for faculty development were an IPE committee, through membership in a consortium, but twenty-eight percent (n = 17) of programs report that there is no support for faculty development. Sixty-two percent (n = 38) of programs report no support for clinical/field preceptors' development in IPE.

Institutional Support

Nine questions investigated respondents' opinion on institutional efficacy in supporting their IPE curriculum. Responses for these questions are in Table 11. Program respondents are of the opinion that their institutions are slightly to somewhat effective in supporting the development, implementation, evaluation, and/or sustainability of their IPE programs. They report that their institutions are not effective or only slightly effective in identification and development of solutions for institutional policies that may hinder interprofessional collaboration (62%; n = 37); and not effective at all (75%; n = 42) with developing financing models for IPE in concert with individual program models. Strategic direction (26%; n = 16) was the only form of institutional support to show promise; this may be a reflection of the comments made by programs regarding planned development of IPE centers at their institutions.

Table 11

Institutional Support

	Not effective		Slightly effective		Somewhat effective		Very effective		Extremely effective	
Area of support	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%

Strategic direction	6	9.84	16	26.23	18	29.51	16	26.23	5	8.20
Allocating resources for IPE plans	11	17.74	17	27.42	26	41.94	5	8.06	3	4.84
Logistical support	12	19.67	17	27.87	17	27.87	11	18.03	4	6.56
Designating dedicated leadership	7	11.48	19	31.15	23	37.70	8	13.11	4	6.56
Joint oversite and planning	10	16.67	19	31.67	16	26.67	11	18.33	4	6.67
Developing finance models	29	51.79	13	23.21	9	16.07	3	5.36	2	3.57
Supporting policies for IPE	15	25.00	22	36.67	18	30.00	3	5.0	2	3.33
Faculty development	7	11.67	20	33.33	22	36.67	7	11.67	4	6.67
Faculty recognition	9	15.00	21	35.00	21	35.00	6	10.00	3	5.00

Barriers

Course schedules 55% (n = 34) and faculty time/workload (40%; n = 25) were reported as major barriers to IPE. Faculty development (77%; n = 48) and faculty interest (66%; n = 41) were reported as slight to moderate barriers, with lack of student prior IPE experience (66%; n = 41) and not being affiliated with an academic health center (56%; n = 34) most reported as no barrier at all. See results in Table 12. Eight (12.89%) respondents chose other as a barrier. Some of their comments included options already provided but they took time to specifically include statements such as:

"Faculty who are against IPE activities (see them as extra) negatively influencing students."

"Multiple institutional barriers, it is my nights and weekends or it doesn't happen."

"We have so many different programs on state/ university/ inter-collegiate; college; department levels it is different for each program/activity - but funding/schedule/workload are always the biggest barriers."

"COVID-19 Changes Everything."

Table 12

Level of Potential Barrier Impact on IPE

	No barrier		Slight barrier		Moderate barrier		Major barrier	
Potential Barrier	*n*	%	*n*	%	*n*	%	*n*	%
Classroom Space	14	22.58	28	45.16	12	19.35	8	12.90
Course Schedules	0	0.00	12	19.35	16	25.81	34	54.84
Readiness of Students	22	35.48	23	37.10	17	27.42	0	0.00
Student Interest	30	48.39	24	38.71	8	12.90	0	0.00
Lack of student prior IPE knowledge	41	66.13	18	29.03	3	4.84	0	0.00
Participation from other professions	21	33.87	22	35.48	16	25.81	3	4.84
Appropriate mix of professions	26	41.94	16	25.81	17	27.42	3	4.84
Faculty time/workload	3	4.84	12	19.35	22	35.48	25	40.32
Faculty development	9	14.52	24	38.71	24	38.71	5	8.06

Faculty Interest	14	22.58	20	32.26	21	33.87	7	11.29
Funding	19	30.65	18	29.03	9	14.52	16	25.81
Institutional support	29	46.77	18	29.03	12	19.35	3	4.84
No AMHC	34	55.74	11	18.03	10	16.39	6	9.84
Lack of community partners	31	50.82	21	34.43	9	14.75	0	0.00
Other	3	37.50	0	0.00	1	12.50	4	50.00

IPE Experiences

IPE experience information was collected from the 61 programs who reported that IPE is included in their curriculum. Programs were asked to select all that apply to many of these questions which is reflected in the data. These 61 programs report that they categorize IPE activities as a required part of the curriculum (95%; n = 58), as elective for credit (15%; n = 9) or as extracurricular activities for no academic credit (25%; n = 15). Seven (12%) of the programs selected that they categorize IPE as "required other" and described activities as required and embedded in courses or as requirements but "not always specifically identified as IPE." IPE is identified as integrated into the curriculum as a required part of the academic program of study. It is primarily integrated into didactic course work (79%; n = 48), clinical/field work (54%; n = 33), one-time events (38%; n = 23), and online learning (34%; n = 21). IPE also occurs as a sequenced series (25%; n = 15) and its own course (23%; n = 14). The most cited professions that PT students interact with during IPE experiences are nursing (90%; n = 55), pharmacy (64%; n = 39), occupational therapy (61%; n = 37), physician assistant (59%; n = 36), and medicine (56%; n = 34). Other was selected by 52% (n = 32) of the respondents however the write-ins

were varied with counseling (n = 9) representing the most mentioned. The settings for IPE are small group classroom (85%; n = 52), large group such as a lecture hall (70%; n = 43), simulation center (62%; n = 38), and web-based (36%; n = 22). A few write-ins included a variety of community settings and simulation without a simulation center. In-person modes of delivery include case-based discussions (87%; n = 53), small group exercises (85%; n = 52), simulation/standardized patients (74%; n = 45), community/service-learning experiences (59%; n = 36) shared clinical duties in a patient care setting (48%; n = 29), and lectures (44%; n = 27). PT students also participate in on-line IPE activities including video conference discussions (46%; n = 27), simulations (34%; n = 20), chat room discussions (32%; n = 19), and a variety of planned interactions (44%; n = 26). Twenty-one (36%) programs report that their students do not participate in on-line IPE. Most programs reported content focus for their IPE activities as roles/responsibilities of other professions (98%; n = 60). Team skills (92%; n = 56), patient care planning (79%; n = 48), patient safety/error reduction (62%; n = 38), ethics (57%; n = 35), patient evaluation (54%; n = 33), patient discharge planning (51%; n = 31), and the consulting process (31%; n = 19) are also content focus for IPE activities. Programs included bias, patient/family education and the social determinants of health as write-ins. PT programs used debriefing for IPE activities with all disciplines involved (80%; n = 49) and with just PT students (23%; n = 14) depending on the activity.

Learning Outcomes

The learning outcomes reported by responding programs as identified for their students IPE activities are roles/responsibilities of other professions (98%; n = 60), communication (95%; n = 58), team skills (92%; n = 56), values/ethics (72%; n = 44), and leadership (44%; n = 27).

Student Assessment

The most reported form of assessment was pre/post surveys (72%; n = 44) for IPE activities. Group participation (69%; n = 42), reflective writing (64%; n = 39), group project (44%; n = 27), simulation/standardized patient exercise rubric (39%; n = 24), and peer assessment (18%; n = 11) were also identified. Two programs reported using no assessment and other forms included preceptor, faculty, and self-assessment surveys.

Tracking students for mastery of program defined IPE competencies was reported as present by 25% (n = 15) of the responding programs, not currently in place by 50% (n = 30), 13% (n = 7) of respondents don't know, and one program did not respond. Other programs reported with open text responses they are in the process of developing plans for tracking student participation either with or without assessment and that "the process is in place but not as strong as they would like".

Program Evaluation of IPE

Programs reported they evaluate their plans in a formative manner for each IPE experience (64%; n = 39), annually as a whole (52%; n = 32), and sixteen percent report they do not formally evaluate their IPE plan (n = 6) or that they don't know (n = 4). Other programs indicated that program evaluation varies (10%; n = 6) and provided other sources of evaluation such as University IPE center or community partners.

Most programs report not using an evaluation framework (56%; n = 34). Kirkpatrick's four-point typology of education outcomes is used by 7% (n = 4) of the responding programs, 3% (n = 2) use Bigg's 3P model modified for IPE, 21% (n = 13) report not knowing, and 13% (n = 8) vary their evaluation or are in development.

Discussion

As of January 1, 2018 all CAPTE programs for physical therapist (PT-SRE 6F, 7D7, and 7D39) education must have IPE curricula in both didactic and clinical learning experiences directed towards the IPEC Core Competencies (CAPTE PT Standards, 2017). CAPTE is an endorsing member of the consensus document, *Guidance on Developing Quality Interprofessional Education for the Health Professions* (HPAC, 2019). The HPAC document provides recommendations to its member programs that outlines guidance on developing quality IPE including institutional support, deliberate design, outcome-based goals, and assessment and evaluation.

The purpose of this inquiry was to provide a current and relevant description of the implementation of IPE in the curricular environments of accredited physical therapist education programs. The response rate of this survey was lower than hoped but the data provide a foundation for examination of current IPE environments for physical therapist education considering the HPAC recommendations and for future research.

Program respondents were of the opinion that their institutions are slightly to somewhat effective in supporting the development, implementation, evaluation, and/or sustainability of their IPE programs. While respondents were not of the opinion that their institutions are highly effective, they do not consider this a barrier to their efforts. Institutional support was identified as a non-barrier (n = 29) or slight barrier (n = 18) by 76% of the responding programs. This sentiment is similar to the responses reported by Wise et al. Institutional support was cited as a reason for IPE initiative success and the leading factor contributing to or needed for sustainability (Wise et al, 2015). Other factors contributing to or needed for sustainability

identified in the Wise article such as student buy-in and community partners were rated as slight to no barrier at all by responding programs for their IPE efforts. Faculty buy-in and schedules are still considered by programs as challenges.

The IPE experiences in professional physical therapist education programs consist of many of the recommendations in the HPAC document. Although 100% of responding programs do not align with CAPTE accreditation standard element 6F, the majority report that their IPE is integrated and occurs throughout the program of study in both didactic (79%) and clinical experiences (54%). The activities are required, electives, and extracurricular in nature. They occur in multiple settings with other professions that reflect physical therapists' future practice. For example, the top three content focus responses for IPE activities in our data include team skills, patient care planning, and patient safety. These activities are experienced with nursing, OT, and pharmacy students all of whom physical therapists collaborate with in clinical practice.

The learning outcomes identified by responding PT programs identified for IPE activities closely align with HPAC consensus document recommendation for achievement of the four IPEC competencies, see Table 13. This is not surprising as CAPTE is an endorsing member of the HPAC document and PT faculty support endorsement of the competencies (Wise, et al, 2015). The competencies are outlined within the quality IPE characteristic of outcome-based goals. This characteristic also includes charting expectations for individual students along a continuum for achievement of the competencies. Our data indicate that few programs track individual learners' mastery of program defined interprofessional competencies. Some are in the progress of developing a mechanism, others track participation, or imbed the competencies in a course where they are evaluated but not tracked.

Table 13

Program Identified IPE Student Learning Outcomes

Learning outcome	n	Percent	Percent of cases
Communication (IPEC competency 3)	58	23.58	95.08
Values/Ethics (IPEC competency 1)	44	17.89	72.13
Leadership	27	10.98	44.26
Roles/Responsibilities (IPEC competency 2)	60	24.39	98.36
Team skills (IPEC competency 4)	56	22.76	91.80
Other	1	0.41	1.64

Note: This survey question permitted respondents to select all that apply. Percent column represents the proportion of selections for each outcome. Percent of cases column represents the proportion of the cases accounted for by each outcome.

Our data suggests that most programs assess student outcomes for IPE activities with pre/post-tests, for participation, and through reflective writing. The HPAC document suggest the use of self-reported, instructor-observed, and objective measures for a robust learner assessment strategy. The suggested scope aligns with the IPEC competencies to assess reactions to IPE as a practice, changes in attitudes and perceptions of other professions, acquisition of knowledge and skill, and demonstration of collaborative behaviors in both training and practice. Programs who chose to comment on student assessment reported use of surveys for clinical experiences, instructor observation and feedback, peer assessment, and some used standardized tools. Our data suggests that assessment of student learning is present in physical therapy programs but limited in practice and scope for achieving quality IPE.

We asked programs how their IPE plans are evaluated. The written responses cause concern about understanding of the question. Respondents were directed to select all that apply and more than half reported that they evaluate their plan formatively for each IPE experience and/or summative as a whole annually. Respondents were also invited to write comments on how they evaluate their IPE plans to which many explained evaluating courses or activities, but few discussed overall evaluation that would imply presence of a plan as described in the HPAC document.

"Certain events are assessed more summative although the whole program is not formally assessed"

"Each faculty will evaluate for their course"

"Some items are formally assessed. Most are not."

"The University IPE office manages this for their events. At the program level we do not have a set plan other than students must meet university requirements."

The IPE plan is an area where a deeper investigation is warranted to explore if a rationale exists for IPE within programs and what that looks like.

Limitations

Several issues are of concern when conducting internet surveys, such as sampling (representation), recruitment, response error, and mode of employment. For the purposes of this research, the primary areas of limitation were subject expertise (IPE knowledge), recruitment, response error, and the mode. To increase the likelihood that the survey was completed by the expert on IPE within the curriculum of the physical therapy education program, a two-step recruitment process was employed. While this could be considered a limitation, this additional

step was selected based on literature which conducted similar research (Blue et al., 2010; Palatta et al., 2015).

Internet self-administered questionnaires create both advantages and disadvantages due to the removal of the survey administrator. Bias on the part of the administrator is controlled for but also gone is the ability to clarify. To address the concern for interpretive limitations, the survey used language present in current physical therapy literature, specifically the Journal of Physical Therapy Education and ACAPT publications on curriculum and accreditation (CAPTE PTA Standards, 2017; CAPTE PT Standards, 2017; Wise, et al., 2015) and. All IPE language was standardized to the HPAC (HPAC, 2019) consensus document. Responders were asked how long they personally had been involved with IPE which may not represent the program's experience in implementing IPE. Future research should include responder and program length of time involved with IPE.

COVID-19 was a limitation in the collection of this data. This research used an internet self-administered questionnaire, while this mode of survey distribution may have allowed more people to receive the original email invitation, distribution during COVID-19 may have impacted response rate. Research conducted by de Koning et al. (2021) investigated research conducted pre-COVID and post-COVID (defined as after January 2020) identifying reduced response rates post-COVID. This phenomenon is called survey fatigue due to the significant increase in surveys and other on-line strategies to gather data during this time coupled with the move to on-line education. Furthermore, this inquiry requested information about IPE in 2019 but COVID and related adjustments to academic practices were mentioned by respondents and may have affected multiple choice selections.

The response rate of 25.5% was low and did not reflect the average physical therapist program as reported by CAPTE (2020) for the 2019-2020 academic year. The CAPTE report described the average PT program by type of institution (private, 54%), geographic location (South Atlantic, 20.4%), and top 3 states (NY, CA-TX with the same total, and PA). Most respondents for this inquiry identified their institutions as public (55%; n = 34), located in the south (46%; n = 28), and the top responding states were TX, PA, OH, and FL (n = 5).

Conclusion

The results of this survey offer a starting point for understanding the IPE environment in professional (entry-level) physical therapist education programs. The limitations and low response rate make it difficult to generalize the results to all professional (entry-level) physical therapist education programs. This data did demonstrate a strong presence of IPE in the curriculum and helped to highlight areas for improvement. Programs need to develop methods for tracking student acquisition of interprofessional competencies along a continuum. Faculty workload and course schedules continue to be a hinderance in the development and sustainability for IPE. Future research is needed in the areas of program IPE plan development and assessment, mapping of learning outcomes to a continuum of learning, and best practices in assessment of learner acquisition of competencies along a continuum.

Chapter 5

Conclusion: Current Environment of Interprofessional Education in Graduate Programs of Occupational Therapy, Physician Assistant, and Physical Therapist: Similarities and Differences

Interprofessional Education (IPE) is "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (WHO, 2010).

The accrediting bodies of many graduate programs that prepare healthcare professionals, including the Accreditation Council for Occupational Therapy Education (ACOTE), the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA), and the Commission on the Accreditation of Physical Therapy Education (CAPTE), acknowledge the importance of IPE by including it as an accreditation standard (Zorek & Raehl, 2013a) and use the WHO definition of IPE. The preamble of the 2018 ACOTE adopted accreditation standards states that the graduate of an OT program must "be prepared to effectively communicate and work interprofessionally with all who provide services and programs for persons, groups, and populations" (ACOTE, 2018, p.2). Several B4 standards for both the entry-level doctoral and master's-degree programs contain the term interprofessional when describing outcomes for students as clinicians who are able to effectively consult, communicate, and develop discharge plans. These students must demonstrate knowledge of the principles of interprofessional team dynamics.

Accreditation standards for programs of study leading to a graduate degree in PA studies state that the curriculum must include instruction that prepares students to work collaboratively

in patient centered teams that extend beyond the traditional physician-PA partnership (ARC-PA, 2010). Standard B1.08 explicitly states that opportunities for students to apply the principles of interprofessional practice in interprofessional teams within the curriculum must be provided (ARC-PA, 2010) and that there be documentation that assessment occurred.

The 2020 Standards and Required Elements for Accreditation of Physical Therapist Education Programs includes language incorporating both IPE and the interprofessional collaborative competencies. Education programs leading to a professional degree in PT require that both didactic and clinical curriculum include IPE that leads to development of interprofessional competencies. Programs are required to provide a narrative about the activities and the assessments describing the effectiveness in the preparation of graduates ready for team-based collaboration (CAPTE, 2020).

Accreditors evaluate their programs on IPE independent of partnering programs and of other programs in the same profession. The health professions accreditors collaborative (HPAC) was established in 2014 to provide a framework for addressing individual profession's needs while incorporating the IPEC competencies. ACOTE, ARC-PA, and CAPTE are all endorsing members of the HPAC consensus document on quality IPE.

The purpose of this study was to describe the current environment of interprofessional education in the curricula of entry level graduate OT, PA, and PT accredited professional programs. The accrediting bodies of these three disciplines are endorsing members of the HPAC consensus document on quality IPE. Chapters 2, 3, and 4 provide a contemporary snapshot of the existing IPE environments across these accredited programs. This final chapter combines the

three data sets and allows us to examine them collectively to answer the overarching dissertation research questions:

DRQ1: What is the current environment of interprofessional education in the curricula of entry level graduate OT, PA, and PT accredited professional programs?

DRQ2: What are the similarities and differences between the three programs?

Analysis

The data gathered in the three surveys were combined to form one database. This data set was analyzed with descriptive statistics on all discrete survey questions to answer dissertation research questions one and two. Additionally, for research question two, non-parametric statistics were used. All analysis was conducted using IBM SPSS Statistics (Version 27) predictive analytics software.

Categorical variables were created and summarized as number and percentage of respondents. For role/position with the program the categories of Chair/Program Director, faculty, IPE, and other was used. IPE designation was used if the respondent specifically identified as this role. Length of time in IPE was redefined as “less than 1 year”, “1-2 years”, “3-4 years”, “5 or more years” (Levy, Mathieson, 2017). Program location was redefined to the regions. All text fields were reviewed and recoded into existing options or reported as other. Multiple response variables were created for questions asking respondents to select all that apply.

Bigg’s (Biggs, 1993) 3P model of learning and teaching has been used in the evaluation (Anderson, Smith, & Hammick, 2016; Freeth & Reeves, 2004) and program development (Pardue, 2015) of IPE curriculum. In their 3P model of learning to collaborate, Freeth and Reeves (2004) include elements identified as central to generating IPE experiences. The three

phases of presage, process, and product consider all factors contributing to the development, delivery, and sustainment of an IPE curriculum. This model guided analysis of survey data. However, one element missing in the model is evaluation, an important characteristic of quality IPE identified in the HPAC consensus document. Evaluation was added as a fourth phase.

All survey questions were mapped to the framework and phases for which they provided data (Table 14).

Table 14

IPE Environmental Framework Mapping of the Survey Instrument

Phase	Factor	Instrument Question
Presage: Factors present prior to the IPE experience	Learner Characteristics	Q9, Q28, Q39
	Teacher/Program Developer Characteristics	Q1, Q2, Q25, Q26, Q27, Q28
	Context Characteristics	Q3, Q4, Q5, Q6, Q7, Q8, Q22, Q23, Q24, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38
Process: Factors present during the IPE experience	IPE Experience	Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15
	Assessment of Student Outcomes	Q17, Q18
Product: Factors describing the outcomes of learning and measurement of those outcomes	Learning Outcomes	Q16
Evaluation: Factors that describe program QA/QI of IPE	Evaluation Process	Q19, Q20
	Evaluation Tools	Q21

Note: This table maps each survey question to the factor and phase for which it provided data.

Results

Respondent and Program Demographics

Surveys were sent to 694 programs; 161 surveys were submitted complete (23.20% response rate) and included in analysis. Majority of respondents identified as program directors (52%; n = 83) with 40% (n = 65) reporting less than 6 years' experience in IPE. Respondents' institutions were almost equally divided between public (50.31%; n = 81) and private (49.69%; n = 80), most representation was from the South region (40%; n = 64) and located in an academic non-health center (58%; n = 93). Prior to COVID-19 the programs were primarily delivered as traditional face to face interactions (79%; n = 127). This question allowed for selection of all that apply and at the time of data collection, the responding programs reported hybrid (40%; n = 65), web based (6%; n = 10), and a movement to various combinations of content delivery with plan for returning to traditional when permitted. Four (3%) programs reported being in the planning/development stages of IPE and were routed by the survey to bypass questions about IPE activities.

IPE Environment

Presage

Learner Characteristics. Responding programs were asked when their students participated in IPE during the curriculum. The three professional education programs report that students engage in IPE throughout their tenure in both didactic and clinical experiences. Comments included that programs are structured to allow students to have IPE throughout their education. Learner readiness (71%; *n* = 111), student interest (88%; *n*= 138), and lack of prior

knowledge of IPE (94%; n=148) were not identified as barriers by all three professions. OT was the only one that identified lack of prior knowledge as a major barrier (Table 15).

Program identified characteristics related to IPE were reported as considerations in the admissions process by 57% of the respondents. These programs reported a focus on the themes of team skills and communication along with knowledge and experience in IPE when evaluating applicants. The process of gathering information about applicants varied including use of a rubric, interview questions, group activities, supplemental application questions, and part of the holistic interview process.

Teacher/Program Developer Characteristics. The most common benefits identified for faculty who participate in IPE was support of annual evaluation (58%; n = 90), tenure and promotion (51%; n = 79) and recognition (46%; n = 71). No benefits for faculty was reported by 16% (n = 25) and only 10% (n = 16) report receiving release time for IPE participation.

When asked about the presence of a program to support faculty development in IPE, 33% (n = 50) said they had none and 10% (n = 15) didn't know. Programs reported faculty development in IPE as provided by the university (26%; n = 39), the program (12%; n = 19) or an IPE center (21%; n = 32). Clinical faculty development in IPE is lacking; 63% (n = 97) report no presence of it and when provided it is primarily done by the program (11%; n = 17)).

Barriers identified for faculty included time/workload with 72% (n = 113) ranking this as moderate to major barrier. Faculty development (71%; n = 111) was ranked as slight to moderate in regard to barriers for IPE. Faculty interest was ranked as slight to moderate barrier by 64% (n = 111) of the programs and as a non-barrier by 29% (n = 46). Faculty interest was a theme in open text comments from respondents. Comments included statements such as anti-IPE faculty

influencing student attitudes and lack of participation requiring more work from fewer faculty without release time.

Context Characteristics. IPE activities that include learning with, from, and/or about students from at least one other profession were reported by 98% (n = 157) of the respondents and 2% (n = 4) identified as in the planning/development stage. Interprofessional learning activities are primarily categorized as required (99%; n = 155). Some programs reported inclusion of extracurricular activities with no academic credit (23%; n = 36), electives for academic credit (1.9%), and as either required by the institution or embedded in courses not designated as IPE (5.7%).

The academic home for IPE learning activities identified by respondents is an interprofessional curriculum committee (53%; n = 82), their program department (37%; n = 58), individual faculty (29%; n = 45) and a university-based office or IPE center (28%; n = 43). Regardless of the academic home for IPE, programs reported that ultimate responsibility for coordinating IPE overwhelmingly fell on individual faculty (54%; n = 83) and a department committee (25%; n = 38). Program budgets do not specify funds for IPE learning (61%; n = 94), however 11% (n = 18) of respondents identified sources outside of the department for funding. The sources mentioned included the College, an IPE center, their dean, other budgets on campus, and a few respondents commented that some available funding was not identified as IPE specific.

When rating potential barriers to development, implementation, or maintenance of IPE, institutional support (79%; n = 125), lack of community partners (84%; n = 130) and appropriate mix of professions (68%; n = 108) were not seen as barriers. Responses were more evenly

distributed when rating classroom space, course schedules, participation from other professions, and presence of a medical health center as potential barriers. Course schedules is the single context specific potential barrier identified as major (56%; n = 89) by the responding programs collectively as well as individually.

Kruskal -Wallis Test was utilized to test for differences between groups. There was not a statistically significant difference in the distribution of the combined barriers across the three professions, $H(2)=0.761$, $P=0.684$.

Table 15

Level of Potential Barrier Impact on IPE

	OT		PA		PT		Combined	
Potential Barrier	*n*	%	*n*	%	*n*	%	*n*	%
Classroom Space								
No barrier at all	14	34.15	18	32.73	14	22.58	46	29.11
A slight barrier	13	31.71	15	27.27	28	45.16	56	35.44
A moderate barrier	9	21.95	15	27.27	12	19.35	36	22.78
A major barrier	5	12.20	7	12.73	8	12.90	20	12.66
Course Schedules								
No barrier at all	0	0.00	5	9.09	0	0.00	5	3.16
A slight barrier	6	14.63	9	16.36	12	19.35	27	17.09
A moderate barrier	5	12.20	16	29.09	16	25.81	37	23.42
A major barrier	30	73.17	25	45.45	34	54.84	89	56.33
Comparable readiness of students								
No barrier at all	5	12.20	18	33.33	22	35.48	45	28.66
A slight barrier	20	48.78	23	42.59	23	37.10	66	42.04
A moderate barrier	15	36.59	11	20.37	17	27.42	43	27.39
A major barrier	1	2.44	2	3.70	0	0.00	3	1.91
Faculty time/Workload								
No barrier at all	3	7.14	3	5.56	3	4.84	9	5.70

A slight barrier	11	26.19	13	24.07	12	19.35	36	22.78
A moderate barrier	15	35.71	21	38.89	22	35.48	58	36.71
A major barrier	13	30.95	17	31.48	25	40.32	55	34.81
Faculty development								
No barrier at all	9	21.95	9	16.67	9	14.52	27	17.20
A slight barrier	13	31.71	20	37.04	24	38.71	57	36.31
A moderate barrier	14	34.15	16	29.63	24	38.71	54	34.39
A major barrier	3	7.32	9	16.67	5	8.06	17	10.83
Faculty interest								
No barrier at all	15	36.59	17	31.48	14	22.58	46	29.30
A slight barrier	14	34.15	19	35.19	20	32.26	53	33.76
A moderate barrier	12	29.27	15	27.78	21	33.87	48	30.57
A major barrier	0	0.00	3	5.56	7	11.29	10	6.37
Funding								
No barrier at all	8	19.51	12	22.22	19	30.65	39	24.84
A slight barrier	4	9.76	24	44.42	18	29.03	46	29.30
A moderate barrier	16	39.02	9	16.67	9	14.52	34	21.66
A major barrier	10	24.39	9	16.67	16	25.81	35	22.29
Institutional support								
No barrier at all	16	38.1	28	51.9	29	46.77	73	46.20
A slight barrier	14	33.3	20	37.0	18	29.03	52	32.91
A moderate barrier	7	16.7	4	7.4	12	19.35	23	14.56
A major barrier	5	11.9	2	3.7	3	4.84	10	6.33
Participation from other professions								
No barrier at all	14	34.15	24	43.64	21	33.87	59	37.34
A slight barrier	17	41.46	13	23.64	22	35.48	52	32.91
A moderate barrier	9	21.95	12	21.82	16	25.81	37	23.42
A major barrier	1	2.44	6	10.91	3	4.84	10	6.33
Appropriate mix of professions								
No barrier at all	14	34.15	15	27.27	26	41.94	55	34.81
A slight barrier	17	41.46	20	36.36	16	25.81	53	33.54
A moderate barrier	8	19.51	14	25.45	17	27.42	39	24.68
A major barrier	1	2.44	6	10.91	3	4.84	10	6.33

No academic medical center								
No barrier at all	16	39.02	33	61.11	34	55.74	83	53.21
A slight barrier	8	19.51	5	9.26	11	18.03	24	15.38
A moderate barrier	7	17.07	8	14.81	10	16.39	25	16.03
A major barrier	6	14.63	8	14.81	6	9.84	20	12.82
Lack of student prior knowledge of IPE								
No barrier at all	24	58.54	33	61.11	41	66.13	98	62.42
A slight barrier	15	36.59	17	31.48	18	29.03	50	31.85
A moderate barrier	1	2.44	4	7.41	3	4.84	8	5.10
A major barrier	1	2.44	0	0.00	0	0.00	1	.64
Lack of community partners								
No barrier at all	20	50.00	25	46.30	31	50.82	76	49.03
A slight barrier	13	32.50	20	37.04	21	34.43	54	34.84
A moderate barrier	4	10.00	5	9.26	9	14.75	18	11.61
A major barrier	1	2.50	4	7.41	0	0.00	5	3.23
Student interest								
No barrier at all	41		54		62			
A slight barrier	21	51.22	31	57.41	30	48.39	82	52.23
A moderate barrier	14	34.15	18	33.33	24	38.71	56	35.67
A major barrier	6	14.63	4	7.41	8	12.90	18	11.46
Other Comment								
No barrier at all	2	4.76	3	5.26	3	4.84	8	4.97
A slight barrier	0	0.00	1	1.75	0	0.00	1	.62
A moderate barrier	0	0.00	0	0.00	1	1.61	1	.62
A major barrier	1	2.38	0	0.00	4	6.45	5	3.11

All respondents were asked nine questions exploring their opinion on how effective their institution is in supporting the development, implementation, and/or sustainability of their IPE plan. Responses for these questions are in Table 16. Program respondents were of the opinion that their institutions have been slightly to somewhat effective in supporting the development, implementation, evaluation, and/or sustainability of their IPE programs in seven of the nine

areas. They reported that their institutions were somewhat to very effective in strategic directions (56%; n = 88). However, responding programs feel that their institutions are not effective at all with developing finance plans to support IPE (53%; n = 79).

Kruskal -Wallis Test was utilized to test for differences between the three professions and perceived institutional effectiveness in supporting IPE initiatives. There was not a statistically significant difference in the distribution of the combined perception of intuitional effectiveness across the three professions, $H(2)=0.083$, $P=0.959$.

Table 16

Institutional Support OT, PA, and PT Combined

	Not effective		Slightly effective		Somewhat effective		Very effective		Extremely effective	
Area of support	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Strategic direction	13	8.33	38	24.36	51	32.69	37	23.72	17	10.90
Allocating resources for IPE plans	27	17.31	41	26.28	54	34.62	26	16.67	8	5.13
Logistical support	26	16.67	24	28.85	50	32.05	27	17.31	8	5.13
Designating dedicated leadership	28	17.95	44	28.21	42	26.92	25	16.03	17	10.90
Joint oversite and planning	33	21.29	42	27.10	41	26.45	30	19.35	9	5.81
Developing finance models	79	52.67	27	18.00	26	17.33	14	9.33	4	2.67
Supporting policies for IPE	40	25.81	53	34.19	42	27.10	15	9.68	5	3.23

Faculty development	23	14.94	49	31.82	52	33.77	22	14.29	8	5.19
Faculty recognition	30	19.61	45	29.41	49	32.03	22	14.38	7	4.58

Note: Total responses for each question does not equal N as not all respondents answered every question.

Process

IPE Experience. This information was provided by the 157 (98%) respondents who answered yes when asked if their students were currently offered IPE activities. Many of the questions allowed for multiple responses which is reflected in the response rates.

Required IPE activities for the students are integrated in didactic (77%; n = 120) and clinical (42%; n = 66) coursework as part of the program of study (69%; n = 107), a one-time event (31%; n = 48), its own course (717%; n = 27), a sequenced series (28%; n = 44), and online-learning (24%; n = 37). Respondents reported 28 different professions as included in their students' learning activities. Nursing (85%; n = 132), Physical Therapy (74%; n = 70), Pharmacy (57%; n = 89), Occupational Therapy (59%; n = 67), and Medicine (52%; n = 81) were reported by more than 50% of the respondents.

The settings for IPE activities are classroom (85%; n = 132), lecture hall (67%; n = 105), simulation center (60%; n = 93), and web-based (34%; n = 53).

In-person activities included small group exercises (87%; n = 135), case-based discussions (83%; n = 129), simulation/standardized patient exercise (71%; n = 110), lectures (52%; n = 80), and service (54%; n = 83). On-line activities reported were video conference discussion (42%; n = 62), simulations (37%; n = 55), chat room discussions (35%n = 51). Forty-five (31%) programs reported that their students did not participate in on-line IPE.

Roles and responsibilities of other professions (100%) was reported by both OT (n = 42) and PA (n = 53) as content focus for IPE learning activities. Other content included team skills (88%; n = 138), patient care planning (77%; n = 120), patient evaluation (62%; n = 97), and patient safety/error reduction (59%; n = 93).

Debriefing was used by the respondents in their activities with all participating students (82%; n = 128) and with just program students (22%; n = 34).

Product

Learning outcomes. Program defined learning outcomes for IPE activities included roles/responsibilities (98%; n = 151), other outcomes reported were communication (92%; n =141), team skills (90%; n = 138), values/ethics (64%; n = 98), and leadership (44%; n = 67).

Assessment of student outcomes. Pre/post surveys (75%; n =117) were the most common reported assessment of students. Programs also used group participation (66%; n = 102), reflective writing (62%; n = 96), group project (41%; n = 63), simulation/standardized patient exercise rubric (40%; n = 61), and seven (5%) programs used no assessment.

Evaluation

Program evaluation of the experience. Thirty-three percent (n = 52) of the respondents' reported having a mechanism in place or in development to track individual learners' mastery of program defined competencies, 48% (n = 70) did not have a mechanism in place and 8% (n = 13) respondents didn't know.

IPE plan evaluation was reported as formative (67%; n = 104) for each experience, summative (45%; n = 70) as a whole and could vary depending on the activity. Some programs

report that it occurred at the institution level or by a committee. Other programs either did not formally evaluate their IPE plan (12%; n = 19) or don't know (5%; n = 7).

Evaluation tools. Most programs did not use an evaluation framework (57%; n = 88) or the respondent didn't know (22%; n = 34). Frameworks used included Bigg's 3P modified for IPE (3%; n =4), Kirkpatrick's four-point typology of education outcomes (6%; n = 10), or program developed rubrics/framework.

Discussion

Interprofessional education (IPE) is an educational approach of increasing popularity in professional schools for the preparation of a collaborative ready healthcare workforce. The accrediting bodies of professional education programs in OT, PA, and PT have incorporated standards for outcomes addressing IPE. These accrediting bodies are endorsing members of the Health Professions Accreditors Collaborative (HPAC) consensus document on quality IPE. The purpose of this dissertation was to investigate the current IPE environment of all accredited entry-level programs of study leading to professional degrees in OT, PA, and PT then identify similarities and differences between the three programs of study. The goal was to fill a knowledge gap for each profession on the contemporary IPE environments in the curriculum of their accredited programs and provide a baseline for planning quality IPE as defined by the HPAC consensus document endorsed by their accreditors.

The HPAC document provides recommendations to its member programs that outlines guidance on developing quality IPE including institutional support, deliberate design, outcome-based goals, and assessment and evaluation. This inquiry was driven by five research questions

that relate to these recommendations. While response rate wasn't what was hoped the results are very promising for the future of IPE in the education of these populations.

Institutional Effectiveness. The majority of respondents are of the opinion that their institutions are slightly to somewhat effective in supporting the development, implementation, and/or sustainability of their IPE programs. While the respondents are not of the opinion that their institutions are highly effective in providing support, overall, they do not consider this a barrier. Institutional support was identified as not a barrier at all (46%; n = 73) or slight barrier (33%; n = 52) and a moderate to major barrier (n = 33) by 21% of the responding programs. The one area of institutional support considered by more than fifty percent of responding programs as not effective at all was "Developing financing models, including tuition-attribution for IPE in concert with individual program models" (73%; n = 79). The majority of responding programs reported that funds were not specified in their program budgets (61%; n = 94) but shared with open text comments that funding is available outside the department from the institution, Deans office, IPE committee, college, and internal grants. This aligns with a report from The American Interprofessional Health Collaborative (2020) from a national survey they conducted investigating organizational models of IPE. When asked questions on institutional financing models for IPE respondents reported having a dedicated budget, internally funded by the institution 46% (n = 37) and that the internal funding was either a form of centralized funding (53%; n = 42) or from each college/program (15%; n = 12).

IPE Experiences. Deliberate design of IPE experiences is another characteristic of quality IPE. Our data indicates an alignment with the HPAC guidelines for deliberate design and other recommendation in the HPAC document. The IPE experiences in professional

education programs of OT, PA, and PT were integrated in the curriculum and occurred throughout the program of study. These activities occurred in both didactic (77%; n = 120) and clinical experience (42%; n = 66), though not for all responding programs. The activities were required, elective, and extracurricular in nature. They occurred in multiple settings with other professions that reflected student future practice. For example, the top content focus responses for IPE activities in our data included roles/responsibilities of other professions (99%; n = 155), team skills (88%; n = 1380, patient care planning (77%; n = 120), patient evaluation (62%; n = 97), and patient safety (60%; n = 93). These activities are experienced with nursing (85%; n = 132), pharmacy (57%; n = 89), and medicine (52%; n = 81) students all of whom these professions collaborate with in clinical practice.

In-person activities represented a variety of IPE experiences for students including service learning, student-to-student teaching, simulations, and shared courses as described in the data and shared in open text comments provided by programs.

Student-to-student; “(Our) students teaching students from nursing and dentistry about transfers and body mechanics.”

Service learning; “Designing and implementing community projects.”

Simulation; “Poverty simulation with social work.”

On-line activities experienced by students included case-based discussions, simulations with “mock” patients presenting with real diagnosis, telemedicine, videos and discussion, and poverty simulation. Other text entries were qualified as “due to the pandemic” or “because of COVID” and included course content as the activities. Other responses indicated that prior to the pandemic they did not conduct IPE on-line but intend to move it there in the future.

A majority of these experiences meet with the definition of IPE and the HPAC guidelines. Students are engaged in activities with students from other professions designed to reflect areas related to future practice including shared decision making, cultural competencies, quadruple aim, social determinants of health, and clinical skills. Some programs are reporting independent assignments such as reading assignments, watching movies, or shared courses as IPE. The HPAC document recognizes that these approaches have merit as one-time events but without knowledge of the learning outcomes and assessments used in these events it is difficult to ascertain if learning about, with, or from the other professional students occurred.

Learning Outcomes. The learning outcomes identified by responding programs for their IPE activities closely align with HPAC guidelines, see Table 17. The consensus document recommends endorsing member programs adapt and support student achievement of the IPEC competencies. ACOTE, ARC-PA, and CAPTE are endorsing members.

Table 17

Which Learning Outcomes Has Your Program Identified for IPE Learning Activities? (select all that apply)

Learning Outcome	OT		PA		PT		Combined	
	n	%	*n*	%	*n*	%	*n*	%
Communication	36	85.71	47	92.16	58	95.08	141	91.56
Values and Ethics	22	52.38	32	62.75	44	72.13	98	63.64
Leadership	19	45.24	21	41.18	27	44.26	67	43.51
Roles and Responsibilities	40	95.24	51	100.0	60	98.36	151	98.05
Team Skills	34	80.95	48	94.12	56	91.80	138	89.61
Other	5	11.90	1	1.96	1	1.64	7	4.55

Note: Professionalism, conflict resolution, risk reduction, mutual respect, and IPEC competencies were reported as other.

This characteristic of quality IPE also includes charting expectations for individual students along a continuum for achievement of the competencies. The majority of programs reported not tracking students (47%; n = 74), see Table 18. Fifteen respondents chose to provide a comment and reported they are working on it, through courses, some activities yes/some activities no, pre/posttests, not as well as we would like to, and participation only. The written responses are simultaneously encouraging and discouraging. Programs reported development of a mechanism in progress and comments associated with courses included courses in series with mapping of program defined IPE learning outcomes to the courses. Relying on pre/posttests and participation only are foundational at best. Instructions sent with the survey requested the program IPE expert complete the survey; the number of respondents who reported they don't know (8%; n =13) is of some concern.

Table 18

Is there a mechanism in place to track individual learner mastery of program defined competencies?

Learning Outcome	OT		PA		PT		Combined	
	n	%	*n*	%	*n*	%	*n*	%
Yes	17	40.48	20	37.74	15	24.59	52	33.33
No	19	45.24	25	47.17	30	49.18	74	47.44
Comment	3	7.14	4	7.55	8	13.33	15	9.62
I don't know	2	4.76	4	7.55	7	11.67	13	8.33

Student Assessment for IPE Activities. Our data suggests that OT, PA, and PT programs relied primarily on pre/posttests in the assessment of student learning outcomes for IPE activities. OT and PT also used group participation, reflective writing, and group project. PA programs reported using simulation/standardized patient exercise rubrics instead of group

project, see Table 19. The HPAC document suggest the use of self-reported, instructor-observed, and objective measures for a robust learner assessment strategy. The suggested scope aligns with the IPEC competencies to assess reactions to IPE as a practice, changes in attitudes and perceptions of other professions, acquisition of knowledge and skill, and demonstration of collaborative behaviors in both training and practice. Comments on additional forms of assessment included surveys for clinical experiences, faculty/preceptor assessment, debriefing, faculty and standardized patient verbal feedback, standardized tools, rubrics, and non-graded peer/self-evaluations. Our data suggests that assessment of student learning in IPE activities is present in these programs but is limited in practice and scope for achieving quality IPE as outlined in the HPAC consensus document. There are validated tools available to programs and recently a guide was developed for assistance in the selection of an appropriate IPE assessment tool depending on the purpose and outcome being measured (Almoghirah, Nazar, & Illing, 2021).

Table 19

How are student learning outcomes assessed in IPE learning activities? (select all that apply)

Learning Outcome	OT		PA		PT		Combined	
	n	%	*n*	%	*n*	%	*n*	%
Simulation/Standardized patient exercise rubric	16	38.10	21	40.38	24	39.34	61	39.35
Group project	18	42.86	18	34.62	27	44.26	63	40.65
Reflective writing	24	57.14	33	63.46	39	63.93	96	61.94
Written exam	5	11.90	5	9.62	8	13.11	18	11.61
Group participation	21	50.00	39	75.00	42	68.85	102	65.81
Pre/post Surveys	30	71.43	43	82.69	44	72.13	117	75.48
Oral exam	1	2.38	0	0.00	1	1.64	2	1.29
OSCE	2	4.76	12	23.08	4	6.56	18	11.61
Peer assessment	10	23.81	8	15.38	11	18.03	29	18.71
No assessment	2	4.76	3	5.77	2	3.28	7	4.52

Other (Please describe.)	2	4.76	3	5.77	10	16.39	15	9.68

Program Evaluation. The HPAC consensus document addresses the need for quality IPE plans to include a strategy for evaluation. Our data suggests that formal evaluation of IPE plans does occur (Table 20), but few programs could articulate use of a framework (Table 21). Many programs discussed evaluation by committees or IPE office with limited dissemination of results. When IPE occurs in a course, the faculty and students provide feedback for use in future if appropriate. Quality IPE encourages that a robust evaluation strategy be developed to include outcome data, costs, benefits, and stakeholder perceptions. The plan should be developed to serve quality improvement in achieving outcomes.

While respondents noted having evaluation of IPE activities, few had a formal evaluation framework or approach to their IPE plan itself. Open text responses to questions asked about IPE plan evaluation and evaluation frameworks referenced “skill assessment rubrics” and “evaluated by students after the event” or that it occurs on a case (event) by case (event) basis all of which imply that the focus was on events not the curriculum. The American Interprofessional Health Collaborative (2020) surveyed self-identified leaders of IPE who reported the presence of assessment and evaluation measures as one of two most common components present when asked about a systematic IPE approach/plan. The report did not include example of methods. With an emphasis on rationale and developing IPE plans in the HPAC document, this is an area that requires further investigation.

Table 20

How is your IPE Plan Evaluated? (select all that apply)

Form of Evaluation	OT	PA	PT	Combined

	n	%	*n*	%	*n*	%	*n*	%
We don't formally evaluate our plan	7	16.67	6	11.32	6	9.84	19	12.18
Summative, as a whole annually	16	38.10	22	41.51	32	52.46	70	44.87
Formative, each IPE experience	30	71.43	35	66.04	39	63.93	104	66.67
I don't know	0	0.00	3	5.66	4	6.56	7	4.49
Varies (Please describe.)	0	0.00	3	5.66	6	9.84	9	5.77
Other (Please describe.)	1	2.38	1	1.89	2	3.28	4	2.56

Table 21

Does your program use an evaluation framework?

Framework	OT		PA		PT		Combined	
	n	%	*n*	%	*n*	%	*n*	%
Yes, we use Bigg's 3P model modified for IPE	0	0.00	2	3.85	2	3.28	4	2.60
Yes, we use Kirkpatrick's four-point typology of educational outcomes	3	7.32	3	5.77	4	6.56	10	6.49
Yes, we use Pawson and Tilley's realistic evaluation	0	0.00	0	0.00	0	0.00		
I don't know	9	21.95	12	23.08	13	21.31	34	22.08
Varies (Please describe.)	1	2.44	3	5.77	6	9.84	10	6.49
Other (Please describe.)	4	9.76	2	3.85	2	3.28	8	5.19
We don't use an evaluation framework	24	58.54	30	57.69	34	55.74	88	57.14

Limitations

Limitations and areas of concern in this research include subject expertise, recruitment, response error, mode, and COVID-19. To increase the likelihood that the survey would be completed by the IPE expert in the PA program, a two-step recruitment process was employed.

This could be a limitation, however this approach proved successful in similar research (Blue et al., 2010; Palatta et al., 2015).

This research used an internet self-administered questionnaire, which controlled for bias on the part of the administrator but removed the ability to clarify. COVID-19 moved a lot of programs to remote delivery of content. While this mode of distribution may have allowed more people to receive the original email invitation, distribution during COVID-19 may have impacted response rate. The response rates for the three surveys was low and did not align with reported demographics for each profession. Research conducted by de Koning et al. (2021) investigated research conducted pre-COVID and post-COVID (defined as after January 2020) identifying reduced response rates post-COVID. This phenomenon is called survey fatigue due to the significant increase in surveys and other on-line strategies to gather data during this time coupled with the move to on-line education. Furthermore, this inquiry requested information about IPE in 2019 but COVID and related adjustments to academic practices were mentioned by respondents and may have affected multiple choice selections. Responder representation of IPE in the curriculum may have been affected by a conflation of the environment prior to and since COVID.

Conclusion

The limitations and low response rate make it difficult to generalize the results of this survey, but they do offer a starting point for understanding the IPE environment of accredited entry-level programs of study leading to professional degrees in occupational therapy, physician assistant, and physical therapist. Although no statistically significant differences existed in our findings, our data suggests that the practice of IPE varies. This data did demonstrate a strong

presence of IPE in the curriculum and helped to highlight areas for improvement. Faculty workload, course schedules, and funding continue to be a hinderance in the development and sustainability for IPE. Future research should include examination of the relationship between program leadership and institutional leadership in developing, implementing, and sustaining an IPE plan; faculty/preceptor development and assessment in delivering IPE; mapping learning outcomes and learner assessment; and tracking student acquisition of IPE competencies. Inquiry should include addressing barriers and identifying to what degree and where the control lies for each. Quality IPE requires investment from all stakeholders to all stakeholders.

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Appendix A. Survey Question Development Table

Survey Question Development Table

Survey Question OT	Survey Question PA	Survey Question PT	Source Question	Theoretical Framework/HPAC
Q1: What is your role/position with the occupational therapy program?	Q1: What is your role/position with the physician assistant program?	Q1: What is your role/position with the physical therapist education program?	Developed for contribution to respondent characteristics.	Presage/Rationale
Q2: How long have you been involved with/in IPE?	Q2: How long have you been involved with/in IPE?	Q2: How long have you been involved with/in IPE?	Developed for contribution to teacher/developer characteristics.	Presage/Rationale
Q3: Is your institution: (private or public) Public Private	Q3: Is your institution: (private or public) Public Private	Q3: Is your institution: (private or public) Public Private	This question is included in annual reports and referenced surveys.	Presage/Rationale
Q4: Select the state where your program is located. If you have satellite sites, only select the state where your main campus is located. A drop down of the 50 States will provide selection choices.	Q4: Select the state where your program is located. If you have satellite sites, only select the state where your main campus is located. A drop down of the 50 States will provide selection choices.	Q4: Select the state where your program is located. If you have satellite sites, only select the state where your main campus is located. A drop down of the 50 States will provide selection choices.	Based on committee discussion.	Presage/Rationale

Q5: How is/are your occupational therapy degree program(s) delivered? (select all that apply) Traditional Hybrid Web based Other (Please describe.)	Q5: How is your physician assistant program delivered? (select all that apply) Traditional Hybrid Web based Other (Please describe.)	Q5: How is your physical therapist program delivered? (select all that apply) Traditional Hybrid Web based Other (Please describe.)	This question is included in annual reports, referenced surveys and accreditation web sites.	Presage/Rationale
Q6: Select the statement that best describes the campus where your program resides? Academic Non-Health Center Academic Health Center Non-Academic Health Center	Q6: Select the statement that best describes the campus where your program resides? Academic Non-Health Center Academic Health Center Non-Academic Health Center	Q6: Select the statement that best describes the campus where your program resides? Academic Non-Health Center Academic Health Center Non-Academic Health Center	Derivations of this appear on other surveys along with Carnegie Classifications. These terms were chosen after discussion with the committee.	Presage/Rationale
Q7: Given the definition of IPE above, are your OT students currently offered IPE activities that include learning with, from, and about students from at least one other profession?	Q7: Given the definition of IPE above, are your PA students currently offered IPE activities that include learning with, from, and about students from at least one other profession?	Q7: Given the definition of IPE above, are your DPT students currently offered IPE activities that include learning with, from, and about students from at least one other profession?	In light of the definition of IPE as explained above, are your dental students currently offered IPE experiences? Palatta If respondents select No, they will be directed to Q. 28 and	Process/Rationale; Deliberate Design

(Select all that apply) Yes, as a university-led (IPE Center) program/experience Yes, as a department led program/experience No, but we are in the planning/development stage for adding a program/experience	(Select all that apply) Yes, as a university-led (IPE Center) program/experience Yes, as a department led program/experience No, but we are in the planning/development stage for adding a program/experience	(Select all that apply) Yes, as a university-led (IPE Center) program/experience Yes, as a department led program/experience No, but we are in the planning/development stage for adding a program/experience		
Q8: Is the IPE learning activity(s) currently categorized as required, elective, or extracurricular? (Select all that apply.) Required: part of an academic program of study Elective: for academic credit Extracurricular: no academic credit Required: other (Please describe.)	Q8: Is the IPE learning activity(s) currently categorized as required, elective, or extracurricular? (Select all that apply.) Required: part of an academic program of study Elective: for academic credit Extracurricular: no academic credit Required: other (Please describe.)	Q8: Is the IPE learning activity(s) currently categorized as required, elective, or extracurricular? (Select all that apply.) Required: part of an academic program of study Elective: for academic credit Extracurricular: no academic credit Required: other (Please describe.)	What kind of IPE program/experience is this? (select all that apply.) Palatta Required: part of an academic program of study Elective: for academic credit Extracurricular: no academic credit Are IPE opportunities at your University required, elective, or both? Congdon	Process/Rationale; Deliberate Design
Q9: In which year(s) of study	Q9: In which phase(s) of	Q9: In which year(s) of study	In which year(s) do your	Presage/Rationale; deliberate Design

do your students currently participate in IPE learning activities with students from at least one other profession? (Select all that apply) Y1 Y2 Y3	study do your students currently participate in IPE learning activities with students from at least one other profession? (Select all that apply) Didactic Clinical Both Other (Please describe.)	do your students currently participate in IPE learning activities with students from at least one other profession? (Select all that apply) Y1 Y2 Y3	dental students participate in the IPE program/experience? Palatta	
Q10: How is IPE currently integrated in your program curriculum? (select all that apply) As a one-time event As its own course As a sequenced series Integrated in didactic course work (e.g., course lectures, projects) Integrated in clinical/field work course work (e.g., reflections, projects) Online-learning Other (Please describe.)	Q10: How is IPE currently integrated in your program curriculum? (select all that apply) As a one-time event As its own course As a sequenced series Integrated in didactic course work (e.g., course lectures, projects) Integrated in clinical course work (e.g., reflections, projects) Online-learning Other (Please describe.)	Q10: How is IPE currently integrated in your program curriculum? (select all that apply) As a one-time event As its own course As a sequenced series Integrated in didactic course work (e.g., course lectures, projects) Integrated in clinical/field work course work (e.g., reflections, projects) Online-learning Other (Please describe.)	HPAC Published Reviews	Presage; Process/Rationale; Deliberate Design

Q11: Which other professions are included in your students IPE learning activities? (Select all that apply.) Architecture Athletic Training Dietetics Education Engineering Interior Design Medicine Nursing Osteopathic Medicine Pharmacy Physical Therapy Physician Assistant Public Health Social Work Speech-Language Pathology Other (Please describe.)	Q11: Which other professions are included in your students IPE learning activities? (Select all that apply.) Architecture Athletic Training Dietetics Education Engineering Interior Design Medicine Nursing Occupational Therapy Osteopathic Medicine Pharmacy Physical Therapy Public Health Social Work Speech Pathology Other (Please describe.)	Q11: Which other professions are included in your students IPE learning activities? (Select all that apply.) Architecture Athletic Training Dietetics Education Engineering Interior Design Medicine Nursing Occupational Therapy Osteopathic Medicine Pharmacy Physician Assistant Public Health Social Work Speech Pathology Other (Please describe.)	Which other professions are included in the IPE program/experience? (select all that apply.) Palatta What professions/disciplines participate in IPE at your University? Congdon	Process/Rationale; Deliberate Design
Q12: What are the settings in which your students experience IPE? (Select all that apply) Small group classroom setting	Q12: What are the settings in which your students experience IPE? (Select all that apply) Small group classroom setting	Q12: What are the settings in which your students experience IPE? (Select all that apply) Small group classroom setting	The IPE experiences occur in the following setting(s): (select all that apply.) Palatta Large group setting (lecture hall)	Process/Deliberate Design

Large group setting (lecture hall) Simulation Center Office/clinic-based Hospital-based Health department/community clinic Student-run clinic Web based Other (Please describe.)	Large group setting (lecture hall) Simulation Center Office/clinic-based Hospital-based Health department/community clinic Student-run clinic Web based Other (Please describe.)	Large group setting (lecture hall) Simulation Center Office/clinic-based Hospital-based Health department/community clinic Student-run clinic Web based Other (Please describe.)	Small group classroom setting Simulation laboratory Community agency Office/clinic-based Hospital-based Community-based faculty office Health department/community clinic Student-run clinic Community hospital Interprofessional clinic Other (please specify)	
Q13: What are the types of in-person IPE learning activities your students participate in with students from at least one other profession? (Select all that apply) Community service/service-learning experience	Q13: What are the types of in-person IPE learning activities your students participate in with students from at least one other profession? (Select all that apply) Community service/service-learning experience	Q13: What are the types of in-person IPE learning activities your students participate in with students from at least one other profession? (Select all that apply) Community service/service-learning experience	What are the key IPE experiences? (select all that apply.) Palatta Shared clinical duties in a patient care setting Community service/service-learning experience Simulation exercise Standardized patient exercise Lecture presentation	Process/Deliberate Design

Simulation/Standardized patient exercise Lecture presentation Case-based discussion Small group exercise Shared clinical duties in a patient care setting Other (Please describe.)	Simulation/Standardized patient exercise Lecture presentation Case-based discussion Small group exercise Shared clinical duties in a patient care setting Other (Please describe.)	Simulation/Standardized patient exercise Lecture presentation Case-based discussion Small group exercise Shared clinical duties in a patient care setting Other (Please describe.)	Case-based discussion Small group exercise Other (please specify)	
Q14: What are the types of on-line IPE learning activities your students participate in with students from at least one other profession? (Select all that apply) Video conference discussions Mock electronic medical record collaborations Interprofessional gaming Chat room discussions Simulations Other (Please describe.)	Q14: What are the types of on-line IPE learning activities your students participate in with students from at least one other profession? (Select all that apply) Video conference discussions Mock electronic medical record collaborations Interprofessional gaming Chat room discussions Simulations Other (Please describe.)	Q14: What are the types of on-line IPE learning activities your students participate in with students from at least one other profession? (Select all that apply) Video conference discussions Mock electronic medical record collaborations Interprofessional gaming Chat room discussions Simulations Other (Please describe.)	HPAC (2019) pg. 15	Process/Deliberate Design

Our students don't participate in on-line IPE	Our students don't participate in on-line IPE	Our students don't participate in on-line IPE		
Q15: What are the IPE content focus areas in your learning activities? (Select all that apply.) Patient Evaluation Patient safety/error reduction Ethics Roles/Responsibilities of other professions Team Skills Preventative Health The consulting process Patient discharge planning Patient care planning Other (Please describe.)	Q15: What are the IPE content focus areas in your learning activities? (Select all that apply.) Patient Evaluation Patient safety/error reduction Ethics Roles/Responsibilities of other professions Team Skills Preventative Health The consulting process Patient discharge planning Patient care planning Other (Please describe.)	Q15: What are the IPE content focus areas in your learning activities? (Select all that apply.) Patient Evaluation Patient safety/error reduction Ethics Roles/Responsibilities of other professions Team Skills Preventative Health The consulting process Patient discharge planning Patient care planning Other (Please describe.)	What are the IPE content focus areas? (select all that apply.) Palatta Nutrition Ethics Roles/responsibilities of other professions Patient safety/error reduction Team skills Substance abuse Community health Preventative health Biomedical science discipline Other (please specify)	Process/Deliberate Design
Q16: Which learning outcomes has your program identified for IPE learning activities? (Select all that apply.) Communication	Q16: Which learning outcomes has your program identified for IPE learning activities? (Select all that apply.) Communication	Q16: Which learning outcomes has your program identified for IPE learning activities? (Select all that apply.) Communication	Are IPE opportunities for students at your university mapped to IPE competencies in any way? (eg IPEC) Congdon	Product/Outcome-based goals

Values/Ethics Leadership Roles/responsibilities Team skills Other (Please describe.)	Values/Ethics Leadership Roles/responsibilities Team skills Other (Please describe.)	Values/Ethics Leadership Roles/responsibilities Team skills Other (Please describe.)		
Q17: How are student learning outcomes assessed in IPE learning activities? (Select all that apply.) Simulation/Standardized patient exercise rubric Group project Reflective writing Written exam Group participation Pre/post Surveys Oral exam OSCE Peer assessment No assessment Other (Please describe.)	Q17: How are student learning outcomes assessed in IPE learning activities? (Select all that apply.) Simulation/Standardized patient exercise rubric Group project Reflective writing Written exam Group participation Pre/post Surveys Oral exam OSCE Peer assessment No assessment Other (Please describe.)	Q17: How are student learning outcomes assessed in IPE learning activities? (Select all that apply.) Simulation/Standardized patient exercise rubric Group project Reflective writing Written exam Group participation Pre/post Surveys Oral exam OSCE Peer assessment No assessment Other (Please describe.)	How are students assessed in the IPE experience? (select all that apply.) Palatta Simulation exercise Standardized patient exercise Group project Reflective writing Written exam Small group participation Surveys Oral exam OSCE Peer assessment No assessment at this time Other (please specify)	Process/Assessment and Evaluation
Q18: Does your program utilize debriefing following IPE learning activities? (Select all that apply.) Yes, with all students/discipl	Q18: Does your program utilize debriefing following IPE learning activities? (Select all that apply.) Yes, with all students/discipl	Q18: Does your program utilize debriefing following IPE learning activities? (Select all that apply.) Yes, with all students/discipl	LeFlore & Anderson Meny, deVoest, Salvati	Process/Rationale; Deliberate Design Specifically discuss inclusion of this in my methodology

ines involved in the experience Yes, just with the occupational therapy students involved in the experience No I don't know Other (Please describe.)	ines involved in the experience Yes, just with the physician assistant students involved in the experience No I don't know Other (Please describe.)	ines involved in the experience Yes, just with the physical therapy students involved in the experience No I don't know Other (Please describe.)		
Q19: Is there a mechanism in place to track individual learners' mastery of program defined interprofessional competencies? Yes No Comment	Q19: Is there a mechanism in place to track individual learners' mastery of program defined interprofessional competencies? Yes No Comment	Q19: Is there a mechanism in place to track individual learners' mastery of program defined interprofessional competencies? Yes No Comment	Throughout the duration of their professional program, how many hours of each category of IPE does the "average student" participate in?; How do you inventory your IPE opportunities for students at your university and how often do you update the inventory? Congdon This language is directly from HPAC (2019) pg. 11	Assessment/Evaluation/Rationale; assessment and evaluation
Q20: How is your IPE plan evaluated?	Q20: How is your IPE plan evaluated?	Q20: How is your IPE plan evaluated?	Do you systematically collect data	Assessment and Evaluation/Assessment and Evaluation

(Select all that apply.) We don’t Summative, as a whole annually Formative, each IPE experience I don’t know Varies (Please describe.) Other (Please describe.)	(Select all that apply.) We don’t Summative, as a whole annually Formative, each IPE experience I don’t know Varies (Please describe.) Other (Please describe.)	(Select all that apply.) We don’t Summative, as a whole annually Formative, each IPE experience I don’t know Varies (Please describe.) Other (Please describe.)	concerning IPE activities?; Do you have an across school curriculum committee or similar to review the quality of IPE offerings? Congdon	
Q21: Does your program use an evaluation framework? Yes, we use Bigg’s 3P model modified for IPE Yes, we use Kirkpatrick’s four-point typology of educational outcomes Yes, we use Pawson and Tilley’s realistic evaluation I don’t know Varies (Please describe.) Other (Please describe.)	Q21: Does your program use an evaluation framework? Yes, we use Bigg’s 3P model modified for IPE Yes, we use Kirkpatrick’s four-point typology of educational outcomes Yes, we use Pawson and Tilley’s realistic evaluation I don’t know Varies (Please describe.) Other (Please describe.)	Q21: Does your program use an evaluation framework? Yes, we use Bigg’s 3P model modified for IPE Yes, we use Kirkpatrick’s four-point typology of educational outcomes Yes, we use Pawson and Tilley’s realistic evaluation I don’t know Varies (Please describe.) Other (Please describe.)	Reeves & Barr	Assessment and Evaluation/Assessment and Evaluation
Q22: Where is the academic home of the IPE learning activities?	Q22: Where is the academic home of the IPE learning activities?	Q22: Where is the academic home of the IPE learning activities?	Where is the academic home of the IPE program/experience?; How are	Presage/Rationale

(Select all that apply.) An interprofessional curriculum committee A university-based office/ IPE center Specific college Individual Faculty Other (Please describe.)	(Select all that apply.) An interprofessional curriculum committee A university-based office/ IPE center Specific college Individual Faculty Other (Please describe.)	(Select all that apply.) An interprofessional curriculum committee A university-based office/ IPE center Specific college Individual Faculty Other (Please describe.)	the IPE experiences/program governed? (select all that apply.) Palatta Dentistry Medicine Nursing Pharmacy Other (please specify)	
Q23: Who has ultimate responsibility for coordinating IPE in your program? Department/faculty committee IPE center Individual Faculty Other (Please describe.)	Q23: Who has ultimate responsibility for coordinating IPE in your program? Department/faculty committee IPE center Individual Faculty Other (Please describe.)	Q23: Who has ultimate responsibility for coordinating IPE in your program? Department/faculty committee IPE center Individual Faculty Other (Please describe.)	Which administrative unit has ultimate responsibility for coordinating IPE programs? Palatta An interprofessional curriculum committee A university-based office Provost/chancellor office Specific college Other (please specify)	Presage/Rationale
Q24: Are funds specified for IPE learning activities in your program budget? Yes No I don’t know	Q24: Are funds specified for IPE learning activities in your program budget? Yes No I don’t know	Q24: Are funds specified for IPE learning activities in your program budget? Yes No I don’t know	Is there a specific budget for interprofessional activities?; Please enter the approximate budget dollar	Presage/Rationale

			amount per year. Palatta	
Q25: Please identify any benefits for faculty who participate in IPE. (Select all that apply.) Release time Supports tenure and promotion Startups for projects/research Recognition Other (Please describe.) None I don't know	Q25: Please identify any benefits for faculty who participate in IPE. (Select all that apply.) Release time Supports tenure and promotion Startups for projects/research Recognition Other (Please describe.) None I don't know	Q25: Please identify any benefits for faculty who participate in IPE. (Select all that apply.) Release time Supports tenure and promotion Startups for projects/research Recognition Other (Please describe.) None I don't know	Is IPE part of your promotion and tenure process? If so, please describe. Congdon	Presage/Rationale; Assessment and Evaluation
Q26: Is there a program to support faculty development in IPE? (Select all that apply.) Yes, provided by the university Yes, provided by the occupational therapy program Yes, provided by another professional school Yes, provided by the IPE center No	Q26: Is there a program to support faculty development in IPE? (Select all that apply.) Yes, provided by the university Yes, provided by the physician assistant medicine program Yes, provided by another professional school Yes, provided by the IPE center No	Q26: Is there a program to support faculty development in IPE? (Select all that apply.) Yes, provided by the university Yes, provided by the physical therapy education program Yes, provided by another professional school Yes, provided by the IPE center No	Exact language. Palatta Is faculty development for IPE available at your university? If yes, how often is it offered? Congdon	Presage/Rationale; Assessment and Evaluation

I don't know Other (Please describe.)	No I don't know Other (Please describe.)	I don't know Other (Please describe.)		
Q27: Is there a program to support your clinical/field preceptors' development in IPE? (Select all that apply.) Yes, provided by the university Yes, provided by the occupational therapy program Yes, provided by another professional school Yes, provided by the IPE center Other (Please describe.) No I don't know	Q27: Is there a program to support your clinical preceptors' development in IPE? (Select all that apply.) Yes, provided by the university Yes, provided by the physician assistant program Yes, provided by another professional school Yes, provided by the IPE center Other (Please describe.) No I don't know	Q27: Is there a program to support your clinical/field preceptors' development in IPE? (Select all that apply.) Yes, provided by the university Yes, provided by the physical therapy program Yes, provided by another professional school Yes, provided by the IPE center Other (Please describe.) No I don't know	Based on HPAC consensus document; accreditation language requiring clinical IPE experiences.	Presage; Process/Rationale; Deliberate Design
Q28: On a scale of 1-4 with 1=no barrier at all to 4=a major barrier, please rate the levels to which the following potential barriers have	Q28: On a scale of 1-4 with 1=no barrier at all to 4=a major barrier, please rate the levels to which the following potential barriers have	Q28: On a scale of 1-4 with 1=no barrier at all to 4=a major barrier, please rate the levels to which the following potential barriers have	Exact language. Palatta (they used 1-5) Lack of institutional support Lack of student interest Faculty resistance	Presage/Rationale; Assessment and Evaluation

impacted the development, implementation, or maintenance of your IPE planning.	impacted the development, implementation, or maintenance of your IPE planning.	impacted the development, implementation, or maintenance of your IPE planning.	Funding limitations
Classroom space	Classroom space	Classroom space	Limited participation from other professions
Course schedules	Course schedules	Course schedules	Lack of classroom space
Comparable readiness of students	Comparable readiness of students	Comparable readiness of students	Academic calendars and schedule
Faculty time/Workload	Faculty time/Workload	Faculty time/Workload	Comparable readiness of students
Faculty development	Faculty development	Faculty development	Other (please specify)
Faculty interest	Faculty interest	Faculty interest	Aligned terms with HPAC 2019
Funding	Funding	Funding	
Institutional support	Institutional support	Institutional support	
Participation from other professions	Participation from other professions	Participation from other professions	
Appropriate mix of professions	Appropriate mix of professions	Appropriate mix of professions	
No academic medical center	No academic medical center	No academic medical center	
Student interest	Student interest	Student interest	
Lack of student prior knowledge of IPE	Lack of student prior knowledge of IPE	Lack of student prior knowledge of IPE	
Lack of community partners	Lack of community partners	Lack of community partners	
Other (please specify	Other (please specify	Other (please specify	

Question 29 – 37 explore your opinion on how effective your institution is in supporting the development, implementation, evaluation, and/or sustainability of your IPE curriculum

On a scale of 1-5 with 1=not effective at all to 5=extremely effective please rate how effective your institution is in the following areas:
1 – not effective at all • 2 – slightly effective • 3 – somewhat effective • 4 – very effective • 5 – extremely effective

Q29: Providing strategic direction and approach, through a compelling vision to "set the tone at the top" led by academic and institutional leaders (e.g., Presidents, Chancellors, Vice-Chancellors, Provosts, Councils of Deans);	Q29: Providing strategic direction and approach, through a compelling vision to "set the tone at the top" led by academic and institutional leaders (e.g., Presidents, Chancellors, Vice-Chancellors, Provosts, Councils of Deans);	Q29: Providing strategic direction and approach, through a compelling vision to "set the tone at the top" led by academic and institutional leaders (e.g., Presidents, Chancellors, Vice-Chancellors, Provosts, Councils of Deans);	HPAC, 2019, pg. 13	Presage/Rationale
Q30: Allocating resources to develop, implement, evaluate, and sustain program IPE plans (e.g., dedicated faculty time to IPE, staff, space and finances) at the institutional and education and/or training program levels;	Q30: Allocating resources to develop, implement, evaluate, and sustain program IPE plans (e.g., dedicated faculty time to IPE, staff, space and finances) at the institutional and education and/or training program levels;	Q30: Allocating resources to develop, implement, evaluate, and sustain program IPE plans (e.g., dedicated faculty time to IPE, staff, space and finances) at the institutional and education and/or training program levels;	HPAC, 2019, pg. 13	Presage/Rationale

Q31: Providing logistical support and management with the alignment of academic calendars, scheduling, classroom and facilities planning and design, common affiliation agreements with health systems;	Q31: Providing logistical support and management with the alignment of academic calendars, scheduling, classroom and facilities planning and design, common affiliation agreements with health systems;	Q31: Providing logistical support and management with the alignment of academic calendars, scheduling, classroom and facilities planning and design, common affiliation agreements with health systems;	HPAC, 2019, pg. 13	Presage/Rationale Deliberate Design
Q32: Designating a dedicated leader and/or team of leaders given sufficient protected time, responsibility, and accountability for IPE at the institutional level;	Q32: Designating a dedicated leader and/or team of leaders given sufficient protected time, responsibility, and accountability for IPE at the institutional level;	Q32: Designating a dedicated leader and/or team of leaders given sufficient protected time, responsibility, and accountability for IPE at the institutional level;	HPAC, 2019, pg. 13	Presage/Rationale
Q33: Facilitating joint IPE curricular planning and oversight involving faculty and administrative leaders from participating	Q33: Facilitating joint IPE curricular planning and oversight involving faculty and administrative leaders from participating	Q33: Facilitating joint IPE curricular planning and oversight involving faculty and administrative leaders from participating	HPAC, 2019, pg. 13	Presage/Deliberate Design

education and/or training programs;	education and/or training programs;	education and/or training programs;		
Q34: Developing financing models, including tuition-attribution for IPE in concert with individual program models;	Q34: Developing financing models, including tuition-attribution for IPE in concert with individual program models;	Q34: Developing financing models, including tuition-attribution for IPE in concert with individual program models;	HPAC, 2019, pg. 13	Presage/Rationale
Q35: Supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration;	Q35: Supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration;	Q35: Supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration;	HPAC, 2019, pg. 13	Presage/Evaluation/ Assessment and Evaluation
Q36: Supporting efforts in providing faculty development related to the planning, implementation, and assessment/evaluation of IPE activities in classroom, simulation and	Q36: Supporting efforts in providing faculty development related to the planning, implementation, and assessment/evaluation of IPE activities in classroom, simulation and	Q36: Supporting efforts in providing faculty development related to the planning, implementation, and assessment/evaluation of IPE activities in classroom, simulation and	HPAC, 2019, pg. 13	Presage/Evaluation/ Assessment and Evaluation

clinical/experiential education settings; and	clinical/experiential education settings; and	clinical/experiential education settings; and		
Q37: Formally recognizing faculty effort toward successful implementation of IPE (e.g., job expectations, the promotion/tenure process).	Q37: Formally recognizing faculty effort toward successful implementation of IPE (e.g., job expectations, the promotion/tenure process).	Q37: Formally recognizing faculty effort toward successful implementation of IPE (e.g., job expectations, the promotion/tenure process).	HPAC, 2019, pg. 13	Presage/Rationale
Q38: This school or program has INTERPROFESSIONAL OR SIMILAR INTERPROFESSIONAL LANGUAGE (COLLABORATION) which appears in official institutional documentation (mission or vision statement, strategic plans, governance documentation)? Yes No I don't know	Q38: This school or program has INTERPROFESSIONAL OR SIMILAR INTERPROFESSIONAL LANGUAGE (COLLABORATION) which appears in official institutional documentation (mission or vision statement, strategic plans, governance documentation)? Yes No I don't know	Q38: This school or program has INTERPROFESSIONAL OR SIMILAR INTERPROFESSIONAL LANGUAGE (COLLABORATION) which appears in official institutional documentation (mission or vision statement, strategic plans, governance documentation)? Yes No I don't know	This school or college has INTERPROFESSIONAL OR SIMILAR INTERPROFESSIONAL LANGUAGE which appears in official institutional documentation (eg mission or vision statement, strategic plans, governance documentation.) Clay	Presage/Rationale
Q39: Are characteristics	Q39: Are characteristics	Q39: Are characteristics	From annual reports on	Presage/Rationale

that your program identifies as being “IPE” related considered in the admissions process? For example, do you evaluate candidates for team skills or communication ? Explain.	that your program identifies as being “IPE” related considered in the admissions process? For example, do you evaluate candidates for team skills or communication ? Explain.	that your program identifies as being “IPE” related considered in the admissions process? For example, do you evaluate candidates for team skills or communication ? Explain.	admissions by national associations in OT, PA and PT.
Q40: Please share comments about your program’s approach to IPE that you think are important or that we did not capture with this survey.	Q40: Please share comments about your program’s approach to IPE that you think are important or that we did not capture with this survey.	Q40: Please share comments about your program’s approach to IPE that you think are important or that we did not capture with this survey.	

Appendix B. Chapter 2 IPE Survey: Occupational Therapy

IPE Curricular Environment Survey for ACOTE Entry-level OT Educational Programs

When answering these questions, use the following definition of Interprofessional Education (IPE):

> "When students from two or more professions learn about, from and with each other to enable effective collaboration and improve patient outcomes." (IPEC, 2016 update, pg. 8)

1 What is your role/position with the occupational therapy program?

2 How long have you been involved with/in IPE?

3 Is your institution:

Public
Private

4 Select the state where your program is located. If you have satellite sites, only select where your main campus is located.

Drop down list

5 How is/are your OT program(s) delivered? (select all that apply)

Traditional
Hybrid
Web Based
Other (Please describe.)

6 Select the statement that best describes the campus where your program resides.

Academic Non-Health Center
Academic Health Center
Non-Academic Health Center

7 Given the definition of IPE above, are your occupational therapy students currently offered IPE experiences with students from at least one other profession? (Select all that apply)

Yes, as a university-led (IPE Center) program/activity
Yes, as a department led program/activity

No, but we are in the planning/development stage for adding a program/activity

8 Is the IPE learning activity(s) currently categorized as required, elective, or extracurricular? (Select all that apply.)

Required: part of an academic program of study
Elective: for academic credit
Extracurricular: no academic credit
Required: other (Please describe.)

9 In which year(s) of study do your occupational therapy students currently participate in IPE learning activities with students from at least one other profession? (Select all that apply)

Y1
Y2
Y3
Other (Please describe.)

10 How is IPE currently integrated in your occupational therapy education program curriculum? (Select all that apply)

Required: part of an academic program of study
As a one-time event
As its own course
As a sequenced series
Integrated in didactic course work (e.g., course lectures, projects)
Integrated in clinical/field work course work (e.g., reflections, projects)
Online-learning
Other (Please describe.)

11 Which other professions are included in your students IPE learning activities? (Select all that apply.)

Architecture
Athletic Training
Dietetics
Education
Engineering
Interior Design
Medicine
Nursing
Osteopathic Medicine

Pharmacy
Physical Therapy
Physician Assistant
Public Health
Social Work
Speech Pathology
Other (Please describe.)

12 What are the settings in which your students experience IPE? (Select all that apply)

Small group classroom setting
Large group setting (lecture hall)
Simulation Center
Office/clinic-based
Hospital-based
Health department/community clinic
Student-run clinic
Web based
Other (Please describe.)

13 What are the types of *in-person* IPE learning activities your students participate in with students from at least one other profession? (Select all that apply)

Community service/service-learning experience
Simulation/Standardized patient exercise
Lecture presentation
Case-based discussion
Small group exercise
Shared clinical duties in a patient care setting
Other (Please describe.)

14 What are the types of *on-line* IPE learning activities your students participate in with students from at least one other profession? (Select all that apply)

Video conference discussions
Mock electronic medical record collaborations
Interprofessional gaming
Chat room discussions
Simulations
Other (Please describe.)
Our students don’t participate in online IPE learning activities

15 What are the IPE content focus areas in your learning activities? (Select all that apply.)

Patient Evaluation
Patient safety/error reduction
Ethics
Roles/Responsibilities of other professions
Team Skills
Preventative Health
The consulting process
Patient discharge planning
Patient care planning
Other (Please describe.)

16 Which learning outcomes has your program identified for IPE learning activities? (Select all that apply.)

Communication
Values/Ethics
Leadership
Roles/responsibilities
Team skills
Other (Please describe.)

17 How are student learning outcomes assessed in IPE learning activities? (Select all that apply.)

Simulation/Standardized patient exercise rubric
Group project
Reflective writing
Written exam
Group participation
Pre/post Surveys
Oral exam
OSCE
Peer assessment
No assessment
Other (Please describe.)

18 Does your program utilize debriefing following IPE learning activities? (Select all that apply.)

Yes, with all students/disciplines involved in the experience
Yes, just with the occupational therapy students involved in the experience
No
I don’t know
Other (Please describe.)

19 Is there a mechanism in place to track individual learners' mastery of program defined interprofessional competencies?

Yes
No
Comment

20 How is your IPE plan evaluated? (Select all that apply.)

Summative, as a whole annually
Formative, each IPE experience
We don't formally evaluate our plan
I don't know
Varies, explain
Other, explain

21 Does your program use an evaluation framework?

Yes, we use Bigg's 3P model modified for IPE
Yes, we use Kirkpatrick's four-point typology of educational outcomes
Yes, we use Pawson and Tilley's realistic evaluation
We don't use an evaluation framework
I don't know
Varies, explain
Other, explain

22 Where is the academic home of the IPE learning activities? (Select all that apply.)

An interprofessional curriculum committee
A university-based office/ IPE center
Specific college
Our OT department
Individual Faculty
Other (Please describe.)

23 Who has ultimate responsibility for coordinating IPE curriculum in your OT program?

Department faculty committee
IPE center
Individual Faculty
Other (Please describe.)

24 Are funds specified for IPE learning activities in your program budget?

Yes
No
I don't know
Other (Please describe)

25 Please identify any benefits for faculty who participate in IPE. (Select all that apply.)

Release time
Supports annual evaluation
Supports tenure and promotion
Startups for projects/research
Recognition
Other (Please describe.)
None
I don't know

26 Is there a program to support faculty development in IPE? (Select all that apply.)

Yes, provided by the university
Yes, provided by our OT program
Yes, provided by another professional school
Yes, provided by the IPE center
Other (Please describe)
No
I don't know

27 Is there a program to support your clinical/field preceptors' development in IPE? (Select all that apply.)

Yes, provided by the university
Yes, provided by our OT program
Yes, provided by another professional school
Yes, provided by the IPE center
Other (Please describe)
No
I don't know

Question 28 explores the development, implementation and/or maintenance of your IPE curriculum

28 On a scale of 1-4 with 1=no barrier at all to 4=a major barrier, please rate the levels to which the following potential barriers have impacted the development, implementation, or maintenance of your IPE efforts.

1 – no barrier at all • 2 – a slight barrier • 3 – a moderate barrier • 4 – a major barrier

Classroom space
Course schedules
Comparable readiness of students
Student interest
Lack of student prior knowledge of IPE
Participation from other professions
Appropriate mix of professions
Faculty time/Workload
Faculty development
Faculty interest
Funding
Institutional support
No academic medical center
Lack of community partners
Other (please specify

Question 29 – 37 explore your opinion on how effective your institution is in supporting the development, implementation, evaluation, and/or sustainability of your IPE curriculum

On a scale of 1-5 with 1=not effective at all to 5=extremely effective please rate how effective your institution is in the following areas:
1 – not effective at all • 2 – slightly effective • 3 – somewhat effective • 4 – very effective • 5 – extremely effective

29 Providing strategic direction and approach, through a compelling vision to "set the tone at the top" led by academic and institutional leaders (e.g., Presidents, Chancellors, Vice-Chancellors, Provosts, Councils of Deans);

30 Allocating resources to develop, implement, evaluate, and sustain program IPE plans (e.g., dedicated faculty time to IPE, staff, space and finances) at the institutional and education and/or training program levels;

31 Providing logistical support and management with the alignment of academic calendars, scheduling, classroom and facilities planning and design, common affiliation agreements with health systems;

32 Designating a dedicated leader and/or team of leaders given sufficient protected time, responsibility, and accountability for IPE at the institutional level;

33 Facilitating joint IPE curricular planning and oversight involving faculty and administrative leaders from participating education and/or training programs;

34 Developing financing models, including tuition-attribution for IPE in concert with individual program models;

35 Supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration;

36 Supporting efforts in providing faculty development related to the planning, implementation, and assessment/evaluation of IPE activities in classroom, simulation and clinical/experiential education settings; and

37 Formally recognizing faculty effort toward successful implementation of IPE (e.g., job expectations, the promotion/tenure process).

Program specific questions:

38 This school or program has interprofessional or similar interprofessional language (collaboration) which appears in official institutional documentation (mission or vision statement, strategic plans, governance documentation)?

Yes
No
I don't know

39 Are characteristics that your program identifies as being "IPE" related considered in the admissions process? For example, do you evaluate candidates for team skills or communication? Explain.

Yes (Please describe.)
No
I don't know

40 Please share comments about your program's approach to IPE that you think are important or that we did not capture with this survey.

Appendix C. Chapter 2 Email: Occupational Therapy Programs

Dear (Program Director),

I am conducting research on interprorfessional education as part of the requirements for completion of my PhD in Health Related Sciences, and I would like to invite your program to participate.

As you know, interprofessional education is an emerging part of health professions education. As the Director of the program, I am asking you to please identify the person that you feel best represents the below description, yourself included. Please forward this email to them.

IPE representative: This survey is for the representative most familiar with interprofessional education (IPE) in the educational curriculum of your entry-level doctoral and or master's occupational therapy program.

Dear IPE representative,

> By clicking (or copying and pasting) the Survey Link Below, you have read the study information, conditions of participation and agree to voluntarily participate in this study.
>
> This study was approved by the VCU IRB committee IRB #HM20019093

Your honesty is appreciated.

xxxxxxx survey link

Procedures: The survey takes less than 15 minutes to complete.

Project Title: Current Environment of Interprofessional Education in Occupational Therapy Curricula: A National Survey

Principal Investigator: Allison Kaczmarek (kaczmareka@vcu.edu), Carole Ivey (civey@vcu.edu)

Purpose of Project: Provide a contemporary description of IPE within the curricula of ACOTE accredited programs in the United States.

Risks/Benefits: There is no known potential for physical or social harm in this study. Although you may not personally benefit from participation in this study, the hope is that the understanding of IPE in health care curriculum will be advanced.

Confidentiality: Data collection will be confidential. No identifying information will be stored with the survey data. All data will be separated from emails and will be stored in a locked file

cabinet in the PI's office and data stored on a password-protected computer. Concerns of confidentiality can be directed to the PI, as noted above. All data will be reported as group data.

CONDITIONS OF PARTICIPATION

Participating in this project is voluntary, and refusal to participate or withdrawing from participation at any time during the project will involve no penalty or loss of benefits to which the subject is otherwise entitled. The principal investigator may terminate participation of a subject or the project entirely without regard to the subject's consent. If you have any questions, concerns, or complaints about this study now or in the future, please contact Allison Kaczmarek, 813-493-7481, kaczmareka@vcu.edu or Carole Ivey, civey@vcu.edu.

Appendix D. Chapter 3 Survey: Physician Assistant

IPE Curricular Environment Survey for ARC-PA Entry-level Physician Assistant (PA) Education Programs

When answering these questions, use the following definition of Interprofessional Education (IPE):

> "When students from two or more professions learn about, from and with each other to enable effective collaboration and improve patient outcomes." (IPEC, 2016 update, pg. 8)

1 What is your role/position with the physician assistant education program?

2 How long have you been involved with/in IPE?

3 Is your institution:

Public
Private

4 Select the state where your program is located. If you have satellite sites, only select the state where you rmain campus is located.

Drop down list

5 How is your physician assistant education program delivered? (Select all that apply)

Traditional
Hybrid
Web based
Other (Please describe.)

6 What is your institution's academic health center status?

Academic Non-Health Center
Academic Health Center
Non-Academic Health Center

7 Given the definition of IPE above, are your physician assistant students currently offered IPE activities with students from at least one other profession?

Yes, as a university-led (IPE Center) program/activity

Yes, as a department led program/activity
No, but we are in the planning/development stage for adding a program/activity

8 Is the IPE learning activity(s) currently categorized as required, elective, or extracurricular? (Select all that apply.)

Required: part of an academic program of study
Elective: for academic credit
Extracurricular: no academic credit
Required: other (Please describe.)

9 In which phase(s) of study do your physician assistant students currently participate in IPE learning activities with students from at least one other profession? (Select all that apply)

Didactic
Clinical
Both
Other (Please describe.)

10 How is IPE currently integrated in your physician assistant education program curriculum? (select all that apply)

Required: part of an academic program of study
As a one-time event
As its own course
As a sequenced series
Integrated in didactic course work (e.g., course lectures, projects)
Integrated in clinical/field work course work (e.g., reflections, projects)
Online-learning
Other (Please describe.)

11 Which other professions are included in your students IPE learning activities? (Select all that apply.)

Architecture
Athletic Training
Dietetics
Education
Engineering
Interior Design
Medicine
Nursing

Occupational Therapy
Osteopathic Medicine
Pharmacy
Physical Therapy
Public Health
Social Work
Speech Pathology
Other (Please describe.)

12 What are the settings in which your students experience IPE? (Select all that apply)

Small group classroom setting
Large group setting (lecture hall)
Simulation Center
Office/clinic-based
Hospital-based
Health department/community clinic
Student-run clinic
Web based
Other (Please describe.)

13 What are the types of *in-person* IPE learning activities your students participate in with students from at least one other profession? (Select all that apply)

Community service/service-learning experience
Simulation/Standardized patient exercise
Lecture presentation
Case-based discussion
Small group exercise
Shared clinical duties in a patient care setting
Other (Please describe.)

14 What are the types of *on-line* IPE learning activities your students participate in with students from at least one other profession? (Select all that apply)

Video conference discussions
Mock electronic medical record collaborations
Interprofessional gaming
Chat room discussions
Simulations
Other (Please describe.)
Our students don't participate in on-line IPE

15 What are the IPE content focus areas in your learning activities? (Select all that apply.)

Patient Evaluation
Patient safety/error reduction
Ethics
Roles/Responsibilities of other professions
Team Skills
Preventative Health
The consulting process
Patient discharge planning
Patient care planning
Other (Please describe.)

16 Which learning outcomes has your program identified for IPE learning activities? (Select all that apply.)

Communication
Values/Ethics
Leadership
Roles/responsibilities
Team skills
Other (Please describe.)

17 How are student learning outcomes assessed in IPE learning activities? (Select all that apply.)

Simulation/Standardized patient exercise rubric
Group project
Reflective writing
Written exam
Group participation
Pre/post Surveys
Oral exam
OSCE
Peer assessment
No assessment
Other (Please describe.)

18 Does your program utilize debriefing following IPE learning activities? (Select all that apply.)

Yes, with all students/disciplines involved in the experience
Yes, just with the physician assistant students involved in the experience
No
I don’t know

Other (Please describe.)

19 Is there a mechanism in place to track individual learners' mastery of program defined interprofessional competencies?

Yes
No
I don't know
Comment

20 How is your IPE plan evaluated? (Select all that apply.)

Summative, as a whole annually
Formative, each IPE experience
We don't formally evaluate our plan
I don't know
Varies, (Please describe.)
Other, (Please describe.)

21 Does your program use an evaluation framework?

Yes, we use Bigg's 3P model modified for IPE
Yes, we use Kirkpatrick's four-point typology of educational outcomes
Yes, we use Pawson and Tilley's realistic evaluation
We don't use an evaluation framework
I don't know
Varies, (Please describe.)
Other, (Please describe.)

22 Where is the academic home of the IPE learning activities? (Select all that apply.)

An interprofessional curriculum committee
A university-based office/ IPE center
Specific college
Our PA department
Individual Faculty
Other (Please describe.)

23 Who has ultimate responsibility for coordinating IPE curriculum in your program?

Department faculty committee
IPE center
Individual Faculty
Other (Please describe.)

24 Are funds specified for IPE learning activities in your program budget?

Yes
No
I don't know
Other (Please describe.)

25 Please identify any benefits for faculty who participate in IPE. (Select all that apply.)

Release time
Supports annual evaluation
Supports tenure and promotion
Startups for projects/research
Recognition
Other (Please describe.)
None
I don't know

26 Is there a program to support faculty development in IPE? (Select all that apply.)

Yes, provided by the university
Yes, provided by our program
Yes, provided by another professional school
Yes, provided by the IPE center
Other (Please describe.)
No
I don't know

27 Is there a program to support your clinical/field preceptors' development in IPE? (Select all that apply.)

Yes, provided by the university
Yes, provided by our program
Yes, provided by another professional school
Yes, provided by the IPE center
Other (Please describe.)
No
I don't know

Question 28 explores the development, implementation and/or maintenance of your IPE curriculum

28 On a scale of 1-4 with 1=no barrier at all to 4=a major barrier, please rate the levels to which the following potential barriers have impacted the development, implementation, or maintenance of your IPE efforts.

1 – no barrier at all • 2 – a slight barrier • 3 – a moderate barrier • 4 – a major barrier

Classroom space
Course schedules
Comparable readiness of students
Student interest
Lack of student prior knowledge of IPE
Participation from other professions
Appropriate mix of professions
Faculty time/Workload
Faculty development
Faculty interest
Funding
Institutional support
No academic medical center
Lack of community partners
Other (please specify

Question 29 – 37 explore your opinion on how effective your institution is in supporting the development, implementation, evaluation, and/or sustainability of your IPE curriculum

On a scale of 1-5 with 1=not effective at all to 5=extremely effective please rate how effective your institution is in the following areas:
1 – not effective at all • 2 – slightly effective • 3 – somewhat effective • 4 – very effective • 5 – extremely effective

29 Providing strategic direction and approach, through a compelling vision to "set the tone at the top" led by academic and institutional leaders (e.g., Presidents, Chancellors, Vice-Chancellors, Provosts, Councils of Deans);

30 Allocating resources to develop, implement, evaluate, and sustain program IPE plans (e.g., dedicated faculty time to IPE, staff, space and finances) at the institutional and education and/or training program levels;

31 Providing logistical support and management with the alignment of academic calendars, scheduling, classroom and facilities planning and design, common affiliation agreements with health systems;

32 Designating a dedicated leader and/or team of leaders given sufficient protected time, responsibility, and accountability for IPE at the institutional level;

33 Facilitating joint IPE curricular planning and oversight involving faculty and administrative leaders from participating education and/or training programs;
34 Developing financing models, including tuition-attribution for IPE in concert with individual program models;

35 Supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration;

36 Supporting efforts in providing faculty development related to the planning, implementation, and assessment/evaluation of IPE activities in classroom, simulation and clinical/experiential education settings; and

37 Formally recognizing faculty effort toward successful implementation of IPE (e.g., job expectations, the promotion/tenure process).

Program specific questions:

38 This school or program has interprofessional or similar interprofessional language (collaboration) which appears in official institutional documentation (mission or vision statement, strategic plans, governance documentation)?

Yes
No
I don't know

39 Are characteristics that your program identifies as being "IPE" related considered in the admissions process? For example, do you evaluate candidates for team skills or communication? Explain.

Yes (Please describe.)
No
I don't know

40 Please share comments about your program's approach to IPE that you think are important or that we did not capture with this survey.

Appendix E. Chapter 3 Email: Physician Assistant Programs

Dear (Program Director),

My name is Allison Kaczmarek. I am a doctoral candidate in the School of Health Professions at Virginia Commonwealth University. I am conducting research as part of the requirements for completion of my PhD in Health Related Sciences, and I would like to invite your program to participate.

As the Director of the program, I am asking you to please identify the person that you feel best represents the below description, yourself included. Please forward this email to them and cc me at kaczmareka@vcu.edu .

IPE representative: This survey is for the representative most familiar with interprofessional education (IPE) in the educational curriculum of your entry-level physician assistant program.

Dear IPE representative,

> By clicking (or copying and pasting) the Survey Link Below, you have read the study information, conditions of participation and agree to voluntarily participate in this study.
>
> This study was approved by the VCU IRB committee IRB #xxxxx

Your honesty is appreciated.

xxxxxxx survey link

Procedures: The survey takes less than 15 minutes to complete.

Project Title: Interprofessional Education: Current Environment in the Curriculum of ARC-PA Physician Assistant Programs of Education

Principal Investigator: Allison Kaczmarek (kaczmareka@vcu.edu), Carole Ivey (civey@vcu.edu)

Purpose of Project: Provide a contemporary description of IPE within the curricula of all ARC-PA physician assistant programs of education in the United States.

Risks/Benefits: There is no known potential for physical or social harm in this study. Although you may not personally benefit from participation in this study, the hope is that the understanding of IPE in health care curriculum will be advanced.

Confidentiality: Data collection will be confidential. No identifying information will be stored with the survey data. All data will be separated from emails and will be stored in a locked file

cabinet in the PI's office and data stored on a password-protected computer. Concerns of confidentiality can be directed to the PI, as noted above. All data will be reported as group data.

CONDITIONS OF PARTICIPATION

Participating in this project is voluntary, and refusal to participate or withdrawing from participation at any time during the project will involve no penalty or loss of benefits to which the subject is otherwise entitled. The principal investigator may terminate participation of a subject or the project entirely without regard to the subject's consent. If you have any questions, concerns, or complaints about this study now or in the future, please contact Allison Kaczmarek, 813-493-7481, kaczmareka@vcu.edu or Carole Ivey, civey@vcu.edu.

Appendix F. Chapter 4 Survey: Physical Therapist

IPE Curricular Environment Survey for CAPTE Entry-level Physical Therapist Education Programs

When answering these questions, use the following definition of Interprofessional Education (IPE):

> "When students from two or more professions learn about, from and with each other to enable effective collaboration and improve patient outcomes." (IPEC, 2016 update, pg. 8)

1 What is your role/position with the physical therapist education program?

2 How long have you been involved with/in IPE?

3 Is your institution:

Public
Private

4 Select the state where your program is located. If you have satellite sites, only select the state where your main campus is located.

Drop down of States

5 How is/are your physical therapist education program delivered? (select all that apply)

Traditional
Hybrid
Web based
Other (Please describe.)

6 Select the statement that best describes the campus where your program resides?

Academic Non-Health Center
Academic Health Center
Non-Academic Health Center

7 Given the definition of IPE above, are your physical therapist students currently offered IPE activities with students from at least one other profession?

Yes, as a university-led (IPE Center) program/activity

Yes, as a department led program/activity
No, but we are in the planning/development stage for adding a program/activity

8 Is the IPE learning activity(s) currently categorized as required, elective, or extracurricular? (Select all that apply.)

Required: part of an academic program of study
Elective: for academic credit
Extracurricular: no academic credit
Required: other (Please describe.)

9 In which year(s) of study do your physical therapist students currently participate in IPE learning activities with students from at least one other profession? (Select all that apply)

Y1
Y2
Y3
Other (Please describe.)

10 How is IPE currently integrated in your physical therapist education program curriculum? (Select all that apply)

Required: part of an academic program of study
As a one-time event
As its own course
As a sequenced series
Integrated in didactic course work (e.g., course lectures, projects)
Integrated in clinical/field work course work (e.g., reflections, projects)
Online-learning
Other (Please describe.)

11 Which other professions are included in your students IPE learning activities? (Select all that apply.)

Architecture
Athletic Training
Dietetics
Education
Engineering
Interior Design
Medicine
Nursing

Occupational Therapy
Osteopathic Medicine
Pharmacy
Physician Assistant
Public Health
Social Work
Speech Pathology
Other (Please describe.)

12 What are the settings in which your students experience IPE? (Select all that apply)

Small group classroom setting
Large group setting (lecture hall)
Simulation Center
Office/clinic-based
Hospital-based
Health department/community clinic
Student-run clinic
Web based
Other (Please describe.)

13 What are the types of *in-person* IPE learning activities your students participate in with students from at least one other profession? (Select all that apply)

Community service/service-learning experience
Simulation/Standardized patient exercise
Lecture presentation
Case-based discussion
Small group exercise
Shared clinical duties in a patient care setting
Other (Please describe.)

14 What are the types of *on-line* IPE learning activities your students participate in with students from at least one other profession? (Select all that apply)

Video conference discussions
Mock electronic medical record collaborations
Interprofessional gaming
Chat room discussions
Simulations
Other (Please describe.)
Our students do not participate in on-line IPE

15 What are the IPE content focus areas in your learning activities? (Select all that apply.)

Patient Evaluation
Patient safety/error reduction
Ethics
Roles/Responsibilities of other professions
Team Skills
Preventative Health
The consulting process
Patient discharge planning
Patient care planning
Other (Please describe.)

16 Which learning outcomes has your program identified for IPE learning activities? (Select all that apply.)

Communication
Values/Ethics
Leadership
Roles/responsibilities
Team skills
Other (Please describe.)

17 How are student learning outcomes assessed in IPE learning activities? (Select all that apply.)

Simulation/Standardized patient exercise rubric
Group project
Reflective writing
Written exam
Group participation
Pre/post Surveys
Oral exam
OSCE
Peer assessment
No assessment
Other (Please describe.)

18 Does your program utilize debriefing following IPE learning activities? (Select all that apply.)

Yes, with all students/disciplines involved in the experience
Yes, just with the physical therapist students involved in the experience
No
I don’t know

Other (Please describe.)

19 Is there a mechanism in place to track individual learners' mastery of program defined interprofessional competencies?

Yes
No
I don't know
Comment

20 How is your IPE plan evaluated? (Select all that apply.)

Summative, as a whole annually
Formative, each IPE experience
We don't formally evaluate our plan
I don't know
Varies, (Please describe)
Other, (Please describe)

21 Does your program use an evaluation framework?

Yes, we use Bigg's 3P model modified for IPE
Yes, we use Kirkpatrick's four-point typology of educational outcomes
Yes, we use Pawson and Tilley's realistic evaluation
WE don't use an evaluation framework
I don't know
Varies, (Please describe)
Other, (Please describe)

22 Where is the academic home of the IPE learning activities? (Select all that apply.)

An interprofessional curriculum committee
A university-based office/ IPE center
Specific college
Our PT deaprtment
Individual faculty
Other (Please describe.)

23 Who has ultimate responsibility for coordinating IPE curriculum in your program?

Department faculty committee
IPE center
Individual Faculty
Other (Please describe.)

24 Are funds specified for IPE learning activities in your program budget?

Yes
No
I don't know
Other, (Please describe)

25 Please identify any benefits for faculty who participate in IPE. (Select all that apply.)

Release time
Supports annual evaluation
Supports tenure and promotion
Startups for projects/research
Recognition
Other (Please describe.)
None
I don't know

26 Is there a program to support faculty development in IPE? (Select all that apply.)

Yes, provided by the university
Yes, provided by our program
Yes, provided by another professional school
Yes, provided by the IPE center
Other, (Please describe)
No
I don't know

27 Is there a program to support your clinical/field preceptors' development in IPE? (Select all that apply.)

Yes, provided by the university
Yes, provided by our program
Yes, provided by another professional school
Yes, provided by the IPE center
No
I don't know

Question 28 explores the development, implementation and/or maintenance of your IPE curriculum

28 On a scale of 1-4 with 1=no barrier at all to 4=a major barrier, please rate the levels to which the following potential barriers have impacted the development, implementation, or maintenance of your IPE efforts.

1 – no barrier at all • 2 – a slight barrier • 3 – a moderate barrier • 4 – a major barrier

Classroom space
Course schedules
Comparable readiness of students
Student interest
Lack of student prior knowledge of IPE
Participation from other professions
Appropriate mix of professions
Faculty time/Workload
Faculty development
Faculty interest
Funding
Institutional support
No academic medical center
Lack of community partners
Other (Please describe)

Question 29 – 37 explore your opinion on how effective your institution is in supporting the development, implementation, evaluation, and/or sustainability of your IPE curriculum

On a scale of 1-5 with 1=not effective at all to 5=extremely effective please rate how effective your institution is in the following areas:
1 – not effective at all • 2 – slightly effective • 3 – somewhat effective • 4 – very effective • 5 – extremely effective

29 Providing strategic direction and approach, through a compelling vision to "set the tone at the top" led by academic and institutional leaders (e.g., Presidents, Chancellors, Vice-Chancellors, Provosts, Councils of Deans);

30 Allocating resources to develop, implement, evaluate, and sustain program IPE plans (e.g., dedicated faculty time to IPE, staff, space and finances) at the institutional and education and/or training program levels;

31 Providing logistical support and management with the alignment of academic calendars, scheduling, classroom and facilities planning and design, common affiliation agreements with health systems;

32 Designating a dedicated leader and/or team of leaders given sufficient protected time, responsibility, and accountability for IPE at the institutional level;

33 Facilitating joint IPE curricular planning and oversight involving faculty and administrative leaders from participating education and/or training programs;

34 Developing financing models, including tuition-attribution for IPE in concert with individual program models;

35 Supporting a process for identification and development of solutions for institutional policies that may hinder interprofessional collaboration;

36 Supporting efforts in providing faculty development related to the planning, implementation, and assessment/evaluation of IPE activities in classroom, simulation and clinical/experiential education settings; and

37 Formally recognizing faculty effort toward successful implementation of IPE (e.g., job expectations, the promotion/tenure process).

Program specific questions:

38 This school or program has interprofessional or similar interprofessional language (collaboration) which appears in official institutional documentation (mission or vision statement, strategic plans, governance documentation)?

Yes
No
I don't know

39 Are characteristics that your program identifies as being "IPE" related considered in the admissions process? For example, do you evaluate candidates for team skills or communication? Explain.

40 Please share comments about your program's approach to IPE that you think are important or that we did not capture with this survey.

Appendix F. Chapter 4 Email: Physical Therapist Programs

Dear (Program Director),

My name is Allison Kaczmarek. I am a doctoral candidate in the School of Health Professions at Virginia Commonwealth University. I am conducting research as part of the requirements for completion of my PhD in Health Related Sciences, and I would like to invite your program to participate.

As the Director of the program, I am asking you to please identify the person that you feel best represents the below description, yourself included. Please forward this email to them and cc me at kaczmareka@vcu.edu .

IPE representative: This survey is for the representative most familiar with interprofessional education (IPE) in the educational curriculum of your entry-level physical therapist program.

Dear IPE representative,

> By clicking (or copying and pasting) the Survey Link Below, you have read the study information, conditions of participation and agree to voluntarily participate in this study.
>
> This study was approved by the VCU IRB committee IRB #xxxxx

Your honesty is appreciated.

xxxxxxx survey link

Procedures: The survey takes less than 15 minutes to complete.

Project Title: Current Environment of Interprofessional Education in CAPTE Physical Therapist Education: A National Survey

Principal Investigator: Allison Kaczmarek (kaczmareka@vcu.edu), Carole Ivey (civey@vcu.edu)

Purpose of Project: Provide a contemporary description of IPE within the curricula of CAPTE accredited programs in the United States.

Risks/Benefits: There is no known potential for physical or social harm in this study. Although you may not personally benefit from participation in this study, the hope is that the understanding of IPE in health care curriculum will be advanced.

Confidentiality: Data collection will be confidential. No identifying information will be stored with the survey data. All data will be separated from emails and will be stored in a locked file

cabinet in the PI's office and data stored on a password-protected computer. Concerns of confidentiality can be directed to the PI, as noted above. All data will be reported as group data.

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Participating in this project is voluntary, and refusal to participate or withdrawing from participation at any time during the project will involve no penalty or loss of benefits to which the subject is otherwise entitled. The principal investigator may terminate participation of a subject or the project entirely without regard to the subject's consent. If you have any questions, concerns, or complaints about this study now or in the future, please contact Allison Kaczmarek, 813-493-7481, kaczmareka@vcu.edu or Carole Ivey, civey@vcu.edu.