

Testing the Validity of an Interdisciplinary Education Model for Students in Social Work Education, Health and Social Sciences: A Quasi-Experimental Study

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Abstract

Social workers and other health and human sciences professionals participate in planned, joint activities to serve clients and patients across many fields of practice (O'Hare, 2020; Rumping, Boendermaker, & de Ruyter, 2019). This study aimed to determine the validity of an interdisciplinary educational program developed based on existing literature (Khan & Wells, 2023) and concepts drawn from teamwork (Obiekwe, Obiekwe, & Oiku, 2023) and experiential learning theory (Seaman, Brown, & Quay, 2017). The program consisted of four stages: planning, education, training, and evaluation. 76 students representing 5 disciplines (social work, exercise science, nutrition, sports administration, and nursing) were randomly selected and divided into 2 groups: a control group (N=42) and a working group (N=34). The working group received educational materials on interdisciplinary knowledge and teamwork and participated in a joint experience in which teams of students from the five majors reviewed a case and developed a joint assessment and evaluation. An instrument comprising 18 items was developed to assess students' understanding of interdisciplinary concepts, joint assessment and intervention, and program evaluations. The instrument has an overall reliability (Alpha) of .79. The study results show significant differences between the two groups at the post-test in all four program sections, $t = -5.92$, $p = .001$. Finally, the study indicates a need to develop innovative and practical models to train students in these majors in interdisciplinary knowledge and practice.

Keywords: health, interdisciplinary education model, social work education, social sciences, quasi-experimental study

1. Introduction

Students majoring in social work and health and human sciences are increasingly expected to collaborate with professionals from diverse educational backgrounds (Johnson, Sparkman-Key, & Kalkbrenner, 2017; Ulrich & Breitbach, 2022). Examining existing curricula in social work, health, and human sciences reveals a structural and content gap in integrating interdisciplinary practice and knowledge within curricula grounded in a clear theoretical foundation and rigorous training models (Oudenampsen, Van De Pol, Blijlevens, & Das, 2023). This underscores the urgent need to equip students for future careers in interprofessional collaboration and service delivery in medical and human service fields. Guided by experiential learning theory (Kolb & Kolb, 2017) and informed by the Interprofessional Education

Collaborative (IPEC) model (2023), and experiential theory, this study aims to enhance students' understanding of interdisciplinary collaboration and foster their capacity to work across disciplines to deliver quality services tailored to patients' needs.

The central premise of this study is that students in social work, health, and human sciences majors need the knowledge, skills, and strategies to engage in interdisciplinary communication and practice effectively. The goal is to create a culture where professionals from diverse fields can jointly assess and develop intervention plans to meet patients' needs and enhance treatment outcomes (Oudenampsen, Van De Pol, Blijlevens, & Das, 2023). This study seeks to answer two key questions: (1) What type of educational and training model can effectively support students in understanding the core principles of interdisciplinary education? and (2) What mechanisms can provide students with the practical experience, competencies, and skills necessary for future multidisciplinary collaboration?

2. Literature Review

Students in social work, health, and human sciences programs typically acquire foundational and advanced knowledge within their discipline. Yet, most will ultimately seek employment in diverse settings, including hospitals, nursing homes, rehabilitation institutions, mental health facilities, and sports clubs. Preparing students to collaborate effectively with professionals from diverse backgrounds is essential to maximizing opportunities for interdisciplinary collaboration. Previous research indicates that interdisciplinary approaches have evolved to include distinct models, techniques, and theoretical frameworks. Arons and Schwartz (1993) highlighted the benefits of team-based approaches to addressing complex issues, such as school dropouts, emphasizing the importance of trust, support, and positive attitudes in achieving collective goals. Similarly, Kramer et al. (2003) underscored the significance of interdisciplinary care in healthcare and rehabilitation, where professionals from multiple fields collaborate to develop comprehensive treatment plans for patients' complex needs (Oudenampsen, Van De Pol, Blijlevens, & Das, 2023).

These models emphasize the importance of information sharing, joint problem-solving, and the integration of diverse perspectives. Students participating in interdisciplinary experiences gain firsthand knowledge of how to communicate effectively across disciplines, preparing them for multifaceted research and practice (Smye & Frangi, 2021).

Effective teamwork requires shared responsibility, consensus-building, and coordinated efforts to achieve specific objectives (Dietrichson, Gudmundsson, & Jochem, 2022). Essential components of effective interprofessional education and practice include: (a) sustained collaborative work, (b) diverse assessment tools, (c) data-gathering mechanisms, and (d) timely faculty training (Kotiranta, Tahvanainen, Kovalainen, & Poutanen, 2020). Various challenges hinder the development of interdisciplinary education, including organizational barriers, power dynamics within institutions, resistance to change, and rigid academic policies. These challenges can limit communication and prevent the achievement of desired outcomes (Khan & Wells, 2023; Xu, Wu, Xu, Lu, & Wang, 2022). Several studies have examined the effectiveness of teamwork-based training in educational curricula. For instance, Sawning and Promes (2010) surveyed students to assess the impact of teamwork training, finding that

methods such as lectures, role-play, and human patient simulations significantly improved students' teamwork skills, knowledge, and attitudes.

2.1 Theoretical Framework

The IPEC has been a leader in promoting interdisciplinary collaboration since the 1990s. Its vision emphasizes integrating interprofessional collaboration across fields to improve health outcomes (IPEC, 2023). The IPEC framework identifies key competencies that emphasize integrating knowledge, skills, and values, with a focus on working together to improve equitable health outcomes. In parallel, experiential learning theory (Seaman, Brown, & Quay, 2017) emphasizes learning through active participation in real-world situations (Kolb & Kolb, 2017). Educational and practice-oriented theories emphasize integrating theoretical knowledge with practical experience (Seaman et al., 2017). The IPEC model further supports this notion by emphasizing the need for students in health and human sciences, including those in exercise science, social work, and nutrition, to engage with professionals from other disciplines.

The concept of interdisciplinary practice is critical, but it requires the development of professional competencies (Schot, Tummers, & Noordegraaf, 2020) and the ability to communicate discipline-specific information across professional boundaries (Wellmon et al., 2012). Three key concepts reflecting interdisciplinary collaboration: multidisciplinary, interdisciplinary, and transdisciplinary—as they illustrate varying levels of integration within collaborative efforts. While multidisciplinary collaboration involves parallel work, interdisciplinary collaboration reflects a higher level of interaction and integration among professionals (Driskell, Salas, & Driskell, 2018).

3. Methodology

A quasi-experimental design was employed to assess the effectiveness of the interdisciplinary educational training model used in this study. Participants included students from health and human science disciplines such as social work, exercise science, sports administration, nutrition, and nursing. A total of 76 students voluntarily participated, of whom 42 students were assigned to the control group and 34 students to the practice group. Students were introduced to the study within their classrooms and independently selected whether to join the control or working group. No incentives were offered for participation.

This study was reviewed and approved by the Internal Review Board of an educational institution. Students voluntarily participated in the study. The study instrument was developed based on existing knowledge and conceptual frameworks within the literature, as well as previous measures of interdisciplinary training (Wellmon, Gilin, Knauss, & Linn, 2012). Additionally, the study instrument was grounded in the competencies outlined in the IPEC module (IPEC, 2023). The IPEC identifies four core competencies for interprofessional collaborative practice: values and ethics, roles and responsibilities, communication, and teamwork (IPEC, 2023).

The conceptualization and operational definitions of the study variables are as follows:

- **Concepts of Interdisciplinary/Multidisciplinary:** This variable involves using

critical thinking to integrate various perspectives and apply them to a single topic. The variable emphasizes cultural diversity, which was adopted as part of the IPEC value section. This variable consists of three items, with a Cronbach's alpha of 0.85.

- **Team Interaction and Skills:** This variable refers to the belief that team-based sessions are an effective method for skill development and interaction. It focuses on teamwork to achieve specific goals. The IPEC emphasizes applying roles, skills, and responsibilities to ensure quality service. The variable includes six items, with a Cronbach's alpha of 0.71.
- **Collaboration and Joint Work:** This variable emphasizes open communication among professionals and specialists to address various aspects of a topic and develop shared assessment and intervention activities. The IPEC framework highlights the promotion of a common understanding of goals and active listening. The variable consists of five items, with a Cronbach's alpha of 0.83.
- **Evaluation of Interdisciplinary Practice:** This variable assesses the outcomes and benefits of interdisciplinary learning and training. It includes items that reflect the value and benefits of teamwork activities (IPEC, 2023). The variable consists of three items, with a Cronbach's alpha of 0.70.

Finally, the study instrument, comprising 18 items, was measured on a Likert scale from 1 (strongly disagree) to 5 (strongly agree), and exhibited an overall Cronbach's alpha of 0.79.

3.1 The Experiment

Both members of the control and practice groups participated voluntarily in the study and were assessed at the pre-stage, 1 month before the experiment, using the study instrument. At the post-stage, both groups were re-evaluated using the same instrument after the intervention (the educational program). While the practice group participated in interdisciplinary education and training, the control group did not. The following model outlines the process of implementing the study:

3.2 The Model

The interdisciplinary education/training model presented in this study is divided into four interconnected stages, designed to foster continuity and extend activities throughout the project:

A. Planning and Organization Stage

The project began by forming an organizing team responsible for laying the foundation, including identifying goals and objectives, establishing a timeline, recruiting students from five different educational units, selecting reading materials, and preparing the training case. One faculty member from each participating unit volunteered to act as a project supervisor, and the organizing team monitored the training and participated as supervisors during practice sessions.

B. Education Stage

The organizing team selected reading materials relevant to interdisciplinary education and

training. These materials, derived from existing literature, were shared with students who opted into the project. The content included four main lessons:

1. **Concepts and Definitions:** This section provides an overview of relevant concepts like multidisciplinary, cross-disciplinary, and interdisciplinary education, alongside the characteristics and strategies of each approach.
2. **Teamwork:** Theories, models, and the value of teamwork were discussed, emphasizing practical application.
3. **Collaboration and Communication Across Disciplines/Professions:** Definitions of collaboration and communication, including the benefits and challenges of maintaining quality communication among diverse disciplines.
4. **Joint Needs Assessment and Planning:** Students learned how to develop joint assessments to address client or patient needs and create plans incorporating multiple perspectives.

C. Practice Stage

The practice session, which lasted over 2.5 hours, enabled students to engage with a case prepared by the organizing team. The practice session included three parts:

- a) Welcome and Orientation: Students were introduced to the session, seated at tables with representatives from each discipline, and provided with the session agenda.
- b) Discussion Session: Students shared and discussed the case, working toward a joint assessment plan. The completed plan was emailed to the organizing team.
- c) Final Intervention Plan: After a break, students viewed an overall assessment of the case prepared by the organizing team and used this assessment to develop an intervention plan. Each group submitted its plan following team discussions. (Table 1)

Table 1. The Interdisciplinary Practice Case

Jessica is a 19-year-old freshman at a community college in Southern Illinois. Four months ago, she had a car accident caused by her lack of attention while driving, as she was texting messages while driving 62 miles per hour on a local road. She suddenly lost balance in her car as she noticed a fast-incoming truck. As a result, her vehicle hit a tree, and she was seriously injured. Upon the arrival of the emergency vehicle and carrying Jessica from her car, she was transported by plane to an emergency room in STL. Her immediate medical assessment indicated her suffering from a fractured left clavicle, two fractured ribs, and traumatic brain injury, including intracranial hemorrhage, which caused her to lapse into a coma for 10 days. Jessica was released from the hospital to a rehab center in STL, where she spent 6 weeks of care.

Jessica returned from STL and has suspended her education this semester. She stays with her mother, stepfather, and three half-siblings (Justin, 14; Emily, 11; and Lilli, 9). She is isolated from the family and has limited interaction. She always stays in her room, and her mother is

the only person who talks to her. She does not like to share her feelings, her mother states. Jessica's mother notes that Jessica is irritable and has angry attributes over minor issues since the accident. Jessica seems worried about her health due to her limping and using a walker. Jessica has no friends and avoids contact with family members. For example, she refuses to eat meals with the family and avoids sitting with family guests. Regarding her nutrition status, Jessica suffers from weight loss and a decreased appetite. Her diet consists of easy-to-consume liquids like juice, canned soups, and oral nutrition supplements. She will often snack on chips or crackers after dinner. While hospitalized and in rehab, she lost about 15-20 lbs.

Jessica consumes all her meals in her room and does not eat the meals her family prepares. She reports staying up late on her phone and scrolling social media until 1:00-2:00 am. She complains of being constipated. Jessica has limited mobility, and her movement is unbalanced. She complains of pain in her left knee and is dependent on pain medication. She is disinterested in completing the exercises the specialists at the rehab hospital prescribed for her. One reason is that practicing these exercises makes her feel exhausted. She also complains of weakness when she attempts the exercises and often states, "I cannot do these." She stays in her chair most of the day and tries to limit her movement, placing all her electronic equipment close to her. Since she arrived home and has been entirely passive, she has begun to experience lower back pain and has some swelling in the lower limbs.

D. Evaluation Stage

After the practice session, students completed an evaluation form assessing the educational and practice components. This evaluation addressed interdisciplinary education, teamwork, and joint planning. The results were shared with students. (Table 2)

Table 2. Assessment Goals and Intervention Plan – ID Case

#	Problem/Concern	Goal	Intervention Activities	Modalities/
1.	Weight loss & Nutrition Deficiency	- Increase caloric needs to Mufflin-St-Joer 1,570 Calories a day	- Incorporate choices for better caloric intake to improve BMI, such as possible fruits and vegetables. - Increasing protein to aid in healing, with a starting point (45-47) grams of protein per day	
2.	Lack of body exercises	- Increase activities and	- Facilitate the start of physical	

	daily exercises	and Occupational Therapy function, balance, and mobility).
		- Educating families on the role they play in rehabilitation - Using compression stockings and elevating legs to improve edema - Jessica will be scheduled for more typical movements, such as extended daily walks.
3.	Withdrawal and depressive symptoms	- Decrease symptoms and address withdrawal - Jessica will be invited and encouraged to address her feelings by preparing a diary to write her feelings and thoughts about herself, others, and life.
4.	Avoidance of social relationships	-Enhance client's adjustment - Jessica will identify issues and activities that will be part of life to open communication with others. - Educate the family on how to regulate her emotions and help her work through them.
5.	Lack of motivation	- Increase motivation and interest in life experience - Identify and address issues that may block motivation. - Set activities and tasks to enhance motivation: - Break tasks into manageable chunks. - Jessica will document positive accomplishments - She gives herself credit for the things completed. - She will be moving to more advanced tasks and monitoring progress.

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| 6. Suspended education | - Enhance interest in reconnecting with school | - Review and help Jessica explore options and targets for education

- contact an education advisor regarding the continuation of education |
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4. Results

Descriptive analysis revealed 75 participants: 45 (56%) in the control group and 33 (44%) in the practice group. The participants' gender distribution included 23 males (30.7%), 50 females (66.7%), and one nonbinary participant (1.3%). The average age of participants was 20.29 years, with a standard deviation of 10.39. Students represented five majors: 23 (30.7%) from social work, 15 (20%) from exercise science, 14 (18.7%) from sports administration, 15 (20%) from nutrition, and 8 (10.7%) from nursing.

Correlation analysis demonstrated significant associations among the study variables, indicating the instrument's reliability and stability. For example, the interdisciplinary concepts variable was correlated with other variables, including interdisciplinary skills ($r = 0.282$, $p = 0.014$), joint work ($r = 0.265$, $p = 0.022$), and evaluation ($r = 0.487$, $p = 0.001$). (Table #3)

Table 3. Correlation Analysis

	Pearson Correlation	Concepts	Interdisciplinary Skills	Joint plans	Evaluation
Concepts	r. p.	1			
Interdisciplinary Skills	r. p.	.282* .014	1		
Joint plans	r. p.	.265* .022	.678 <.001	1	
Evaluation	r. p.	.487** <.001	.540** <.001	.600** <.001	1

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Independent t-tests revealed no significant differences between the control and working groups at the pre-stage ($t = -0.327$, $p = 0.372$). However, significant differences were observed at the post-stage ($t = -5.9$, $p = 0.001$), with the working group showing a marked increase in mean scores. (Table #4)

Table 4. T- Test

Pre				Post			
Group	N	Mean	SD	Group	N	Mean	SD
Control	42	141.09	21.27	Control	42	139.00	22.73
Working	32	142.57	16.74	Working	43	165.37	12.38

Test	T	Df	Sig. one side P.	Test	T	df	Sig. one Side p,
Total Score	-.33	73	.37	Total Score	-5.92	72	<.001

5. Findings

The interdisciplinary training and education intervention model provided strong empirical evidence supporting the program's effectiveness in enhancing students' abilities to communicate, collaborate, and work across disciplines. The findings clearly answer the study questions. First, students learned from the presented model, which included components of interdisciplinary learning: “content, team interaction, collaboration, assessment, and intervention planning.” Regarding the second question, findings suggest that participating in a structured interdisciplinary training experience has enabled students to acquire the knowledge and skills necessary to work across disciplines and specialties, making them applicable to specific fields such as healthcare. These findings align with the goals of the IPEC (2023) and the principles of experiential learning theory (Seaman, Brown, & Quay, 2017). In particular, one of the study’s contributions is the importance of planning and building a model that is applicable for a comprehensive learning experience, including theoretical and practical elements, i.e., reviewing concepts and literature, building a case study that includes relevant aspects of practice, and utilizing teamwork methods to engage in discussion across majors to prepare a joint assessment and intervention plan.

6. Limitations of the Study

While the study design aimed to assess the impact of interdisciplinary training, the quasi-experimental design limited its ability to establish causality due to the non-random assignment of participants to the control and working groups. This reduced the generalizability of the findings to some extent. Replication of the study can ensure random selection, thereby establishing concrete causality.

7. Implications

The study underscores the importance of identifying effective interdisciplinary training methods for students in social work and health and human sciences majors. Preparing social work, health, and human sciences students to gain knowledge and skills for future careers in health care should be built on theories and practice models that provide them with opportunities to engage with and apply concepts of teamwork, integrative, and diverse curricula supported by empirical evidence. By emphasizing interdisciplinary practice, students will be better prepared to deliver comprehensive care and services, underscoring the need to adjust the curriculum to include cross-disciplinary learning.

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Informed Consent

Obtained.

Provenance and Peer Review

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Data Availability Statement

The data that support the findings of this study are available on request.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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