Journal of Interprofessional Education & Practice 9 (2017) 41–50

Contents lists available at ScienceDirect

Journal of Interprofessional Education & Practice

journal homepage: http://www.jieponline.com

Comparing change in perceived achievement of students in an interprofessional class: The effectiveness of participatory versus direct instruction

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ARTICLE INFO

Article history:
Received 25 October 2016
Received in revised form
10 July 2017
Accepted 1 August 2017

1. Introduction

Effectiveness and sequencing of instruction plays a major role in achieving learning outcomes in interprofessional health education.[1–3] Although there are lecture based discussions where the content is designed to teach team-based strategies, a learning approach where teamwork is a part of the actual instruction would seem to be a more valid approach. Unfortunately, empirical evidence to support such a statement is currently lacking in the literature. The aim of this study was to compare and explore the overall students' perceived achievement change scores of participatory instruction versus direct instruction approaches to learning interprofessional content in the form of the core competencies for interprofessional education identified by the Institute of Medicine (IOM). Greiner and Knebel[4] described the five IOM core competencies to include providing patient-centered care; working in interdisciplinary teams, applying quality improvement, employing evidence-based practice, and utilizing informatics (p. 4). These areas came from knowledge identified as critical to improving patient safety and quality of care through cooperation in health professions dating back to efforts in the 1970s. Planning for the current study began in 2011 and used the IOM competencies as a base for instruction. The idea was to find critical areas of overlap between health professions as suitable topics for an interprofessional class. In 2011, the Interprofessional Education Collaborative (IPEC) published a set of intperprofessional competencies designed to expand greatly on the interdisciplinary teams portion of the IOM competencies. These competencies were then expanded to included population health and an increased level of specificity in 2016. Although the IPEC competencies provided guidance for interprofessional education, knowledge at the time of this study as well as an emphasis on finding content areas lending themselves to direct and participatory instruction were foci for the current multi-year study.

1.1. Participatory and direct approaches

1.1.1. Direct instructional approach

On the most basic level, interprofessional education could involve a traditional teaching format with students from different health professions in the same classroom. Within the same space, students can participate in teacher directed activities where prompts guide the learners in the classroom to consider different perspectives and even engage in guided discussions from each other. The key element would be the teacher directed nature of all interactions, with an emphasis on content learning. The direct instruction approach is the most traditional lecture method. Kirschner, Sweller, and Clark[5] defined direct instruction as providing information that fully explains the concepts and procedures that students are required to learn as well as learning strategy support that is compatible with human cognitive architecture (p. 75). Kirschner et al.[5] noted direct instruction works better with a more homogeneous population. However, Felder and Brent[6] noted that students who receive direct instruction master the expected knowledge and skills better. The burden is then on an instructor to be able to develop content cycled to diverse students with widely different levels of clinical

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http://dx.doi.org/10.1016/j.xjep.2017.08.001
2405-4526/

experiences. For example, a single instructor could be addressing first year medical students who have no clinical experience and Nursing students ready to graduate with significant clinical experiences already. Kirschner et al.[5] emphasized that guided (direct) instruction is superior in the context of human cognitive architecture, expert-novice differences, and cognitive load (p. 75); however, it is very challenging when the learner's prior knowledge is high and when students have misconceptions or incomplete or disorganized knowledge,[5] p. 84). A challenge in interprofessional education is getting past students wide variety of knowledge and experiences with other health professions. One of the core competencies involves an accurate understanding of the scope of other professions.

Direct instruction approaches are efficient in the sense of being able to accommodate large number of students in a class, so that in principle all health profession and medical students could be exposed to the same content through the same instructional approach regardless of size or makeup of classes. With challenging schedules and different enrollment numbers across major programs, direct instruction approaches may be expedient and are not predicated on uninteresting and uninspired teaching methods. The question remains whether a direct instruction approach would be optimal in achieving desired learning outcomes, particularly when the end-goal is interprofessional practice (IPP).

1.1.2. Participatory instructional approach

The participatory learning approach focuses on a participation 'plus' pedagogy model; knowledge and insight are from diverse fields.[7] According to Kenny and Wirth,[8] participatory learning practices are more descriptive than prescriptive in nature; politics, negotiation, collaboration, advocacy, and change are the perspectives.[9] Skills training in health procedures may work well in single profession classrooms, but an interprofessional classroom requires an approach allowing for integration across diverse backgrounds.

Bodner, Metz, and Casey[10] noted, student-driven participatory approach should expose the students to a topic for understanding and then provide opportunities for editing their work: posing contradictions, presenting new information, asking questions, encouraging research, and/or engaging students in inquiries designed to challenge current concepts,[11] p. ix). This is not unlike real-world interprofessional encounters where different health professionals need to discuss their intersections in best serving individual patients where each case is different.

Brooks and Brooks[11] provided five overarching principles evident in participatory approach. These principles are a) instructors seek and value their students' points of view; b) classroom activities challenge students' suppositions, c) instructors pose problems of emerging relevance, d) instructors build lessons around primary concepts and big ideas, and e) instructors assess student learning in the context of daily teaching,[11] pp. ix-x). An advantage of these principles is that they promote an equal value of students' views regardless of their backgrounds or major or area of study. In interprofessional education the culture created by this kind of atmosphere is consistent with respect for patients and professionals in a way that supports teamwork. The question remains about the effectiveness for this approach in learning identified core competencies.

This study answered two questions: 1) does an interprofessional class taught using participatory instruction show a greater gain on overall perceived achievement change scores than the class taught using direct instruction; and 2) how do interprofessional students' journal reflections help explain the quantitative results relative to core IOM competencies?

2. Methods

2.1. Quantitative research design

The research design was quasi-experimental nonequivalent control group design. The participant assignments into participatory instruction group (the experimental group) and direct instruction group (the control group) has been illustrated (see Fig. 1). Both groups were given instructor-developed Institute of Medicine Self-rated Knowledge Achievement (IOMSKA) pre-survey and a post-survey. The two groups were not randomly assigned but were from intact classes.

According to Cook and Campbell,[12] nonequivalent means that the expected values of at least one characteristic of the groups are not equal even in the absence of a treatment effect (p. 148). In this case, the nonequivalent referred to the comparison of students in the participatory instruction (experimental) group who were taught and those in the direct (control) group who were not taught. We could not assume pre-treatment equivalence between the control group and the experimental group. Cook and Campbell note that understanding of the nature of the group nonequivalence implies understanding of the selection process and how it differs from being random.

2.2. Qualitative research design

2.2.1. A multiple case-study design

A multiple case-study design[9] was used for collecting and analyzing the qualitative data. According to Cohen, Manion, and Morrison,[13] multiple case-study designs involve comparative case-studies within an overall piece of research or replication case studies,[13] p. 291). In this study, there were six (6) selected student-cases, consisting of three (3) cases of two nursing students and an audiology student from direct instruction group (i.e., literal replications-cases selected from control group were identical) and three (3) cases of two music therapy and one speech language therapy students from participatory instruction group (i.e., theoretical replications-cases selected from experimental group were identical) (see Table 1). We did replication so that we would have two different groups of cases for comparison. The selection criteria used was that a student who had z-score of initial perceived achievement score fell above +2 or below −2 standard deviation (extreme or unique case) was a case-study.

2.3. Population

Target population for this study was all of the graduate and undergraduate students who completed an Interprofessional Health Care in Rural/Underserved Population course in a mid-western university campus from fall 2013 semester to summer 2015. A total of 93 students participated. After removing missing cases, the final sample for the quantitative data analysis was 90 medical and related health science professionals, consisting of 40 students (mean age, 24.28 years) who received participatory instruction from the third to fifth cohort groups and 50 students (mean age, 23.02 years) who received direct instruction from the sixth to eighth cohort groups. The cohort groups stretched over the fall, spring, and summer terms. The sample for qualitative journal reflection data consisted of three students from each instructional group.