The use of standardised patients in interprofessional education curriculum delivery: A causal-comparative study of student feedback

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Abstract

Introduction: Interprofessional education (IPE) has emerged as an essential component of training for students in the health and social care professions. Standardised patients (SPs) have also been developed as an important simulation-based learning modality in health and social care curricula due to the authenticity and realism of the patient or client encounter that may be replicated. Reports evaluating the use of SPs across an IPE curriculum in the health and social care professions are limited.

Methods: This evaluation study used a causal-comparative research design to examine the effect of SPs as an instructional method in an IPE curriculum. Evaluative outcomes of the educational experiences of students attending 37 IPE learning modules offered between Autumn 2006 and Winter 2012 were analysed.

Results: A total of 6,561 students from seven health and social care professions rated the usefulness of the instructional methods used in each module through post-module surveys. Students consistently rated SPs as significantly more useful than other instructional methods, and overall mean satisfaction scores were significantly higher for IPE modules that incorporated SPs.

Conclusions: This study's findings demonstrate the positive effect that SPs can have on the learning experiences of health and social care students. By Using SPs in IPE curricula, the authenticity of classroom-based interprofessional learning experiences can be enhanced and lead to more positive IPE learning outcomes.

Keywords: interprofessional education, standardised patients, causal-comparative evaluation.

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Introduction

The World Health Organisation defined interprofessional education (IPE) as students (or practitioners) from two or more professions learning about, from and with one another to enable effective collaboration and improve health outcomes, and recommends IPE at both pre- and post-licensure levels of health professional education (WHO, 2010). Emerging evidence suggests that IPE enables effective collaborative practice by raising awareness of roles and responsibilities, promoting interprofessional communication and better preparation for interprofessional practice, fostering respect among the health professions and enhancing a patient-centred ethic in practice (Hammick, Freeth, Koppel, Reeves, & Barr, 2007; WHO, 2010). Effective IPE has been characterised by learning experiences that are viewed by learners as having direct relevance to current or future practice (Oandasan & Reeves, 2005; Parsell & Bligh, 1998). Case-based learning has been identified as an effective teaching strategy for IPE, as it fosters interactive learning and enables students to learn from one another (Barr, 2002; Curran, Sharpe, Forristall, & Flynn, 2008). The clinical problem serves as the focus for facilitating interprofessional learning around how to work together, and simulates the clinical practice setting.

Many studies have reported positive outcomes from the use of standardised patients (SPs) in health professions education (Bornais, Raiger, Krahn, & El-Masri, 2012; McGuinness, 2011; Ragan, Virtue, & Chi, 2013; Weaver & Erby, 2012; Yoo & Yoo, 2003). SPs are lay individuals who have been carefully coached and trained to portray a patient in a consistent manner (Holmboe & Hawkins, 2008). They have become an integral part of both teaching and assessment in health professional education and have been used for simulating the clinical encounter and enabling valid and reliable assessments of clinical competencies.

Recent reports suggest that using SPs in health professions education promotes realistic, interactive learning for students. In one study, Bornais et al. (2012) used a comparative design to examine the effectiveness of SPs in improving health assessment performance among undergraduate nursing students. They found that nursing students receiving health assessment education using SPs achieved higher objective structured clinical examination (OSCE) mean scores than students receiving traditional health assessment education. Yoo and Yoo (2003) compared the effects of traditional versus SP instructional methods on nursing students and observed significant gains in clinical judgement, clinical skill performance and communication skills for students instructed using the SP method. Ragan et al. (2013) also described the benefits of using standardised clients in the assessment of practice performance for pharmacy students. According to Ragan and colleagues, student reports of high satisfaction with the standardised client experience suggest that standardised clients provide students with meaningful, practical experience and, further, show promise as a means of discriminating between students who are adequately prepared for clinical practice and those who are not.

Although the literature on IPE is limited, there is a suggestion that SPs are a valuable instructional method in IPE curricula. In one study, Watt-Watson et al. (2004) found that students' ratings of participation in an IPE activity on pain management were highest

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for patient-related content and small-group discussions with SPs. Westberg, Adams, Thiede, Stratton and Bumgardner (2006) have described the use of interprofessional SP experiences (ISPEs) in which students from various health professions were required to work as a team to develop care plans for SPs. They found that ISPEs expanded students' perspective regarding the roles of other healthcare professionals and gave students experience in developing quality patient care plans. Wamsley et al. (2012) also used ISPEs in interprofessional learning exercises with health profession students and observed significant gains in students' knowledge about the roles of other healthcare professionals, increased comfort working collaboratively in interprofessional teams and improved attitudes towards team value and efficiency.

The benefits of using SPs as an instructional method in health professions education curricula have been well established, but the evidence supporting the use and value of SPs in IPE activities is less comprehensive. Further study is needed to evaluate the effectiveness of SPs as an instructional method in various health education settings (Weaver & Erby, 2012). The purpose of this study was to evaluate the effectiveness of SPs as an instructional method in an integrated health sciences IPE curriculum. The specific objectives of the study were to: (1) evaluate health professional students' satisfaction with the use of SPs as an instructional method and (2) conduct a retrospective, causal-comparative analysis of traditional learning methods in IPE (e.g., case-based learning) and the effect of adding SPs to the learning experience.

Methods

The IPE curriculum

At Memorial University, pre-licensure level IPE has been guided by a curriculum framework (Curran & Sharpe, 2007) that facilitates interprofessional learning across all developmental stages of a health professional (Miller, Freeman, & Ross, 2001). The approach supported by this framework is one of exposing students to elements of IPE at an early stage in their training and then continuing throughout the curriculum with regular reinforcement. At the pre-clinical stage, a series of interprofessional learning modules, ranging from 2.5 to 4 hours in duration, have been introduced across the curriculum for health professional students studying in the professions of medicine, nursing, pharmacy, social work, psychology and kinesiology. These modules introduce students to interprofessional collaborative approaches across a variety of patient populations and issues. Modules were designed in nine clinical areas: *patient safety*, *collaborative mental health, professionalism in interprofessional teamwork, HIV/AIDS care, health and wellbeing of children, geriatric care, health promotion, newborn care* and *rehabilitative care*. The modules are designed using a patient-centred, case-based learning methodology, and where SPs are included, they are the focal point for the cases.

Figure 1 depicts two different models of SP use in these IPE modules. In the interprofessional model, students meet with the SP as an element of the case-based, small group learning activity. In the uniprofessional approach, students meet with SPs separately within their own uniprofessional groups and then come together in interprofessional

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small groups to formulate a holistic and patient-centred interprofessional care plan. In all modules, the learning process begins with students receiving the patient case history up to two weeks before the small groups meet face-to-face. This is normally facilitated online, where students discuss the issues emerging from the case. For those modules that featured an SP, the students meet face-to-face in their small groups and discuss their approach to interviewing the patient before their SP encounter. Following the SP encounter the students formulate an interprofessional care plan.

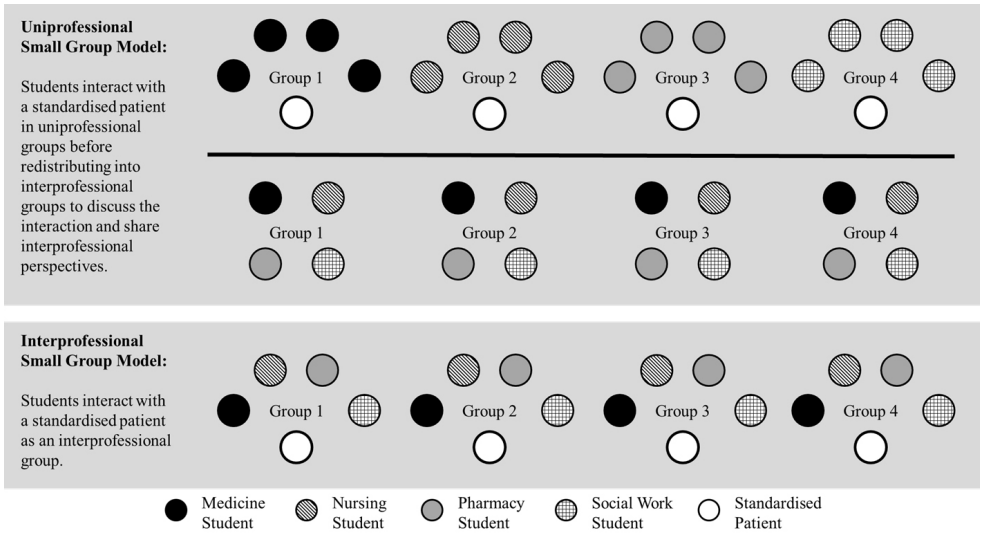

Figure 1. Models of SP use in interprofessional learning.

Study design

This study follows a causal-comparative design, which involves systematic investigation of the impact of independent variables that are not directly manipulated by investigators (Schenker & Rumrill, Jr., 2004). Studies using a causal-comparative approach often involve the use of pre-existing group approaches, where participants self-select into comparison groups through a process that is unrelated to the research goals (Fraenkel & Wallen, 2003). In the case of the current study, the use of SPs is the independent variable, because the decision to use SPs in an IPE module was based on logistical parameters and curriculum learning objectives, not on study objectives. Students' profession and the module topics were also key variables that were not manipulated in this study. Differences between professions, years and modules (delivered with and without SPs) were assessed using descriptive statistics, independent and paired-samples t-tests, and one-way and repeated measures analyses of variance (ANOVA). The main difference examined was student satisfaction with the interprofessional learning experiences, with and without the use of SPs as an instructional modality.

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Participants

Participants in this study were medicine, nursing, pharmacy, social work, psychology, police studies and kinesiology students who completed evaluation surveys immediately after the conclusion of the face-to-face components of the IPE learning modules offered between 2005 and 2012. Students' year of study ranged from first to fourth; each module featured a different student mix of professional disciplines and years of study that varied from year to year.

Materials

Ethics approval for this project was granted by the Health Research Ethics Board, Memorial University of Newfoundland. Students' feedback concerning the delivery and impact of the IPE learning modules was collected using an evaluation survey developed by research staff at Memorial University's Centre for Collaborative Health Professional Education. The survey includes demographics and a student feedback section comprising up to 17 five-point Likert scale items (1 = strongly disagree to 5 = strongly agree). The feedback section of the evaluation survey included a series of items that specifically asked students to indicate their agreement with statements corresponding to each of the instructional methods used in module delivery.

Evaluation surveys were distributed to students immediately after the completion of each IPE learning module. In analysing evaluation survey data in the current study, we used a retrospective, causal-comparative approach. This involved analysing student evaluation ratings longitudinally before and after SPs were introduced in the IPE modules, and comparing these ratings with IPE modules that did not incorporate SPs.

Results

Between January 2006 and August 2012, 37 modules were offered, with 16 of these modules utilising SPs as an instructional method. These 16 SP modules were delivered in four topic areas: *patient safety, collaborative mental health, professionalism in interprofessional teamwork* and *HIV/AIDS*. During this period, an overall total of 6,568 evaluations were collected from students attending all modules, representing 85.4% of all module attendees over that period. Seven of the collected evaluations were excluded from the analysis because they did not provide enough information to calculate an overall mean satisfaction score, yielding an overall sample size of 6,561. Of this overall sample, 2,961 evaluation surveys (45.1%) contained feedback items pertaining to the usefulness of SPs in facilitating interprofessional learning. Response rates for each individual module ranged from 59.3% to 97.5%, with an average response rate of 84.3%. Across all years, overall student participation in the evaluation of the IPE modules that incorporated the use of SPs as an instructional method ranged from 548 in the *patient safety* module to 908 students in the *collaborative mental health* module (see Table 1).

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Table 1
Student Participation in IPE Modules (Number of Students Attending)

Module	Year of Module							Overall (Module)
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	
Patient safety					166	194	188	548
Collaborative mental health		*	*	144	252	261	251	908
Professionalism in interprofessional teamwork		*	*	127	269	231	275	902
HIV/AIDS	75	86	87		*	162	193	603
Overall (Year)	75	86	87	271	686	848	907	2,961

* Indicates a year in which the module was offered but did not use an SP as a part of its curriculum.

Table 2 summarises the mean scores for students from each profession for the feedback item: *"Standardised patient role play was useful in facilitating my learning."* A series of one-way ANOVAs were conducted to compare the mean SP interaction scores for each module between participating professions. Overall, mean SP interaction scores differed by profession ($F(6, 2{,}712) = 10.22$, $p < .001$), with Tukey's HSD post-hoc comparisons indicating medical students reported significantly lower scores than nursing, pharmacy and social work students. Within-module analysis also indicated similar findings, with medical students reporting lower mean satisfaction scores than students in other professions for *collaborative mental health* ($F(4, 887) = 5.12$, $p < .001$), *professionalism* ($F(6, 886) = 6.76$, $p < .001$) and *HIV/AIDS* modules ($F(2, 398) = 9.54$, $p < .001$).

Table 2
Mean Satisfaction for SP Interaction Scores (and Standard Deviations) by Profession and Module

Profession	Module				Overall (Profession)
	Patient safety	Collaborative mental health	Professionalism in interprofessional teamwork	HIV/AIDS	
Medicine	4.25 (.718)	4.50 (.597)	4.01 (.937)	4.29 (.852)	4.30 (.778)
Nursing	4.17 (.253)	4.67 (.605)	4.28 (.771)	4.54 (.573)	4.43 (.706)
Pharmacy	4.29 (.671)	4.67 (.525)	4.56 (.674)	4.66 (.477)	4.55 (.615)
Social work	-	4.70 (.572)	4.42 (.742)	-	4.55 (.679)
Psychology	-	5.00 (.000)	4.40 (.894)	-	4.67 (.707)
Human kinetics and recreation	-	-	4.45 (.768)	-	4.45 (.768)
Overall (Modules)	4.22 (.711)	4.63 (.575)	4.32 (.794)	4.47 (.693)	-

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Table 3 summarises all students' overall mean usefulness scores for the various instructional methods used in the IPE modules. Mean usefulness scores for SPs and other associated curriculum delivery components, such as uniprofessional and interprofessional group discussion, were highest. Mean usefulness scores for SPs ranged from 3.68 in the 2007/08 academic year to 4.52 in 2009/10, with an overall mean score of 4.29. Overall mean scores for uniprofessional group discussion and interprofessional group discussion were highest, at 4.53 and 4.63, respectively.

Table 3
Overall Mean Satisfaction Scores for Methods of Curriculum Delivery by Academic Year

Method of Curriculum Delivery	Year							Overall Mean
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	
e-Learning videos	-	-	3.24	-	3.62	3.16	3.22	3.30
e-Learning discussion activities	3.48	3.59	3.39	3.84	4.04	4.05	3.97	3.63
e-Learning materials, general	3.51	3.64	3.49	3.82	3.98	3.92	3.88	3.75
Case studies	3.85	3.87	3.72	4.20	4.28	4.30	4.29	4.03
Uniprofessional group discussion	-	-	-	4.56	4.51	4.56	4.52	4.53
Interprofessional group discussion	-	-	-	4.69	4.64	4.61	4.62	4.63
Small group discussion	4.01	3.96	3.82	3.98	4.25	4.28	4.20	4.05
Standardised patients	4.21	4.40	3.68	4.45	4.52	4.45	4.30	4.29
Panel/large group discussion	3.93	3.81	3.78	4.11	4.31	4.30	4.12	4.01
Video conferencing	3.61	3.60	3.50	3.87	3.78	3.72	3.51	3.61

Table 4 summarises the results of within-subject ANOVAs of the mean scores for instructional methods within each module that featured SPs. Each of the four ANOVAs was significant, indicating that within each area-specific module, student ratings were significantly higher for some instructional methods than for others. Follow-up analysis using Tukey's HSD revealed that SPs were generally rated more favourably than other instructional methods. For the *patient safety* module, SPs were rated significantly more useful than e-learning materials, and in the *collaborative mental health* module, SPs were rated significantly more useful than all other instructional methods, except for the interprofessional group component. For both the *professionalism in interprofessional teamwork* module and *HIV/AIDS* module, SPs were rated as significantly more useful than any other instructional method.

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Table 4
Mean Usefulness Ratings for All Methods of Curriculum Delivery by IPE Module

Module	Method of Curriculum Delivery									Within-subjects ANOVA Results
	e-Learning discussions	e-Learning materials	Case study	Uniprofessional group	Interprofessional group	Standardised patients	Small group	Panel/large group	Video conferencing	
Patient safety (n=533)	-	3.97 (.753)	4.31 (.530)	-	-	4.20 (.729)	4.40 (.581)	4.21 (.733)	-	$F(4, 2{,}128) = 49.70$, $p = .000$
Collaborative mental health (n=868)	-	3.95 (.850)	4.29 (.607)	4.53 (.611)	4.63 (.545)	4.62 (.590)	-	-	-	$F(4, 3{,}468) = 309.17$, $p = .000$
Professionalism in interprofessional teamwork (n=412)	-	4.05 (.841)	-	-	-	4.27 (.784)	4.16 (.728)	4.07 (.807)	3.82 (.975)	$F(4, 1{,}644) = 30.69$, $p = .000$
HIV/AIDS (n=365)	3.60 (1.053)	3.48 (.939)	4.08 (.726)	-	-	4.46 (.704)	4.15 (.809)	4.07 (.872)	-	$F(5, 1{,}820) = 128.44$, $p < .001$

Table 5
Mean Overall Satisfaction Scores by Year for All Modules

Module	Year							Mean without SPs	Mean with SPs
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12		
Patient safety	-	-	-	-	4.23 *	3.92 *	4.11 *	-	4.08 *
Collaborative mental health	-	3.85	3.61	4.45 *	4.45 *	4.38 *	4.36 *	3.74	4.40 *
Professionalism in interprofessional teamwork	-	3.79	3.74	4.11 *	4.22 *	4.22 *	4.04 *	3.77	4.15 *
HIV/AIDS	3.67 *	3.74 *	3.84 *	-	4.07	4.14 *	4.01 *	4.07	3.94 *
Health and well-being of children	3.74	3.44	3.81	4.09	4.15	4.13	4.24	3.94	-
Geriatric care	-	3.76	3.58	-	-	-	-	3.68	-
Health promotion	-	3.50	2.79	3.43	-	-	-	3.14	-
Newborn care	-	3.75	3.94	-	-	-	-	3.85	-
Rehabilitative care	-	3.48	3.65	-	-	-	-	3.67	-
Overall	-	-	-	-	-	-	-	3.74	4.17 *

* Indicates a module that involved SPs in its delivery.

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Table 5 summarises the overall mean satisfaction scores for all 37 IPE modules offered between the academic years 2005/06 and 2011/12, including modules that did not incorporate the use of SPs as an instructional method. An independent samples t-test was used to compare the overall mean satisfaction score for IPE modules incorporating SPs to that of modules that did not involve SPs. Results from the t-test confirmed that modules involving SPs as an instructional method received significantly higher overall satisfaction scores than those that did not ($t(6,559) = -27.22$, $p < .001$).

Independent samples t-tests were also conducted to compare the mean satisfaction scores for IPE modules both before and following the introduction of SPs as an instructional method. For the *collaborative mental health* module, overall satisfaction scores were higher in those years that featured an SP than for those that did not (M = 4.40 vs M = 3.85; $t(1,290) = -21.06$, $p < .001$). Similarly, for the *professionalism* module, students reported higher satisfaction in years SPs were used than when they were not (M = 4.15 vs 3.77; $t(1,387) = -11.60$, $p < .001$).

Discussion

The findings from the current study suggest that SPs can be successfully integrated within a case-based learning strategy in a pre-licensure IPE curricular approach. Interprofessional learning activities that incorporated SPs were rated more favourably by students in terms of overall satisfaction with interprofessional learning experiences and in comparison with other types of interprofessional learning methods. Before and after satisfaction scores for IPE modules that introduced SPs also demonstrated an increase in student satisfaction scores. Students report that SPs are more realistic in portraying actual clinical experiences, and SPs appear to be particularly useful in fostering interprofessional interaction and dialogue between students from the various health professions.

The literature to date suggests that the use of SPs in IPE leads to improved student learning outcomes (Wamsley et al., 2012; Watt-Watson et al., 2004; Westberg et al., 2006). Students tend to appreciate opportunities to learn about the roles of different professions in the assessment and management of patient care. Moreover, students often describe SP-facilitated learning as a more authentic and realistic approach to learning, compared to other alternatives. By utilising SPs in IPE activities, students are afforded the opportunity to integrate theoretical knowledge with applied practice in a manner that is meaningful and representative of "real world" professional experience. As a type of simulated learning, the use of SPs in interprofessional learning is largely supported by key principles of situated cognition or learning (Onda, 2012).

Situated cognition is a learning theory that is highly relevant to health professional education and to interprofessional learning, in particular. It emphasises higher-order thinking and reasoning processes and is based on the premise that learning is most effective when it occurs in an authentic context (learning environment) that reflects how knowledge is applied in everyday situations (Brown, Collins, & Durguid, 1989; Stein, 1998). SP interaction in small-group IPE activities facilitates learning that is

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authentic by its nature and is situated in the process of solving a real-world problem. Studies have shown that such contextualised learning is much richer because it simulates features of the real-world setting in which the task to be learned might naturally be accomplished (Cordova & Lepper, 1996; Onda, 2012; Latter, Rycroft-Malone, Yerrell, & Shaw, 2000).

According to Onda (2012), situated learning must occur in an instructional environment that has real-world relevance and engages students in defining and completing complex tasks. Cooperative and participative teaching methods that facilitate learning in an authentic context (simulated or real) are cornerstones of the situated learning model. Through collaboration, students are able to understand and express different perspectives and points of view (Onda, 2012). Tasks must be addressed as a group, rather than as an individual, as students work towards a common goal. Interprofessional learning that combines SP interaction with small-group learning in the formulation of an interprofessional care plan preserves many of the complexities of the real-life setting and simulates the authenticity of patient-centred interprofessional collaboration. Reflection is also an essential step in situated cognition, and students receive feedback from the SP on the interaction and on the interprofessional learning experience.

Retrospective causal-comparative studies are most common in educational research (Gay, 1996). Causal-comparative studies are an important first step in identifying possible cause-effect relationships that could lead to more rigorous experimental studies. A main limitation of such studies is that an apparent cause–effect relationship may not be as it appears; only a relationship is established, not necessarily a causal one. The main limitations of the study reported in this paper were the lack of randomisation and control. However, the introduction of SPs in IPE modules and the before–after comparison of student satisfaction do reflect the characteristics of a time-series study design and lend some control over possible sources of invalidity, despite the lack of randomisation (Gay, 1996). The subject matter between the different IPE modules also varied as did the interprofessional mix of students. Nonetheless, the consistently high satisfaction scores and the positive trends do suggest that SPs are a useful instructional methodology for facilitating interactive, collaborative and meaningful forms of interprofessional learning for health sciences students.

Using SPs in IPE activities does bring with it a number of logistical considerations. As the number and mix of students for IPE grows, so does the demand for a larger pool of SPs. Access to an SP database with SPs possessing the appropriate background characteristics for the SP cases used in interprofessional learning is critical. Considerable time is required for the recruitment, training and preparation of SPs for their involvement in IPE activities. SP educators contribute significantly in this regard and are important members of the IPE curriculum development team. Costs are another important consideration, because SPs are compensated for their work at many educational institutions. IPE learning group facilitators must also be oriented to the use of SPs in interprofessional learning, the SP role in facilitating the interprofessional learning process and the variety of techniques an SP may utilise during a scenario in order to capitalise on the student–SP interaction.

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Conclusion

Constructivist learning theory promotes collaborative learning processes as a key way to encourage "shared knowledge construction", to raise awareness of the existence of multiple points of view and to learn from one's peers (Jonassen, Mayes & McAleese, 1993). Freeth, Hammick, Reeves, Koppel and Barr (2005) suggested that the "process" is the most important feature of IPE, and it should promote interactive learning. SPs appear to be a particularly useful method for fostering this level of collaborative and interactive learning through their positive impact on the realism of the educational experience. In a context of limited resources and increasing focus on interprofessional collaboration competency as an important component of formal health and social care professional education, the results of this study support the use of SPs as an instructional method to enhance short-term student interprofessional learning outcomes. Because of the limitations of the causal-comparative design, future research into the use of SPs may benefit from the use of other quasi-experimental designs that isolate SPs as an instructional method and offer the same curriculum concurrently with and without SPs in balanced, randomly-assigned student groups.

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