

Name of Paper: Interdisciplinary Workshop Using Applied Models to Increase Collaboration and Satisfaction between Medical Students and Standardized Patient Instructors: Instructor's Guide

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Construct and Purpose:

Traditionally in North America, full-time faculty members have assumed the major responsibility for teaching first- and second-year medical students physical examination skills. This historic model has its barriers, as recruiting busy faculty without compensation is a problem as is the lack of standardization of teaching physical diagnosis from one faculty member to another. To overcome these barriers, programs have experimented using standardized patients (SPs) or medical students as teachers of physical diagnosis.^{1,2} SPs have been successful in teaching physical diagnosis alone, although there is concern that they have no medical background and cannot provide a clinical context to their teaching. Concomitantly, there has been increasing recognition of the need to prepare medical students for their future teaching roles as intern/residents and physicians.^{3,4,5}

Whereas there are numerous publications addressing peer teaching in undergraduate education, there is sparse literature addressing how medical students co-teach physical diagnosis to pre-clinical students in lieu of faculty. To address these issues, we introduced the concept of Standardized Patient Instructors (SPIs) joining with fourth year medical students (MS-4s) to teach physical examination skills to the first-year medical students (MS-1s) in 2010. The SPIs were trained to teach physical examination maneuvers in a standardized fashion while the MS-4s were in charge of overseeing the MS-1s practicing these skills and providing relevant clinical context to the maneuvers. The George Washington University (GWU) is the first reported school to have such an interdisciplinary program. It has been shown in the literature that with appropriately motivated and mentored senior students, successful teaching courses could be created to meet educational requirements at medical schools having available resources⁶. Taking advantage that at GWU there are senior students each year interested in learning advanced teaching skills, our goal was to create a program utilizing motivated students in combination with SPIs to provide a framework for teaching physical diagnosis to MS1s that could be implemented in other institutions.

The multidisciplinary program was successfully implemented into the curriculum, but not without some unforeseen problems. SPI and MS-4 feedback after the first iteration of this course in the 2010-2011 cycle was fraught with confusion about what were the roles of each group, how the dyads were suppose to conduct physical diagnosis sessions, who assumed a leadership role in the group interaction, and how evaluation was to take place. It was from this feedback that theoretical constructs were examined to help improve the program; namely, the GRPI model and Mezirow's Transformative learning theory.

The purposes of this guide are to:

- Recognize how the authors addressed the problem of interdisciplinary teaching based on feedback from the two groups at the end of the 2010-2011 academic year
- Apply that information into an effective, theoretical-based workshop that we have incorporated into our long-standing senior teaching elective called Teaching and Learning Knowledge and Skills (TALKS)^{10,11}

- Explore applications and limitations of effectiveness of the workshop focused on adult learning principles and team functionality models as well as report both SPI and MS-4 perceptions of the program
- By the end of this guide participants of this workshop should be able to:
 - Recognize their roles, responsibilities, and the expectations of the team in the context of working with an individual from a different discipline
 - Better understand each team members perspective and create a method to work out differences using theories of Mezirow and GRPI model
 - Function as a single team with increased cohesion using each other's strengths and pre-set boundaries

The educational objective of this process was as follows:

Improve the interdisciplinary collaboration between MS-4s and SPIs in regards to roles, responsibilities, goals, processes, and interpersonal skills in teaching physical diagnosis to MS1s.

Target Population:

Medical Students Year-4, Standardized Patients

Development:

The creation of this workshop was based on feedback from SPIs and MS-4s after the first iteration of the program in which this dyad was involved. To address the gaps raised by the MS4s and SPIs, we created a workshop that would provide an evidence-based foundation for an interdisciplinary collaboration on teaching. In creating a model for developing good educational methods as well as management of leadership roles in a team, we identified educational constructs from Mezirow's transformational learning theory and from the business literature utilizing the GRPI (Goals, Roles, Processes, Interactions) model.^{7,9,10}

The GRPI model was initially developed by Richard Beckhard (1972) and addresses team cooperation through identifying the **Goals** for the team, clarifying **Roles** of each team member, discussing the **Processes** and responsibilities needed for the team to run effectively, and working on the **Interpersonal** skills of team members, hence, GRPI⁹. It is a model that has seen some use in the business, leadership, management, systems optimization, and in the healthcare field⁸.

Mezirow (1997) is highly regarded for his contributions to continued education and for his development of "transformative learning." He discusses "transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one's reflective insight, and critically assessing it."⁷ In his discussion of transformational learning theory he takes into account three dimensions: psychological (change in understanding of oneself), convictional (change in one's belief system), and behavioral (change in one's lifestyle). He discusses analyzing one's own beliefs and assumptions (**Premises**), reflecting on the topics at hand (**Content**), and working to change oneself (**Process**) and how focusing on these key points individuals will undergo transformative learning, redefine their worlds, and work better together towards a common goal.

The overlap between Mezirow's learning theories and the GRPI model of team cooperation convinced the authors to apply these constructs to develop a de novo workshop to help the MS-4s and

SPIs understand the principle of effective team collaboration and teaching with the goal of creating a more cohesive dyad.

Type of Assessment:

Workshop

Implementation/Appendix (What resources needed to utilize?):

Preparation Materials:

1. Mezirow's Transformative Learning: Theory to Practice
2. GRPI Model

Workshop and Post Workshop Reinforcement materials

3. Team Based Learning Interdisciplinary Workshop Questions and Answer Key
4. The Blue Angels - The History Channel, Commentator Dennis Quaid

Link: <https://www.youtube.com/watch?v=saG3JuPPhr4> (time: 13:05-25:00)

5. Interdisciplinary workshop self-reflection questionnaire for both SPI and MS-4 in dyads

Evaluation Materials:

6. Interdisciplinary workshop evaluation

This workshop was performed at the beginning of the academic year, before the physical diagnosis course began for the MS-1s. SPIs and MS-4s were informed prior to the workshop of the SPI/MS4 dyad pairings for the rest of the academic year. The workshop leaders did not have any extra notes or power points, using only the materials listed in the appendix.

The overall breakdown of minutes for the workshop that the authors conducted are laid out below in Table 1. The MS-4s and SPIs electronically received the two articles two weeks ahead of time addressing the theories before their assigned workshop date (two workshops were conducted to allow more flexibility and attendance by all MS4s and SPIs) and were instructed to read and come prepared to discuss the articles.

The workshop format was divided into numerous sections, the first of which was an introduction lead by the workshop leader in which the overview of the workshop was presented (Table 1 & Objectives listed in purpose section). The SPIs and MS-4s were seated in tables seating 4-6 individuals and were told to sit with their pre-assigned teaching dyad pairings. The first activity was for everyone to introduce themselves to each other and get to know those they were sitting with. The workshop leader then proceeded to ask the dyad pairings to write down and discuss what they believed each person's role and strengths was in teaching the course over the next year. Next, the workshop leader facilitated a group discussion about the GRPI model and Mezirow's transformational learning theory (Appendix 1&2). After the discussion of the reading was completed, each table (groups of 4-6) was given questions about the readings to answer in a team based learning exercise (Appendix 3). Following this exercise, one of the authors provided a interactive overview and discussion of the questions.

The next portion of the workshop involved watching a YouTube clip about the flight crew "The Blue Angels" (Appendix 4). The entire group viewed approximately 7 minutes of video and afterwards the workshop leader lead a group discussion about team dynamics as seen in the video and related it back to the GRPI model and Mezirow's theories. The SPIs and MS4s were then divided into their teaching dyad pairings. The dyads addressed course content, how the teaching was to be divided, the roles they would be each assuming, boundaries, student evaluation, and other aspects of conducting the teaching sessions using our self-reflection questionnaire as a guide based on the GRPI and Mezirow models (Appendix 5).

A brief questionnaire was created and piloted at GWU among peers involved in medical education to assess if the workshop had been an effective vehicle for improving process, content, and interpersonal issues. All MS-4s (N=44) and SPIs (N=16) teaching the physical diagnosis course in 2013 completed the workshop evaluation (Appendix 6).

Breakdown of workshop minutes, Table 1:

Introduction: Self introductions, Overview of objectives/plans for the workshop, Discussion of previous experience in working with teams,	10 minutes
What do you see as your role in Phys dx course/ What strengths (write these) do you bring to the course-share with a person with whom you will be teaching	10 minutes
Discussion of GRPI model	10 minutes
Discussion of Mezirow's Transformative Learning	10 minutes
Team Based Learning Exercise and Discussion	15 minutes
Video Clip Presentation of "The Blue Angels" and group discussion of team dynamics	20 minutes
Dyads split up into their yearly teams and fill out self-reflection questionnaire with each other while discussing how they will approach teaching the course as a team	30 minutes
Evaluation of the workshop handout	5 minutes
Total Estimated Time	1 hour 50 minutes

Validity:

The questionnaire results are displayed in Table 2. Statements were rated on a scale of strongly disagree (1) to strongly agree (5). 100% of the SPIs and 77% of the MS4s (out of a total of 57 student participants) responded to the questionnaire. There were two responses of disagree (2) for statements 3 and 4, with no responses of strongly disagree for any of the statements amongst the student peer instructors.

Table 2:

Statement	Percent SPIs who Agreed or Strongly Agreed (out of 16 responses)	Percent of MS4s Agreed or Strongly Agreed (out of 44 responses)
1. My overall reaction to my experience as a teacher in physical diagnosis was positive	100	100
2. My experience working with a Standardized Patient Instructor or Peer Instructor was positive.	91	93
3. My teaching role in physical diagnosis was what I expected	93	90
4. The Standardized Patient Instructor/ Peer Instructor partnership was an effective way to maximize learning for first-year medical students	86	84

Through this analysis some themes evolved: 1) Teaching was a rewarding experience for both MS-4s and SPIs. 2) There was an obvious conflict between MS-4s and SPIs over MS-1s' summative evaluations. 3) There remained a few conflicts/tension in teaching roles between the MS-4s and SPIs 4) There was noted improvement in satisfaction of program and MS-4 and SP relationship since implementation of interdisciplinary workshop 5) There was a definite connection between clear instructor expectations and resultant MS-1 preparation for the physical diagnosis sessions. 6) There was also a connection between ease of learning and value of physical diagnosis instruction and pre-session preparation by MS-1s.

Limitations:

There were some limitations identified, the most prominent one being disparities between MS4s and SPIs on the evaluation of the MS-1s' summative performance in the physical diagnosis course. The course directors are still working on that issue as there are no national norms or milestones to assess performance at this level.

An ongoing issue potentially affecting the dyad teaching is MS4s interviewing for a PGY-1 position; i.e., their absence impacting on the dyad when SPIs teach by themselves because there is no MS4 coverage. The absence of MS4s can be disruptive to their relationships with the SPIs and to the MS1s they are teaching. To avoid recurrent absentee problems, the authors have publicized stringent ground rules about this teaching elective as end-of-third year students are considering their fourth year course choices.

Conclusions:

The purpose of this paper was to report an interdisciplinary model utilizing two theoretical constructs on how we addressed a problem that evolved from SPIs and MS-4s working together to effectively teach

physical diagnosis skills. We created a workshop based on feedback that was designed to use underlying theories of collaboration (Mezirow's teaching theories and the GRPI model) to enhance the collaboration of the SPI/MS-4 dyads in teaching MS-1s physical diagnosis. Feedback on the questionnaires revealed that many of the problems identified in 2010-2011 were resolved based on the workshop experience. This workshop strengthened the core curriculum (TALKS^{10,11}) and results suggest that the theoretical constructs that were used effectively brought the SPIs and MS-4s together and created a sense of respect and recognition of the value that each member brought to the team. The authors felt that giving time for these dyads to meet prior to the start of physical diagnosis, providing an opportunity for them to know each other, and allowing them to create plans on how they wanted to teach and handle potential problems in future teaching sessions helped with team cohesion and satisfaction overall.

An outcome measure to evaluate the effectiveness of this dyad's performance as compared to faculty teaching was to assess student scores on the end-of-third year practice-based exams. These scores have actually slightly improved post-implementation of non-physician teaching, validating our innovation to try this model.

Relevance:

The key learning point in creating this program of MS4s and SPIs teaching physical diagnosis skills is that making assumptions about the process and outcomes of a new curriculum is short-sided. Once MS4s and SPIs had an academic year to work together, their honest feedback allowed us to revisit the dyad and develop a theoretical construct to be the scaffolding for a de novo workshop, melding the strengths of the two groups. For those schools interested in implementing such a program, the materials outlined in this paper can help to provide a foundation for successful implementation.

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