Training Medical Student Facilitators of Peer-Assisted Study Sessions Using an Objective Standardized Teaching Exercise
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Abstract
Introduction: Peer-assisted study sessions (P.A.S.S.) are medical student–facilitated small-group sessions that aim to improve students’ knowledge and performance in preclinical courses. Peer teaching has been shown to have a positive impact on academic performance of both learners and peer teachers. For peer teaching to be more effective, there is a need for training of peer teachers. We developed a facilitator training workshop to help to improve medical students’ confidence in serving as P.A.S.S. facilitators. Methods: Participants were first-year medical students who were approved to become P.A.S.S. facilitators. We recruited facilitators to attend a training workshop and provided them with a training manual to use during the training session and as a resource after the session. We recruited five standardized students to participate in an objective standardized teaching exercise (OSTE). We asked facilitators to complete pre/post surveys before and after the workshop to indicate their level of confidence in facilitating the sessions and provide feedback on the workshop. Results: Nine P.A.S.S. facilitators participated in the training session. Analysis of pre- and postworkshop survey data showed a statistically significant increase in student confidence (p < .02). Discussion: Developing and implementing a formalized P.A.S.S. facilitator training manual and workshop with an OSTE helped improve students’ confidence in facilitating an organized, effective, and interactive peer teaching session. Students’ positive feedback on the OSTE suggests that OSTEs can be useful tools to help peer teachers learn skills to cope with challenging situations with students.

Keywords
Students as Teachers, Objective Standardized Teaching Exercise, Peer Study Groups, Basic Science, Leadership Development/Skills, Mentoring/Coaching

Educational Objectives
By the end of this activity, learners will be able to:
1. Increase confidence in planning an organized peer-assisted study session.
2. Increase confidence in facilitating an effective peer-assisted study session.
3. Increase confidence in facilitating an interactive peer-assisted study session.
4. Increase confidence in creating questions to facilitate active learning.
5. Increase confidence in handling challenge situations that may arise during a peer-assisted study session.

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Introduction
Peer teaching has been shown to have a generally positive impact on the academic performance of both learners and peer teachers.1 Peer teaching can be conducted in a variety of ways, including one-on-one tutoring, lecture-style teaching, and peer-assisted study sessions. In order for peer teaching to be more effective, there needs to be a strategy for proper training of peer teachers. The Mount Sinai School of Medicine created a training curriculum for its peer tutoring program that helped peer tutors recognize common issues interfering with student learning, how to diagnose those issues, and different teaching strategies based on those issues. It was found that tutors showed improvement in their comfort with teaching after completing the training.2 In their peer tutoring program, the peer tutors were second-, third-, or fourth-year medical students teaching students at a lower level of training. Peer-assisted study sessions (P.A.S.S.) are first-year medical student–facilitated small-group sessions that aim to help improve students’ performance during the first year of medical school. The study sessions were developed in 2014 at the Brody
School of Medicine (BSOM) by medical students who recognized the need for a more formalized peer-peer teaching program during the preclinical curriculum.

Four years following the implementation of P.A.S.S. at BSOM, a formalized training curriculum had not yet been developed to train students to be effective P.A.S.S. facilitators. During the early stages of implementation, both participant and facilitator feedback suggested a need for improved consistency in teaching strategies among peer facilitators. Our hypothesis was that a training program would be particularly useful for P.A.S.S. facilitators, as they were often expected to lead a small group during their first semester of medical school although many of them had limited teaching experience. Therefore, we created a P.A.S.S. facilitator training curriculum with the goal of increasing students’ confidence in leading P.A.S.S. In order to devise an effective curriculum, we used established teaching strategies to create a facilitator training manual complete with interactive worksheets. We created a manual so that we would have something to give each student to use during the facilitator training workshop and take home for future reference.

Our goal was to make the facilitator training workshop as interactive and practical as possible; therefore, we decided to create a standardized classroom scenario using standardized patients as student actors. BSOM utilized objective standardized clinical exercises to evaluate medical students’ clinical skills throughout their 4 years with a variety of standardized patient scenarios. We decided to use standardized students as standardized students in an objective standardized teaching exercise (OSTE). We believed using standardized students rather than actual students would be more beneficial to facilitators in two ways. First, we believed facilitators would feel more comfortable practicing their teaching skills with standardized students rather with their peers. Second, we were able to effectively train the standardized students to portray difficult scenarios as they had had experience with following scripts in the past as standardized patients. OSTE had been used by other institutions to evaluate faculty and resident teaching with medical student scenarios, but at the time of our literature review, OSTE had not yet been used in evaluating medical students as teachers. We created a standardized classroom scenario to be used for medical student teaching practice without any formal assessment.

We developed a P.A.S.S. facilitator training workshop to help improve medical students’ confidence in leading organized, effective, interactive study sessions. Additionally, we wanted to determine if use of OSTE provided additional benefits in helping medical students navigate challenging situations that might arise when teaching. Finally, we wanted to create a facilitator training manual that could be given to students for a resource and used for subsequent medical school classes.

**Methods**

**Participants and Recruitment**

Participants were recruited from a public medical school in the Southeastern United States. All 80 first-year medical students were invited to submit an application to be a P.A.S.S. facilitator. Faculty approved students to become P.A.S.S. facilitators for a particular subject based upon their grade in the course and their interest in facilitating. We contacted all 12 P.A.S.S. facilitators who were approved and recruited them to attend a facilitator training session. We constructed a facilitator training manual to be given to facilitators for use during the training session as a resource after the session. This training manual (Appendix A) contained learning objectives and an agenda for the session, information on several different topics concerning teaching strategies, interactive worksheets to help facilitators plan their next P.A.S.S., and instructions for the standardized classroom scenario with debrief questions. The topics covered in the training manual were chosen based on P.A.S.S. participant feedback on how P.A.S.S. could be improved, as documented on end-of-semester surveys. We constructed a PowerPoint presentation (Appendix B) to be used by the educator during the training session to augment the training manual. We recruited five standardized students with the assistance of the Office of Clinical Skills. We gave each standardized student instructions (Appendix C) to portray a specific student role. Each role required standardized students to act in a way that presented a challenge to the student facilitators. We also gave the standardized students a copy of the facilitator instructions for the standardized classroom scenario. Standardized students were paid for their time. Students’ participation was voluntary and had no bearing on their involvement in P.A.S.S.

**Educational Intervention**

The facilitator training session took place in a classroom in the Clinical Skill Center and lasted approximately 3 hours. There were nine P.A.S.S. facilitators in attendance, and first author Amber Whitmill, a fourth-year medical student, led the session. We spent the first hour and a half discussing several different topics related to teaching strategies, including how to make objectives, different strategies for presenting material, and how to ask questions facilitating active learning. Students completed three worksheets throughout the session that allowed them to practice what they were learning in planning
their next P.A.S.S. They spent the second hour and a half with the standardized classroom scenario. We let the students pair up and gave them instructions to facilitate a group of standardized students in reviewing basic gastrointestinal anatomy and physiology. We provided them with a single sheet of paper containing the information that they would be asked to cover during the simulated classroom scenario. We informed them that the standardized students should have reviewed the information prior to the class. We gave the facilitators 15 minutes to plan a session using any means available, including PowerPoints, whiteboard, videos, and so on. The students then took turns facilitating a 10-minute simulated study session. The students who were not currently participating in the scenario watched the live video of the session from another room. The same five standardized students participated in each scenario, and each standardized student alternated to portray the challenging role during each student rotation. A member of the clinical skills staff helped to give students a 2-minute warning and let them know when their time was up, as well as assisting with any technological issues. After all facilitators had participated, we brought facilitators and standardized students into the same room for a debriefing session, which allowed for standardized student feedback and facilitator reflection on the OSTE.

Data Collection and Analysis
We gave facilitators a pretraining survey (Appendix D) before the start of the training session and a posttraining survey (Appendix E) and a standardized classroom scenario evaluation (Appendix F) after the training session. We chose to have students complete the surveys immediately after the training session to promote a high percentage of completed surveys. Pre- and posttraining surveys were identical and consisted of seven items that were answered using an even-point Likert scale with options of strongly agree, agree, disagree, and strongly disagree. The pre- and posttraining surveys evaluated participants’ level of confidence in their ability to plan and facilitate P.A.S.S. and deal with challenging student situations. The standardized classroom evaluation consisted of seven items answered using the same even-point Likert scale used in the pre- and posttraining surveys and two open-ended questions to allow for learner feedback and suggestions for improvement. We used a Mann-Whitney U test to compare survey results between the pre- and posttraining surveys, with a significance level of \( p < .05 \). We decided to use a Mann-Whitney U test because we were comparing two independent samples of ordinal data that were not normally distributed.

Results
Nine first-year medical student P.A.S.S. facilitators participated in the training session, and eight of those students participated in the standardized classroom simulation. One student was unable to participate in the entire training session due to another obligation. A fourth-year medical student facilitated the training session, and five standardized students selected from the Office of Clinical Skills participated in the simulation.

We analyzed the data from nine pretraining surveys and nine posttraining surveys by calculating descriptive statistics including frequency, mean, and standard deviation. We used a Mann-Whitney U test to compare survey results between the pre- and posttraining surveys. The Figure shows a statistically significant

![Figure](https://example.com/figure.png)

**Figure.** Mean scores from nine student responses to survey questions using a 4-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) before and after the training session. For all comparisons, \( p \leq .02 \).
increase in mean scores between pre- and posttraining survey responses for all seven questions.

We analyzed the quantitative data from eight standardized classroom evaluations by calculating descriptive statistics including frequency, mean, and standard deviation. The Table shows the breakdown of responses to the standardized classroom evaluation, with all students indicating that they strongly agreed or somewhat agreed with questions 2-6 and 87.5% of students indicating that they strongly agreed or somewhat agreed with question 1.

When students were asked to give open-ended feedback on the standardized student session, three stated that the session was “great,” two stated that the session was “helpful,” and one stated that the session was “very beneficial.” When asked about suggestions for improvement, two students indicated that changing the seating of standardized students so that they were more visible to the teacher would be helpful. Two students indicated that the session may have been too long, and two students stated that the training would have been more helpful earlier in the semester.

Discussion

Peer teaching, including P.A.S.S., has become increasingly common throughout medical education as an additional resource to help students excel academically, which holds true whether a student is in the role of the tutor or the tutee. An area that seems to be lacking in research on peer teaching is the effectiveness of a formal peer teacher training curriculum. While some medical students have had prior teaching experience before medical school, many have not, or their teaching experiences may not be applicable to peer teaching of fellow medical students. By creating a formal peer teacher training curriculum, we increased the confidence of medical students interested in becoming peer teachers, which should lead to more effective peer teaching.

We found that implementing a formalized P.A.S.S. facilitator training workshop with an OSTE helped improve students' confidence in facilitating an organized, effective, and interactive study session. Students' positive feedback on the OSTE confirms that OSTEs can be useful tools to help peer teachers practice and improve upon their teaching strategies. We believe that the students’ positive objective and subjective feedback indicates that they can benefit from facilitator training workshops in the same way that faculty have been shown to benefit.

Limitations

One of the major limitations of this study is its small sample size. We had a total of nine medical students who participated, with only eight of those students participating in OSTE. Twelve were recruited and expected to attend; however, three students did not attend, and one student left early due to another obligation. While we did find significant results with the small sample size, the results may not be generalizable to the greater population of peer teachers throughout medical schools across the nation.

We unfortunately had to reschedule the facilitator training workshop twice due to school cancellations for severe weather, which constituted another limitation. We had originally planned to hold the training prior to the students' first P.A.S.S., but because we had to reschedule twice, the training was pushed back to midway through the students’ courses. This caused students to express frustration, saying that they would have appreciated having the training earlier so that they could have made changes in their P.A.S.S. earlier on in the course. Although students overall found the facilitator training helpful, it would likely have been more helpful if it had been held earlier in the course block.

Using standardized patients to portray students presented a few challenges. One was that the facilitators had likely worked with the standardized patients in previous OSCEs, which may have clouded their ability to view them as peer students rather than patients. Additionally, most of the standardized patients had not played a student before, so they had limited practice in performing their roles. This may have limited the effectiveness of the OSTE in simulating a realistic teaching scenario.

| Question                                                                 | Strongly Agree (%) | Somewhat Agree (%) | Somewhat Disagree (%) | Strongly Disagree (%) |
|--------------------------------------------------------------------------|--------------------|--------------------|-----------------------|-----------------------|
| 1. The scenario was relevant to me as a P.A.S.S facilitator.             | 87.5               | 0                  | 12.5                  | 0                     |
| 2. The scenario will help me to improve my teaching skills.              | 87.5               | 12.5               | 0                     | 0                     |
| 3. The scenario helped me to identify areas in which I could use improvement. | 75.0               | 25.0               | 0                     | 0                     |
| 4. The use of standardized patients was beneficial.                     | 87.5               | 12.5               | 0                     | 0                     |
| 5. The scenario debrief was helpful to my learning.                     | 50.0               | 50.0               | 0                     | 0                     |
| 6. I would participate in similar activities in the future.              | 62.5               | 37.5               | 0                     | 0                     |

Abbreviation: P.A.S.S., peer-assisted study sessions.
Future Directions
In order to ensure that our P.A.S.S. facilitator training curriculum is generalizable to other forms of peer teaching across medical schools worldwide, it would be helpful to try to implement the training for students involved in different forms of peer teaching, including one-on-one peer tutors and large-group teaching. Additionally, a multisite study would evaluate the effectiveness of the training protocol at other medical schools with different medical education curricula.

One change that could be made to the OSTE is that current medical students could be trained to become standardized students instead of using standardized patient actors. This could potentially be beneficial for the student actors, who could observe and learn from their fellow students’ teaching strategies. It could also make the standardized classroom seem more realistic to the student teachers.

Appendices
A. Facilitator Training Manual.docx
B. Training Session PowerPoint.pptx
C. SP Roles.docx
D. Pretraining Survey.docx
E. Posttraining Survey.docx
F. Standardized Classroom Evaluation.docx

All appendices are peer reviewed as integral parts of the Original Publication.

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Prior Presentations
Whitmill A, Edwards T, Charles S. The impact of facilitator training on peer assisted study sessions. Poster presented at: Brody Medical Education Day; April 12, 2017; Greenville, NC.

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Whitmill A, Edwards T, Charles S. Training medical student facilitators of peer assisted study sessions using an objective standardized teaching exercise. Poster presented at: Brody Medical Education Day; April 10, 2019; Greenville, NC.

Ethical Approval
The Social/Behavioral Institutional Review Board approved this study.

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