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Preparing Students for Their First Standardized Patient Encounters: A Paired Formative OSCE with Role Exchange and Repeated Ratings of Confidence and Preparedness

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Research Article

Keywords: Standardized Patients, OSCE, Formative Assessment, Peer Observation, Role Exchange, Learner Appraisal

Posted Date: November 23rd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11627028/v1

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Additional Declarations: No competing interests reported.

Abstract

Purpose

Students' first standardized patient (SP) encounters may shape how they interpret performance expectations and judge their readiness, yet these encounters often occur within a faculty-rated objective structured clinical examination (OSCE). We describe a paired formative OSCE sequence that introduces SP methodology before the first summative OSCE and report how first-year medical students' confidence and preparedness changed across it.

Methods

After an asynchronous orientation, two cohorts of first-year medical students (N = 435) completed two paired formative OSCE sessions approximately three weeks apart, alternating interviewer and observer roles and receiving peer and SP feedback. Students rated SP engagement confidence and OSCE preparedness before and after each session. Cumulative link mixed models compared adjacent rating occasions, adjusting for cohort, gender, underrepresented-in-medicine status, first-generation status, and MCAT percentile.

Results

Each session required 14 SPs and three staff members across 12 examination rooms and no additional faculty; 98% of possible ratings were available. Adjusted odds of higher ratings increased after the first session (confidence OR = 16.70; preparedness OR = 22.83), decreased between sessions (OR = 0.31; OR = 0.38), and increased after the second session (OR = 2.09; OR = 2.00; all Holm-adjusted $p < .001$). Higher MCAT percentile was associated with slightly lower ratings.

Conclusions

A paired formative OSCE sequence with role exchange can be delivered at class scale without additional faculty. Confidence and preparedness rose after each session but partly declined between sessions, a pattern that a single pre-post comparison would miss. Effects on objective OSCE performance remain untested.

Introduction

Simulation and standardized patient (SP) encounters are widely used across health professions education [1–3], and a student's first SP encounter is a significant milestone. When that first encounter is also a faculty-rated objective structured clinical examination (OSCE), students must interpret an unfamiliar performance environment under summative conditions, with little prior information about how

SPs respond, how performance is rated, or how feedback is delivered. They must also judge what competent participation entails and how prepared they are to meet it. How students are introduced to this environment therefore shapes the information available for that judgment. Eva and Regehr argued that global, personally generated judgments of ability are unstable and that self-assessment is better understood as situational monitoring informed by contextual cues and external feedback [4]. Sargeant and colleagues described how learners seek, interpret, and reconcile feedback and other performance information to form these appraisals [5], and McDonald and colleagues traced this process longitudinally as students transitioned into medical school [6]. Participation, observation, and feedback are therefore not only practice; they supply the information students use to judge their readiness. Because self-rated confidence corresponds imperfectly with observed competence [7, 8], how these appraisals form and shift is a question distinct from whether students perform well.

Preparing students for this moment addresses parts of the problem. Standards for SP practice center on case development, portrayal, feedback, assessment, and program quality [2], with less attention to sequencing a novice's first SP experience so that orientation, participation, observation, and feedback precede a faculty-rated OSCE. Mock and formative OSCEs, often peer-led, raise self-rated confidence and lower anxiety before summative examinations [9–11]. In a randomized trial, a formative OSCE with immediate feedback improved surgical clerks' self-confidence, with gains still present one month later, alongside mini-clinical evaluation exercise performance [12]. Role-rotation and peer-feedback formats add opportunities to observe and judge others' performance [13–15], but evidence on how to structure these roles is mixed. Observation supports learning mainly when observers have clear roles, guidance, and a place in the debrief, and active participants generally learn more [16, 17]; serving as a peer examiner before performing helped at some stations and hindered at others [14]. Two gaps follow. The first is an implementation gap: little guidance describes how to combine orientation, performance, observation, and feedback into a novice's first SP experience. The second is a measurement gap: most evaluations survey students once after a single event, and even the one-month follow-up in the randomized trial [12] tracked persistence after one exposure rather than change across repeated exposures. If learners revise readiness appraisals as information accumulates [4, 5], confidence may rise with initial familiarity and then recalibrate toward a more informed estimate, a pattern a single post-event rating cannot detect.

To address both gaps, we developed a paired formative OSCE sequence that introduces first-year medical students to SP methodology before their first faculty-rated OSCE. The sequence combined asynchronous orientation with two paired sessions in which students alternated interviewer and observer roles and received peer and SP feedback. To address the implementation gap, we describe how we structured and delivered the sequence at class scale. For the measurement gap, students rated SP engagement confidence and OSCE preparedness before and after each session, allowing us to detect change within and between sessions, not only from the first to the final rating. We hypothesized that ratings would increase after each session and that part of the initial gain would recede between sessions as students recalibrated their appraisals of readiness.

Materials and Methods

Setting and Intervention

We implemented the sequence with 435 first-year medical students across two cohorts: 51% in 2024 and 49% in 2025. Before this sequence, students' first SP encounters in our curriculum occurred within a summative OSCE at the end of the first systems-based block. These OSCEs included two or three block-aligned encounters, in which faculty assessed communication using the Kalamazoo Essential Elements Communication Checklist–Adapted [18], rated required history-taking components, and provided narrative feedback.

To reduce uncertainty surrounding students' first faculty-rated summative OSCE, we created an asynchronous, self-guided module introducing SP methodology, the OSCE process, and the Clinical Skills Education and Assessment Center (CSEAC), followed by two in-person formative OSCE scenario sessions completed in pairs. The sequence organizes established practices so each component provides a different source of information learners use to judge readiness: the module explains the setting and how performance is rated, interviewing provides direct performance experience, observing a partner provides a point of comparison, and SP and peer feedback provide external information. The innovation lies in ordering these components into a novice's first SP experience before summative assessment and in pairing students with role exchange so that each student both interviews and observes in each scenario. This sequence made the environment, performance expectations, and feedback process explicit before the summative assessment, giving students an initial framework for interpreting the task and later assessing their readiness.

After completing the 30-minute module, students attended two paired scenario sessions approximately three weeks apart (Fig. 1). Each session lasted approximately 30 minutes: two 10-minute interviews, each followed by 5 minutes of structured SP and peer feedback. In each session, one student interviewed while the partner observed, and the pair then exchanged roles, so each student interviewed twice and observed twice across the sequence. Scenario 1 involved a patient presenting with cough; Student A obtained the history of present illness and a comprehensive past medical history, and Student B obtained a comprehensive family and social history. Scenario 2 used one of two similar but distinct cases; identifying details are withheld because both remain in active summative use.

The 32-slide module (Supplementary Material S1) defined SPs and OSCEs, showed how examinee instructions correspond to the faculty and SP rating tools, and explained that SP responses vary mainly with how a question is asked: open versus closed questions, missing follow-up questions, compound questions, and limiting language such as "any current illnesses?" It then presented the SP "Golden Rules" used in SP training: reward open-ended questions with all related information; answer only the question asked; name an affirmative past medical history item; wait for follow-up questions before giving details such as timelines, doses, and amounts; answer only the last part of a compound question; respond "no" or "I don't know" when a clinical detail is not in the case, improvising only for general questions; allow

silence; and stay in character. The module closed by previewing the session structure, peer-feedback expectations, and conduct in the exam rooms.

Each cohort included approximately 220 first-year medical students, and we delivered the activity to each cohort over two afternoons. On each afternoon, we used 12 simulated outpatient examination rooms, 14 SPs, and three staff members; no additional faculty were required. We did not compare the staffing or cost of this sequence with those of other OSCE preparation approaches.

Before each interview, students received scenario-specific door instructions, the brief written task posted outside each examination room that, as in a standard OSCE, introduces the patient and reason for the visit and states the student's task and time limit (here, a 10-minute interview). Supplementary Material S2 provides door instructions for the Scenario 1 cough case; Scenario 2 materials are withheld because the cases remain in summative use. Standardized portrayal and information-disclosure rules linked SPs' information to students' open-ended, follow-up, and closed-ended questions (Supplementary Material S3); students did not receive the SP case portrayal documents. SPs remained in character during the interview, then stepped out of character during feedback to explain how questioning influenced information disclosure, clarify SP training and assessment, and offer guidance for future OSCEs. SPs used the Kalamazoo Essential Elements Communication Checklist–Adapted [18] to structure written and verbal feedback (Supplementary Material S4). Peer observers received advance guidance through the asynchronous module and a reminder during the on-site orientation to verbally identify strengths and opportunities for improvement; they did not use a separate checklist or written form.

The Scenario 1 case portrayed a patient with a dry cough lasting about one month (Supplementary Material S3). Its template specified that the SP offered a first and a second open-ended question and released the remaining history in "chunks" in response to targeted follow-up questions, while open-ended questions about past medical, family, and social history drew out full details. On the Kalamazoo checklist, SPs rated five domains—builds a relationship, opens the discussion, gathers information, understands the patient's perspective, and provides closure—from 1 (poor) to 5 (excellent) [18]. Their written comments, addressed to the student, reinforced one or two effective behaviors and described one or two behaviors to change, with the effect of each on communication and a suggested alternative (Supplementary Material S4).

Ratings were collected in SimCapture (Laerdal, Stavanger, Norway) at each session on one form completed in two parts. Before the session's interviews, students rated their agreement with "Before this encounter, I felt confident in my ability to engage with standardized patients" and "Before this encounter, I felt prepared to succeed in upcoming OSCEs." After both interviews and feedback, they rated "After this encounter, I now feel confident in my ability to engage with standardized patients in the future" and "After this encounter, I now feel prepared to succeed in upcoming OSCEs," and could suggest improvements in an optional open-ended item. All four items used a five-point scale from Strongly Disagree (1) to Strongly Agree (5).

Pre-session items, although worded in the past tense, assessed current confidence and preparedness; post-session items assessed confidence in future SP engagement and preparedness for upcoming OSCEs (Supplementary Material S5). Because the five-point responses were ordinal [19], we analyzed them with cumulative link mixed models that included student random intercepts and treated rating occasion as categorical [20]; missing ratings were not imputed. Three primary comparisons per outcome estimated change after Scenario 1, between sessions, and after Scenario 2. A secondary comparison estimated change from the first to the final rating, and a descriptive contrast compared the two pre-session ratings to show how much of the initial gain remained before Scenario 2. Holm adjustment was applied to *p* values within the primary and secondary families; confidence intervals are unadjusted. Models adjusted for cohort, gender (male vs. non-male), underrepresented-in-medicine status, first-generation medical student status, and MCAT percentile. One missing first-generation value was multiply imputed (30 imputations), and estimates were combined using Rubin's rules [21].

Analyses were conducted in R 4.4.1 using the ordinal package (version 2023.12–4.1) [20] and the mice package (version 3.19.0) for imputation and pooling. MCAT percentile was centered at the sample mean. Each fitted model was screened for convergence (maximum absolute gradient below 0.001 and a positive-definite Hessian); all 60 models (two outcomes × 30 imputations) met these criteria. Odds ratios greater than 1 indicate higher odds of a higher rating at the later occasion or for the named group. Table 2 reports the full model estimates.

Categorical coding suited the four unequally spaced rating occasions (Fig. 1), so each comparison describes change between two occasions rather than a rate of change. This evaluation describes confidence and preparedness rather than establishing intervention effects: it cannot separate the contributions of orientation, participation, observation, case content, history-taking task, role order, role exchange, feedback, elapsed time, or intervening experiences.

The institutional review board determined the study to be exempt as research involving educational materials; informed consent was therefore not required. Reporting followed the Strengthening the Reporting of Observational Studies in Epidemiology statement [22].

Results

The sequence was delivered to both cohorts with the staffing described above, and ratings were nearly complete: of 1,740 possible ratings per outcome (435 students × four occasions), 1,711 SP engagement confidence and 1,710 OSCE preparedness ratings (98%) were available for analysis. The sample included 435 first-year medical students: 44% were male and 56% female or another gender; 13% identified as underrepresented in medicine (URiM), 12% were first-generation medical students (first in their family to attend medical school), and the median national MCAT percentile was 88 (IQR = 79–95). One student was missing first-generation status, which was imputed.

Table 1
Mean SP engagement confidence and OSCE preparedness ratings by occasion

Scenario and timing	SP engagement confidence mean (SD)	OSCE preparedness mean (SD)
Pre-Scenario 1	3.53 (0.75)	3.35 (0.81)
Post-Scenario 1	4.14 (0.58)	4.08 (0.59)
Pre-Scenario 2 (~ 3 weeks later)	3.91 (0.58)	3.89 (0.57)
Post-Scenario 2	4.06 (0.59)	4.03 (0.60)

Both outcomes followed the same pattern across the four occasions: ratings rose after Scenario 1, fell before Scenario 2, and rose again afterward (Table 1). In adjusted models (Table 2), odds of a higher SP engagement confidence rating increased after Scenario 1 (OR = 16.70, 95% CI [11.62, 23.98]), decreased between sessions (OR = 0.31, 95% CI [0.22, 0.42]), and increased after Scenario 2 (OR = 2.09, 95% CI [1.52, 2.88]). OSCE preparedness followed the same sequence (OR = 22.83, 95% CI [15.87, 32.84]; OR = 0.38, 95% CI [0.28, 0.53]; and OR = 2.00, 95% CI [1.46, 2.73], respectively). All primary comparisons remained significant after Holm adjustment (all adjusted $p < .001$). Despite the decline between sessions, ratings before Scenario 2 remained above initial ratings for both outcomes (confidence OR = 5.11; preparedness OR = 8.79). Final ratings exceeded initial ratings for both outcomes (OR = 10.67, 95% CI [7.55, 15.06]; OR = 17.53, 95% CI [12.33, 24.93]). Higher MCAT percentile had small inverse associations with SP engagement confidence and OSCE preparedness (both OR = 0.97, 95% CI [0.96, 0.99], $p < .001$). In an exploratory finding, non-male students reported lower OSCE preparedness than male students (OR = 0.66, 95% CI [0.44, 0.99], $p = .043$); other covariates were not significant (Table 2).

Table 2
Adjusted odds ratios for SP engagement confidence and OSCE preparedness

	SP engagement confidence		OSCE preparedness	
	OR [95% CI]	***p***	**OR [95% CI]**	***p***
Change between occasions (Holm-adjusted *p*)				
After Scenario 1	16.70 [11.62, 23.98]	< .001	22.83 [15.87, 32.84]	< .001
Between sessions	0.31 [0.22, 0.42]	< .001	0.38 [0.28, 0.53]	< .001
After Scenario 2	2.09 [1.52, 2.88]	< .001	2.00 [1.46, 2.73]	< .001
Overall (first to final)	10.67 [7.55, 15.06]	< .001	17.53 [12.33, 24.93]	< .001
Covariates (unadjusted *p*)				
URiM (vs. not)	1.10 [0.58, 2.06]	.78	1.20 [0.64, 2.26]	.57
Non-male (vs. male)	0.74 [0.50, 1.11]	.14	0.66 [0.44, 0.99]	.043
First-generation (vs. not)	1.16 [0.63, 2.14]	.63	1.21 [0.66, 2.22]	.54
2025 cohort (vs. 2024)	1.21 [0.82, 1.79]	.34	1.23 [0.83, 1.83]	.30
MCAT percentile (per point)	0.97 [0.96, 0.99]	< .001	0.97 [0.96, 0.99]	< .001

Note. OR = odds ratio; CI = confidence interval; URiM = underrepresented in medicine. ORs above 1 indicate higher odds of a higher rating at the later occasion or for the named group.

Discussion

The sequence was delivered at class scale. On each of two afternoons per cohort, 14 SPs and three staff members ran 12 examination rooms without additional faculty, and the paired format was designed so that each student interviewed, observed, and gave and received feedback in each scenario. Ratings were available for 98% of possible occasions, which is consistent with near-complete attendance, although participation and module completion were not recorded separately. This addresses the implementation gap identified in the Introduction: a novice's first SP experience can be sequenced to include orientation, performance, observation, and feedback before a faculty-rated OSCE without adding faculty. These data describe feasibility at one institution, not resource efficiency relative to other approaches.

The direction of change matched our hypothesis. Confidence and preparedness ratings rose after the first scenario, declined over the next three weeks, and rose again after Scenario 2. Feeling ready immediately after an activity was therefore not a lasting endpoint, and asking again before the next scenario revealed a change that a single beginning-to-end comparison would have missed. Whether the decline reflects recalibration is considered below. The ratings show how prepared students felt, not whether the sequence changed how accurately they judged their readiness.

The increases after each session are consistent with reports that mock and formative OSCEs raise students' confidence [9–12]. Our design adds the interval between sessions. Ratings fell over the three weeks but remained well above baseline before the second session, which parallels the one-month persistence of self-confidence reported after a single formative OSCE with feedback [12]. The second session produced a smaller gain than the first. Much of the initial increase may have reflected first exposure to an unfamiliar format, but the smaller second gain may also reflect less room to rise, because mean ratings before Scenario 2 were already near 4 on the five-point scale.

Role exchange meant that every student both performed and observed. Because observation supports learning mainly when observers have clear roles, observation tools, and a part in the debrief [16, 17], and our observers gave verbal feedback without a structured tool, adding one may strengthen the observer half of each encounter. Rotation and structured peer-feedback formats report similar benefits for confidence and feedback skills [13, 15], but the mixed effects of serving as a peer examiner before performing [14] suggest that the order in which students observe and perform may matter.

The decline between sessions fits the recalibration we hypothesized: participation, observation, and feedback in Scenario 1 may have given students a clearer sense of what an OSCE requires, tempering their initial post-session ratings [4–6]. However, the lower ratings before Scenario 2 could also reflect elapsed time, intervening experiences, or different cases. Because we did not ask students about their reasoning, anxiety, perceived difficulty, or responses to specific activities, we cannot distinguish these explanations.

Programs can adapt case content, timing, staffing, and feedback procedures while preserving opportunities for novices to participate, observe, exchange roles, and receive feedback before summative testing. What transfers is the structure of this introduction to an unfamiliar assessment environment, not a particular SP case or isolated instructional technique. Because ratings receded over the three weeks between sessions, programs adopting a similar sequence may also consider how closely the final formative session precedes the summative OSCE.

Limitations

Self-assessed confidence does not consistently correspond with objective competence; therefore, the findings reflect learner appraisal, not clinical performance [7, 8]. This single-institution observational evaluation used single-item measures of SP engagement confidence and OSCE preparedness and cannot identify the active intervention component. Pre-session and post-session items were also worded differently: post-session items asked about future SP engagement and upcoming OSCEs, so part of the change after each session may reflect item wording rather than a shift in appraisal. The study did not assess validity evidence, students' interpretation of response options, or durability beyond the second scenario session; it also did not systematically record participation and module-completion rates or notable implementation problems. The reported analyses did not separate interviewer-first from observer-first sequences, so scenario-order and role-order effects remain unresolved. We did not measure prior patient care experience; students who entered medical school with substantial clinical

exposure, such as former nurses or medical assistants, may have rated their confidence and preparedness differently. The inverse MCAT association was exploratory and does not establish that academic preparation reduces readiness. The gender association with OSCE preparedness was exploratory, was not adjusted for multiple comparisons, and relied on a binary male/non-male coding; nonsignificant demographic covariates do not establish equivalent effects across groups.

Future Directions

Future studies should link these ratings to objective and later OSCE performance to test whether changes in confidence and preparedness reflect a better-informed understanding of readiness and predict subsequent learning. Measuring anxiety, perceived task difficulty, and prior patient care experience, comparing students who interview first with those who observe first, and examining which components of the paired experience contribute to change would address the main gaps identified above.

Conclusions

A paired formative OSCE sequence with role exchange introduced first-year students to SP methodology before their first summative OSCE and was delivered at class scale without additional faculty. Across the sequence, self-rated SP engagement confidence and OSCE preparedness rose sharply after the first session, partly declined over the three weeks between sessions, and rose less after the second session. Repeated measurement exposed this variation, which a single pre-post comparison would have missed. Whether these appraisals translate into better OSCE performance remains to be tested.

Declarations

Declaration of competing interest:

No competing interests were reported.

Ethics approval and consent to participate:

The institutional review board determined the study was exempt (protocol STUDY20252346); informed consent was not required.

Funding:

No specific funding was reported for this work.

Author Contribution

NS, CP, and RT contributed to the conception or implementation of the sequence, interpretation of findings, critical revision of the manuscript, and approval of the final version.

Acknowledgement

The authors acknowledge Dr. Sheryl Pfeil for her leadership and contributions to this work.

Data Availability

De-identified data are available from the corresponding author on reasonable request, subject to institutional review board approval.

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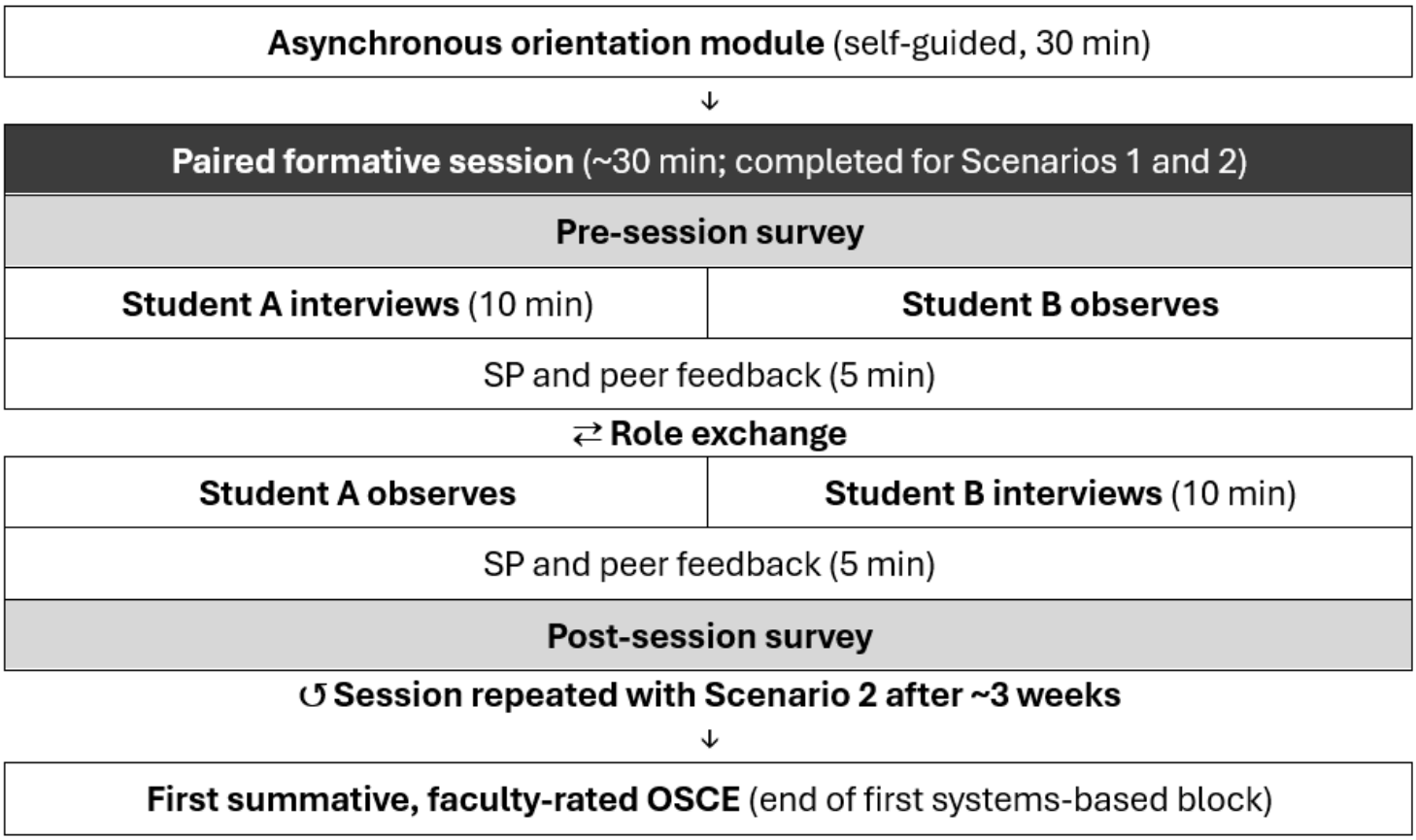
Figures



Note. Shaded rows mark rating occasions; each rating form was completed in two parts within a session (Occasions 1–2 in Scenario 1; Occasions 3–4 in Scenario 2).

Figure 1

Sequence of student activities, role exchange, and rating occasions

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryMaterialsDemystifyingSPsandOSCEs.docx