

Fostering Interprofessional Collaboration Skills through Small Group Case-Based Learning

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Context

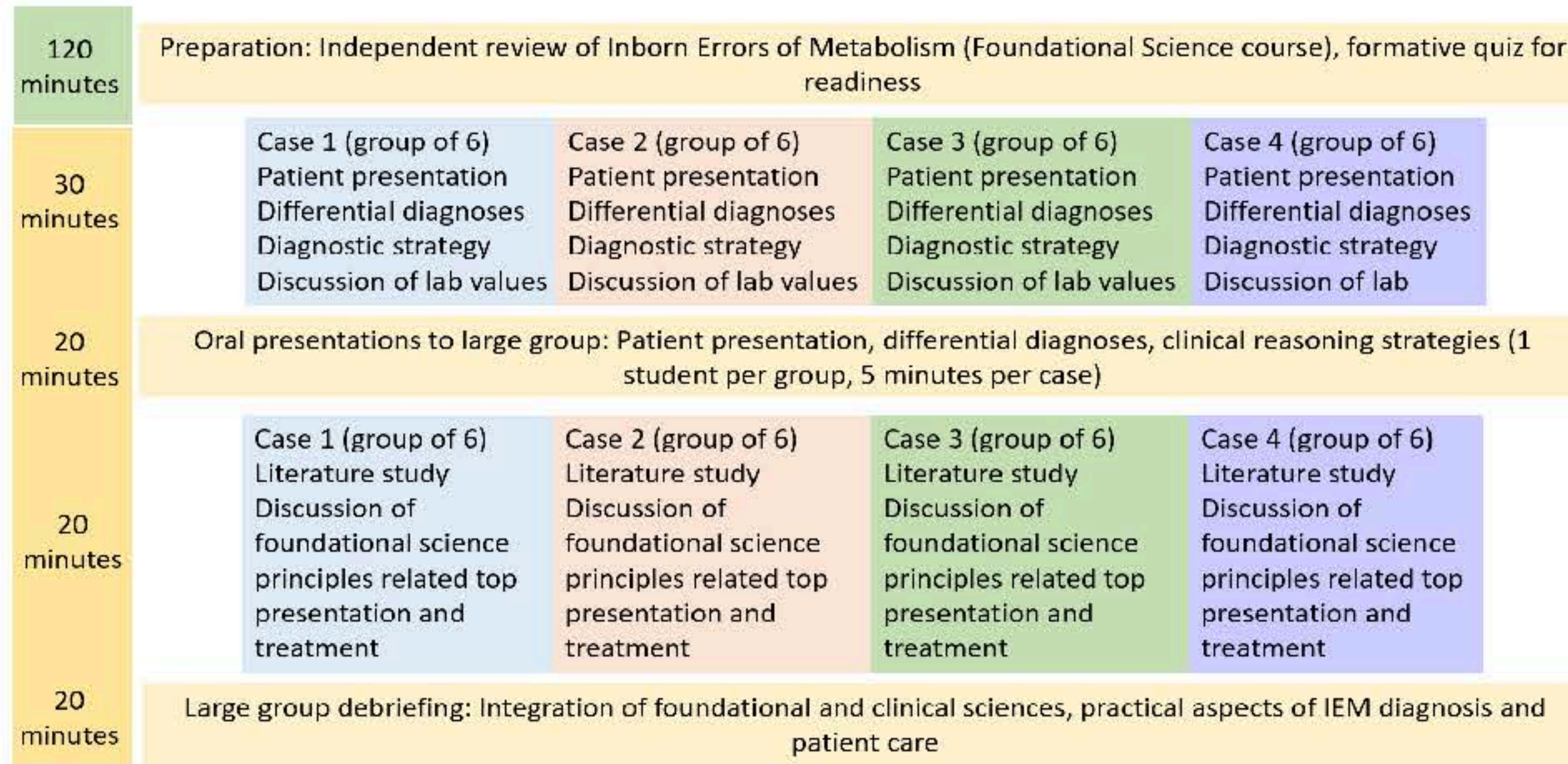
Team learning activities have been shown to be effective modalities for interprofessional education (IPE) because they reflect the collaborative nature of interprofessional care [1]. Structured learning activities like team-based learning (TBL) have been used successfully for IPE of large groups of health professions students [2, 3]. Des Moines University has been developing a unique small group learning activity during which students from different health professions programs discuss patient cases to highlight the connections between basic science principles and clinical presentations [4]. During the activity, called SKIPPs (Scientific knowledge Integrated in Patient Presentations), students combine their skills to work through a self-paced presentation simulating encounters with children presenting with inborn errors of metabolism (IEM). Faculty facilitators guide students as they discuss a diagnostic strategy, interpret test results, present the patient to a larger group, and explore the relevant evidence-based medicine (EBM) literature.

Objective

Evaluate the effectiveness of an interprofessional small group case-based learning activity on teamwork, clinical reasoning, and ability to integrate foundational and clinical sciences.

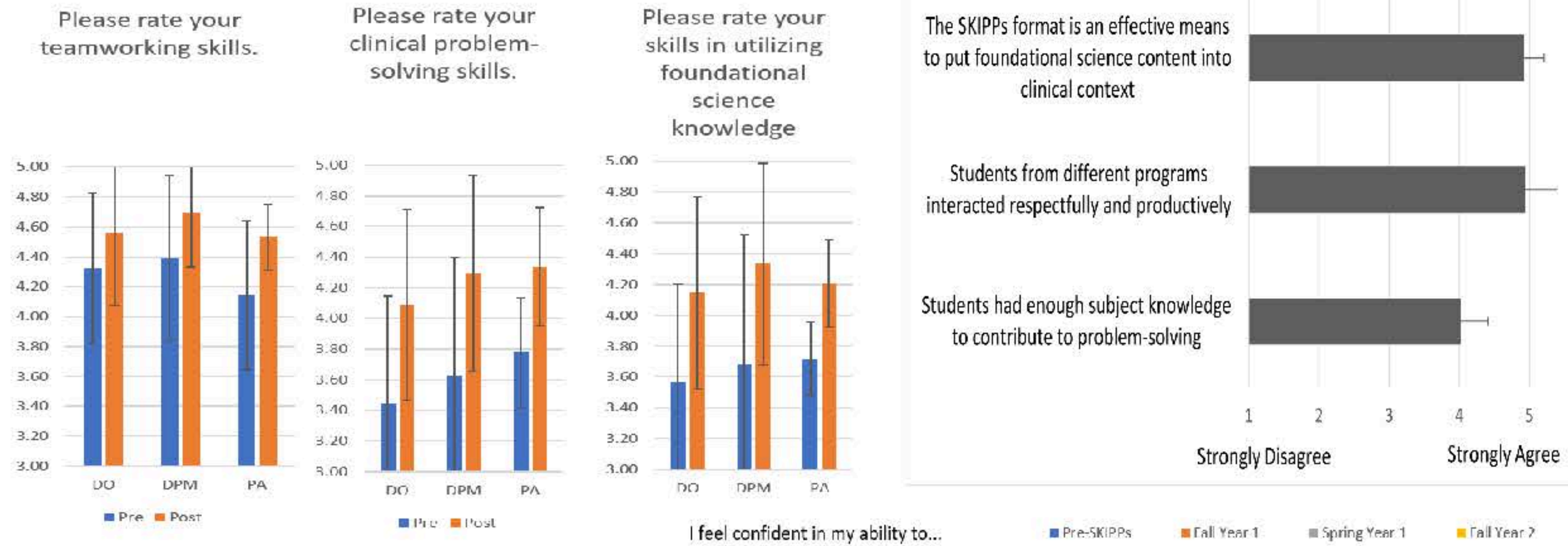
Methods

The SKIPPs activities are comprised of four distinct phases (Fig. 1): 1. Preparation/directed study, 2. Small group discussion of case and differential diagnoses, 3. Oral presentations to large group and 4. Study and discussion of pertinent literature to integrate basic science principles into clinical picture. SKIPPs sessions were scheduled in first-semester Foundational Sciences courses during which participants acquired the knowledge to understand clinical presentations of metabolic disorders. Over the course of 2 years, 572 students from 6 health science programs (DO, DPM, PA, MBS, MSA) participated in the SKIPPs. Students were divided into interprofessional groups of six, with four of these groups combined in a session to explore four cases of IEM. Student learning outcomes were assessed with pre- and post-survey of confidence in key skills as well as facilitator evaluations of group performance.



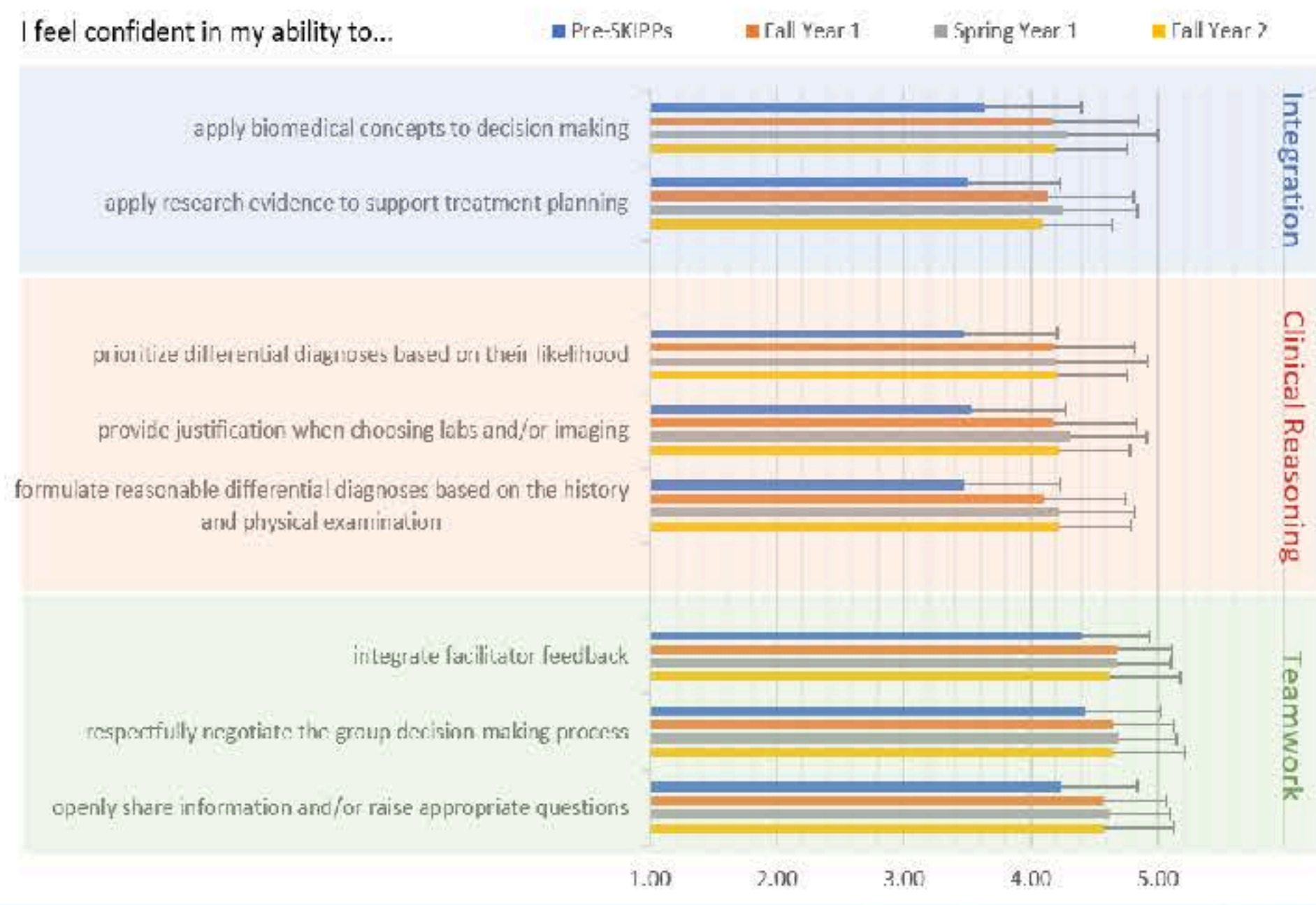
← Fig 1 Organization of SKIPPs session.

↓ Fig 3: Facilitator responses to questions on student performance and adequacy of preparation (N=5). Faculty agreed on the suitability of SKIPPs to foster the integration of basic and clinical sciences, and noted how the format allowed for respectful and productive discussion among students from different programs.



↑ Fig 2: Student ratings by program in the domains of integration, clinical reasoning, and teamwork tasks (N=530; rating scale 1-5, all pre/post-differences significant at p=1.4E-6 or lower, pre/post effect sizes are all large for integration and clinical reasoning, small to large for teamwork).

→ Fig 4: Participant self-evaluation of teamworking, clinical reasoning and science integration skills over the first 3 semesters' SKIPPs. Note that the most significant change occurs at the first SKIPPs session, with diminishing benefits thereafter.



Results and Discussion

Subjective evaluation of learning outcomes: Students were surveyed before and after the SKIPPs session. Subjective learning outcomes: Students were surveyed for their confidence in completing 8 tasks grouped into “integration of basic and clinical sciences”, “clinical reasoning” and “teamworking” skills (Fig. 2). Significant gains were observed in all categories, with the strongest effect in the clinical reasoning domain. Free text responses to a survey question on students’ impression of SKIPPs were analyzed with an emerging theme analysis (N=93). Comments were overwhelmingly positive (85%), and the most common themes were “great teamwork experience”, “would have liked more time to prepare” and “welcome opportunity to apply classroom knowledge to clinical scenarios”.

Medical Knowledge: Assessment of medical knowledge, conducted with three SKIPPs-related questions on the Foundational Sciences unit exam, shows that the learning outcomes of SKIPPs have been met (Average Difficulty 84 +/- 12%, Point Biserial 0.29) and that a clear improvement over pre-SKIPPs knowledge assessment occurred (pre-SKIPPs quiz score 61 +/- 11%). The SKIPPs activity was thus as effective as the traditional lecture format in respect to medical knowledge outcomes (overall biochemistry exam item difficulty of 78.9 +/- 11.8%; p=0.49).

Facilitator evaluation: Facilitators agreed that students interacted productively and agreed that the SKIPPs exercises provide a great opportunity to discuss the relevance of basic sciences for the understanding of clinical presentations (Fig. 3)

Longitudinal Effects: Student evaluations of teamwork, clinical reasoning, and ability to integrate foundational science concepts after SKIPPs was tracked over the following semesters (Fig4). The analysis showed that the strongest gains occur after the first SKIPPs, with little or no change from a high level of confidence afterwards.

Conclusions and Future Directions

Our data show that the SKIPPs format with its focus on teamwork, facilitator-guided clinical problem-solving and integration of basic sciences into clinical scenarios is effective for the development of clinical reasoning skills and improvement of medical knowledge. Students report enthusiasm for the interactive, small-group format and the opportunity to apply classroom knowledge to clinical scenarios. We conclude that SKIPPs exercises are effective for student progress in multiple competency areas and warrant the substantive organizational effort. Given that the largest gains occur after the first session, the inclusion of just one session into the curriculum already has clear benefits for student learning.

References

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