

SIP of Science: Interactive Social Forum Enables Interprofessional Interaction within an Academic Medical Institution

Hana L Haver¹, Terence R Flotte², Janet Hale³, Mary L Mazzanti⁴ and Micah Y Belew^{5*}

¹Department of Radiology, University of Massachusetts Medical School, Worcester, Massachusetts, USA

²School of Medicine, University of Massachusetts Medical School, Worcester, Massachusetts, USA

³Graduate School of Nursing, University of Massachusetts Medical School, Worcester, Massachusetts, USA

⁴Horae Gene Therapy Center, University of Massachusetts Medical School, Worcester, Massachusetts, USA

⁵Graduate School of Biomedical Science, University of Massachusetts Medical School, Worcester, Massachusetts, USA

*Corresponding author: Micah Y Belew, Email; mailto:micah.y.belew@gmail.com

Received: 26 July 2021; Accepted: 03 September 2021; Published: 07 September 2021

collaboration among health professionals to deliver optimal patient care [1]. To promote such an environment, pre-clinical students require an opportunity to learn from and work with one another by interacting with one another in a meaningful capacity [2,3]. Without such opportunities, students are likely to view their role in the interprofessional landscape through a limited lens described as traditional uni-professionalism [4]. With a lack of exposure to other professions, students are less likely to practice communication skills with members of other professions. As such, students may be prone to developing perceptions of other types of professionals that may subsequently hinder their ability to effectively integrate into a multidisciplinary team that acts cohesively to care for patients [5,6]. Therefore, initiating IPE early in the training of health and science professionals may complement the traditional uni-professional teaching of each school's curriculum, thereby increasing awareness and understanding of medical and scientific culture outside of your own profession [7].

IPE has been characterized into formal and informal types [2,8]. Informal IPE refers to unplanned learning that occurs between professionals or students of different professions, in a social environment without it's the intention to promote interprofessionalism [9]. Though traditional clinical training environments are not always specifically designed to foster interprofessional collaborative practice, it is in these environments, where opportunities arise for students to socialize together and interprofessional learning becomes inevitable [9]. Although informal IPE is recognized as a valuable source for interprofessional learning and that social interaction can provide a degree of social preparation for students of health professions to perform effectively as clinical team members, previous reports have focused primarily on formal IPE [8,10-14]. We therefore proposed to begin a conversation about pre-IPE, a socially focused IPE primer that fosters and encourages interprofessional engagement at both informal and formal levels of IPE.

The pre-IPE model satisfies two of the four competencies described by the Interprofessional Education Collaborative [15]. The first two competencies focus on values/ethics and roles/responsibilities, and the third and fourth competencies require recognition and execution of healthcare delivery [15]. The Dreyfus model describes the stages of skills acquisition and in the context of IPE, and the values/ethics competencies described by IPEC coincide with the first two critical learning stages proposed by the model, the novice and advanced beginner stages [16,17]. Here, we describe the pre-IPE initiative, Students as Interdisciplinary Professionals (SIP), at our academic health science center. SIP aimed to promote integration of students and faculty from the three schools on campus, the School of Medicine (SOM), the Graduate School of Nursing (GSN) and the Graduate School of Biomedical Sciences (GSBS). The "SIP of Science" forum series provided a space for discussion highlighting a variety of biomedical topics, including goals, challenges, and concerns shared by the faculty panelists from each school (nurse, physician, researcher). These sessions allowed for a display of common values and sentiments shared by the respective professions and allowed for probing of roles/responsibilities held by the different representatives. Here, we detail how SIP of Science addressed IPE in a comprehensive manner by showing how these meaningful interactions occurred within our educational community.

The Educational Institution of the Case Study

The study was performed at an academic health science center in New England. Across the three disciplines previously mentioned, annual enrollment is greater than 1,000 students, with more than 3,300 affiliated faculty members.

Abstract

Recent emphasis in Interprofessional Education (IPE) has led to the development of programs designed to cultivate a collaborative learning community for health professionals. However, there are few reports on initiatives that provide pre-professional students with an opportunity to engage on a social academic level with students and faculty outside of their own profession. While programs have sought to bring together those from different clinical professions, Students as Interdisciplinary Professionals (SIP) of Science helped us work towards forming relationships among those working at the research bench and at the clinical bedside. Our institution supported the formation of SIP of Science, as a platform to promote integration of students and faculty from the School of Medicine, the Graduate School of Nursing, and the Graduate School of Biomedical Sciences. Students and faculty from all three schools would participate in a student moderated panel discussion based on single unifying medical and scientific topic. Both the forum and social gathering before and after that occurred in SIP of Science allowed students and faculties from all schools within our institution to meet, interact, and establish a cross-disciplinary dialogue. Here, we describe how pre-IPE platform SIP of Science promoted a student to student, faculty to faculty, and student to faculty interaction which we call comprehensive IPE at our institution. After extensive modeling SIP of Science, we assessed for the existence of pre-IPE and comprehensive IPE through participant survey. Observations and a sample of SIP of Science participants provide evidence for the presence of interactions among students and faculty members of different professions, thus suggesting that pre-IPE had occurred. We propose that the SIP of Science may provide a model for academic health science centers to promote interactive pre-IPE opportunities.

Keywords and Abbreviations: IPE: Interprofessional Education (IPE); SIP: Students as Interdisciplinary Professionals (SIP); SOM: School of Medicine (SOM); GSN: Graduate School of Nursing (GSN); GSBS: Graduate School of Biomedical Sciences (GSBS)

Introduction

Interprofessional Education (IPE) aims to enhance the quality of

Promoting Inclusive IPE

The National Institute of Health’s Physician-Scientist Workforce identified a decline in physician-scientists, calling for an increase in this type of clinician [18,19]. We propose that rather than urging healthcare professionals to perform in the scientific arena, we first ought to optimize communication between the medical and scientific communities. Language varies among researchers and clinical practitioners; initiating early interaction to stimulate conversation between these groups in the pre-professional years of education (medical students, nursing students, Ph.D. candidates) may enhance patient care as well as increase the likelihood of biomedical science collaboration that often leads to innovation [18,20]. By consistently providing students of all health and science professions with an opportunity to share conversation, we considered our IPE was inclusive of all health care related professions at our institution.

Recruitment

SIP of Science was a student-led organization that consisted of students from each of the schools at our institution. Students conducted all planning, implementation, and evaluation of the SIP program. We invited student and faculty members from all three schools and its affiliated clinical programs to participate. Electronic correspondence was used in school-wide advertising campaigns for SIP of Science events. Printed paper fliers were posted one week prior to each event on research building bulletin boards, where most PhD candidates had their laboratories. In-person announcements were also made prior to the start of nursing and medical school lectures.

Social Forum as a Model of pre-IPE

We developed SIP of Science interactive events to appeal broadly to individuals from every school on the health science campus. Each forum was designed to engage students and faculty from all levels of training in a shared conversation in a comfortable social setting. In our experience, we found that panel-based forums featuring faculty members from each of the three schools was more successful in gaining participation from each professional school, compared to events that featured only one faculty member and drawing participants predominately from the same school. Topics for SIP of Science sessions were varied and tended to focus on areas that highlighted programs of interest at the institution (Table 1). For example, the topic of Obesity featured a nurse practitioner who works with patients with diabetes, a physician who specializes in bariatric surgery and a scientist who studies adipose tissue. During each event, all presenters and participants were seated and encouraged to address each other by first name (Figure 1).

SIP of Science program protocol

- Upon arrival to SIP of Science, participants were encouraged to interact while enjoying food and a selection of beverages for 15 minutes. Novelty of food type was observed to serve as both a conversation starter and point of attraction for student participants.
- The SIP of Science student leaders rotated as moderator for each session. To break the ice and set an informal tone, the student

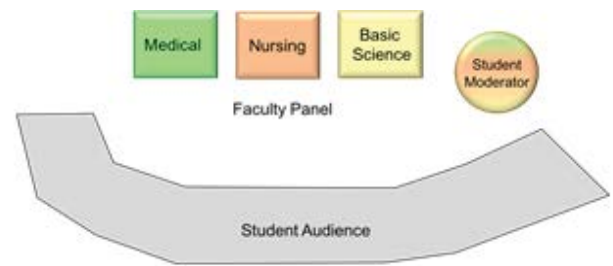


Figure 1: SIP of Science as a model to promote social interprofessional interaction.

moderator began each forum by introducing each faculty member using three personal facts. These shared facts promoted cordial and informal interactions, such that members of the entire group might find themselves sharing laughs and asking questions, further facilitating the flow of dialogue. Student moderator changed with each event and the moderator’s representing school was diversified.

- The student moderator further promoted discussion among the faculty members and engaged student participants by asking questions of both the panel and the audience. Upon addressing the group, students were encouraged to introduce themselves by first name and representative school to encourage a sense of familiarity. We found that students who listened and observed the interactions could pose unique questions and offer a distinct perspective to the conversation.
- Forum events were held six times per year on average (monthly during the fall, bimonthly in the winter semester). Specific time was selected where no required classes were scheduled for students in any of the three schools. SIP of Science forum events were strictly limited to one hour duration out of respect for the busy schedules of all present. At the conclusion of each event, participants were encouraged to follow-up with one another, individually and informally if they chose to do so.

SIP of Science Survey

The SIP of Science survey was developed by the authors, based on the readiness of health care students for interprofessional learning (RIPLS) survey described by Parsell and Bligh²¹, to evaluate whether the different types of interactions required to attain pre-IPE occurred at SIP of Science. Student (n=78) and faculty (n=33) participants who had attended at least one of nine SIP of Science events, received an email invitation for this voluntary survey after all sessions took place. It was distributed via e-mail to student and faculty participants using Qualtrics® survey software (Appendix A). Survey participation was voluntary. After obtaining informed consent, completed survey responses were collected anonymously. The survey consisted of 10 questions inquiring about the presence of specific interactions, perceptions of SIP of Science and IPE (Table 2). Responses were collected using a 5-point Likert-type scale that includes Strongly Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree and Strongly Agree. The survey was distributed to students (n=78) and faculty (n=33). Neither student nor faculty participants were aware of the survey or the questions prior to participating in SIP of Science. For data interpretation, individual responses were converted to a binary outcome, “Agree” or “Disagree” where “Agree” reflects responses combined from “Somewhat Agree” and “Strongly Agree” and Percent Disagree reflects responses combined from “Somewhat Disagree” and “Strongly Disagree”. Responses of “Neither Agree nor Disagree”, were omitted from the analysis. We included this answer not to force the participants into binary decisions. The percent outcome was then tested against a hypothetical outcome of 50% using Chi-square for statistical analysis. This study received an exemption determination from the Institutional Review Board of the academic health science

Table 1: List of SIP of Science events.

1.	Global Health
2.	Obesity
3.	Aging
4.	Addiction
5.	Cancer
6.	Genetics
7.	Brain
8.	Heart
9.	Young Alumni

Table 2: SIP of Science Survey Results. Likert-type scale responses were collected with the following answer choices, (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree and 5= strongly agree). Results were categorized into binary outcomes, Agree (agree and strongly agree) or Disagree (disagree, strongly disagree).

Questions	% Agreed (n)
SIP of Science promotes comprehensive IPE	
I observed or participated in conversation between faculty members from different schools	91 (n=29) p=0.0001
I observed or participated in conversation between students from the Same School	81 (n=26) p=0.0017
I observed or participated in conversation between students from Different Schools	78 (n=25) p=0.0051
I observed or participated in conversation between students and faculty from the Same School	91 (n=29) p=0.0001
I observed or participated in conversation between students and faculty from the Different Schools	75 (n=24) p= 0.0143
Pre-IPE encourages cohesive medical community	
Contributes positively to building a cohesive campus community	94 (n=30) p= 0.0001
Provides a platform for interaction among students/faculty in different professions	97 (n=31) p= 0.0001
Influences the likelihood that you will interact with students/faculty in different professions	88 (n=28) p= 0.0001
Interacting with other students/professionals is meaningful	97 (n=31) p= 0.0001
Communicating with other students/professionals will make me a better team member	97 (n=31) p= 0.0001

center. Following distribution of the survey, we received 32 responses to the survey after year 2018 from students (n=18) and faculty (n=14) (response rate 29% including student and faculty respondents).

Results and Discussion

Demographics

There were 78 unique student participants with an average of 24 participants in attendance for a single SIP of Science event, based on data collected from 9 events. There was consistently representation of at least one student from each school (medicine, nursing, basic science) at every event. Additional participants outside of the three schools were members of the MD-PhD program, physicians in residency, and post-doctoral fellowship programs. “SIP of Science: Addiction” drew the greatest number of student participants (n=43), with nursing and medical students accounting for 77% (n=33) of the total participants. Sessions on Cancer and Genetics had fewer participants, 23 and 25 individuals, respectively. We speculate that familiarity with the topic or invited faculty members may have influenced the decision of individuals to attend and consequently the total number and demographics of attendees. Because we found that individual participants represented each school at all formal events, we considered that SIP of Science was successful in curating an interprofessional environment for IPE.

SIP of Science promotes pre-IPE

We assessed whether SIP of Science promoted pre-IPE by initial observation to optimize the model then through survey results to collect participant perspectives. We found that at least 75% of all participants reported observing or participating in interactions among individuals representing different professions for each type of interaction (Q5; Table 2). Therefore, SIP of Science could be considered as a useful tool to promote pre-IPE within this academic health science center.

SIP of Science promotes Comprehensive IPE

IPE historically focuses on interactions among peers in different professions, horizontal interaction (Figure 2). Comprehensive IPE

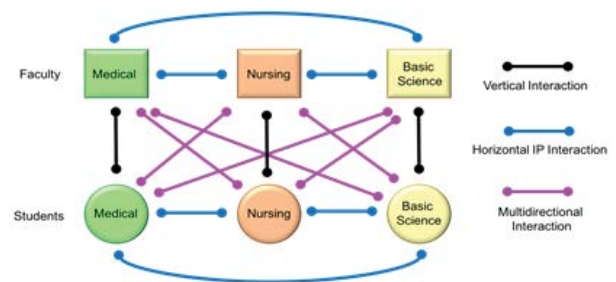


Figure 2: SIP of Science promotes comprehensive IPE.

Proposed model of SIP of Science. **A)** Faculty from each respective Schools were invited and moderated by students. Student moderator was rotated among organizing leader to promote sense of community and unbiased membership. **B)** Representative attendance distribution from all three schools at UMass Medical School

is distinct from IPE in that it occurs among peers as well as those with different levels of training. For example, an interaction among students and faculty members represents both horizontal and vertical interaction (Figure 2). Interactions between and among students and faculty, of multiple training levels (Figure 2), which we considered to represent comprehensive IPE. At SIP of Science, the student moderator guiding the session would ensure adherence to the program protocol and facilitate interaction among the students and faculty of all three schools. Survey data affirmed that student participants observed faculty to faculty (horizontal interactions) as demonstrated through the faculty member discussion on the panel. The addition of individual students from all three professions in a shared discussion was then considered to invoke comprehensive IPE (Figure 2). Consistently, our survey results showed that participants observed faculty-to-faculty interaction from different schools (91% Q1; Table 2), student-to-student interaction from the same and different schools (81% Q2 and 78% Q3; Table 2) and student-to-faculty interaction from the same and different schools (91% Q4 and 75% Q5; Table 2). The presence of all three interactions observed by the participants demonstrated that SIP of Science served as comprehensive IPE.

Pre-IPE promotes perception of cohesive community

Interprofessional team communication leads to better medical care¹. We hypothesized that providing a space for pre-IPE at SIP of Science will allow pre-IPE that will engender meaningful and lasting relationships that leads to a cohesive community. To further analyze the role of pre-IPE on cohesive community building, we inquired about the perceived value of SIP of Science to its participants. We reasoned that the role of pre-IPE on community building could be addressed by surveying perceived cohesion by survey of different professions. Ninety-four percent agreed that SIP of Science “Contributes positively to building a cohesive campus community,” (Q6; Table 1). Additionally, 97% agreed that SIP of Science is a platform for interaction among students/faculty in different professions (Q7 Table 1). We considered these results to indicate that as a participant in SIP of Science, individuals interacted with other professionals in different fields and gained insight into the roles of others and familiarity with how to interact with and learn from other health science professionals in informal social settings, which we considered to be vital to a cohesive community. However, this assessment has limited generalizability given that it represents a sentiment from a single time point. Further research could include a longitudinal evaluation of the effects of pre-IPE.

The majority (97%) of SIP of Science participants agreed that interacting with other students/professionals is meaningful (Q9; Table 2). We inferred that these meaningful interactions arose from the conversations that occurred across the room through all levels of professional conversation, where interprofessionalism was modeled in front of the student participants. Furthermore, we hypothesized that this meaningful conversation would provide individuals with interprofessional experience that would prime them for more cohesive teamwork when they enter a clinical environment. In agreement with our hypothesis, a majority (97%) of participants answered that communicating with other students/professionals will make them a better team member (Q10; Table 2).

We then asked participants about their perception of how SIP of Science would affect their future behavior. The great majority of participants (88%) agreed that SIP of Science “Influences the likelihood that you will interact with students/faculty in different professions” (Q8; Table 2). The response to this question positively reinforces our hypothesis that SIP of Science can provide individuals with a space to interact with individuals in other professions. Therefore, we concluded that pre-IPE through SIP of Science serves as a valuable resource for individuals to connect with those outside of their traditional silos and addresses the call for increased opportunities for genuine engagement with individuals in other professions. Limitations of this survey include small sample size, selection bias for survey respondents and dependence on self-reporting of participants to assess the types of interactions that occurred. Additionally, quantifiable observational data collected by the researchers will elucidate behavioral attributes of participants at SIP of Science. Collectively, self-reporting and behavioral study will be used to further optimize and inform the development of SIP of Science.

Conclusions

SIP of Science fulfilled its mission as a novel interactive social forum by providing a platform of multiple professions to interact, learn, exchange and generate ideas. We recently extended the reach of SIP of Science to include a Veterinary Medicine program near our institution. We believe our experience developing SIP of Science will: 1) continue to expand the size and diversity of the interprofessional community and 2) serve as a model for other medical and biomedical institutions to provide students and faculty with a platform to practice informal, professional interactions. The pre-IPE represents a viable model for a robust Interprofessional education.

Acknowledgements

We thank Robert Martin MD and Kathryn Crawford NP as the founding members of SIP, Lisa Beittel for guidance and encouragement early in the project. We also thank current SIP leader Hannah Simon-Girard MPH, RN, Lydia DiMarzio RN, and the current and past fellow student organizers, speakers and everyone who joined us for SIP of Science.

Funding Support

UMass Medical School Interprofessional Education Grant 2016. There is no conflict of interest. The authors declare no conflicts of interest in the publication of this work.

Role of the Funding Source

This project was funded by an internal Interprofessional Education Grant in 2016.

Declaration of interest

The authors declare no conflict of interest.

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Appendix A

SIP of Science 2018 Participant Survey

Start of Block: Please tell us about your experience at SIP of Science.

Q1 What is your role at UMMS?

- Student (1)
- Faculty Member (2)

Q2 What is your school? Check all that apply.

- Graduate School of Nursing (1)
- School of Medicine (2)
- Graduate School of Biomedical Science (3)

Q7 To what extent, if at all, do you agree with the following statements about the SIP of Science program?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Contributes positively to building a cohesive campus community (1)					
Provides a platform for interaction among students/faculty in different professions (2)					
Influences the likelihood that you will interact with students/faculty in different professions (3)					

Q15 During any SIP of Science session: To what extent, if at all, do you agree with the following statement about faculty-to-faculty interaction?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I observed or participated in conversation between faculty members of from different schools (1)					

Q4 During any SIP of Science session: To what extent, if at all, do you agree with the following statements about student-to-student interaction?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I observed or participated in conversation between students from the Same School (1)					
I observed or participated in conversation between students from Different Schools (2)					

Q5 During any SIP of Science session: To what extent, if at all, do you agree with the following statements about student-to-faculty interaction?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I observed or participated in conversation between students and faculty from the Same School (1)					
I observed or participated in conversation between students and faculty from the Different Schools (2)					

Q3 To what extent, if at all, do you agree with the following statements about interprofessional interaction ?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Interacting with other students/professionals is meaningful (1)					
I have to acquire more knowledge and skill than other students/professionals (2)					
Communicating with other students/professionals will make me a better team member (3)					

End of Block: Please tell us about your experience at SIP of Science.