

Building a Whole New Mind: An Interprofessional Experience in Patient Safety and Quality Improvement Education Using the IHI Open School

By Ryan Miller, MSIV; Tessa Winterton, MSIV; and Wendell W. Hoffman, MD, FACP

Abstract

Introduction

Throughout the last decade, there has been a significant move toward integrating patient safety and quality improvement concepts into health professions education, essentially building a whole new mind in terms of medical knowledge. While existing literature has suggested possible means of implementation, little research has described outcomes and specific examples of integration. The Institute for Healthcare Improvement (IHI) Open School offers a curriculum that could be incorporated in most health professions training. This project serves to study implementation of Open School courses, garner student feedback and guide the implementation of quality and safety curricula across health disciplines in South Dakota.

Methods

First-year medical and allied health students at the University of South Dakota completed surveys before and after having one introductory lecture and finishing two of the Open School courses in interprofessional teams within an existing health professions course.

Results

Medical student means showed significant differences in 16 of 16 ($p=0.05$) primary teaching points related to Open School course objectives, while allied health students showed significant differences in 13 of 16 ($p=0.05$) points. Students valued an introductory lecture and thought their educational experience was enhanced by the addition of the Open School courses.

Conclusion

Our results demonstrate that the Open School courses chosen for this sample of interprofessional students provide a simple, inexpensive and effective method to implement quality and patient safety concepts within existing health professions curricula.

Introduction

Teaching patient safety (PS) and quality improvement (QI) to health professions students is a relatively new concept but has been recognized as vital to the future of health care. The Institute of Medicine's landmark report in 2001, *Crossing the Quality Chasm*, recommended a restructuring of clinical education consistent with principles of 21st century health systems.¹ Fundamentally, the way forward will require a whole new way of thinking about knowledge, which is to turn the "art of medicine" into the new science of medicine, what one of the authors (WWH) has coined as "health care in its right mind."^{2,3,4,5}

Despite the need for change, the response of our

educational apparatus has been lacking. Into this void has stepped the Institute for Healthcare Improvement (IHI). IHI is an international leader in transforming health care delivery and an independent not-for-profit organization based in Cambridge, Mass. At its core, IHI affirms that "everyone should get the best care and health possible."⁶ Founded more than 25 years ago by Dr. Donald Berwick, IHI's work is focused in five key areas: improvement capability; person- and family-centered care; patient safety; quality, cost and value. To educate and equip the medical industry regarding these crucial pillars, the IHI Open School for Health Professions (hereafter termed Open School) emerged in 2008. In a mere five years, 580 health

professions schools and hospitals in 46 states and 60 countries have established chapters of the Open School.⁷ The Open School has accelerated the incorporation of PS and QI topics into health professions education and serves to "...fill the current gap in the professional preparation of improvement leaders while the educational institutions catch up with the need." The establishment of Open School chapters provides students, residents and faculty with free online courses and resources from world-renowned faculty, such as Lucian Leape, Don Berwick, Lloyd Provost and Jim Reinertsen, as well as a forum to facilitate interprofessional dialogue. The Open School online courses are completely revised and updated by an internal editorial team of Open School team members and physician advisors on an ongoing basis, making this knowledge continually new to the learner. Funding is via professional subscriptions to the courses as well as grants and donations. In addition, continuing medical education credit is offered for each course. Lastly, a basic certificate is available upon completion of core content modules, which cover PS, QI, leadership, person- and family-centered care and value. The most current information about the Open School can be accessed at www.ihl.org/offerings/IHIOpenSchool/overview.

The South Dakota Open School chapter was founded in the spring of 2011 with the goal of uniting health disciplines across the state to collaborate on important issues such as QI, PS, teamwork, communication, and patient-centeredness. The chapter now includes eight schools, and over 600 medical, nursing, pharmacy, occupational therapy, physical therapy, physician assistant, health service administration, health sciences, respiratory therapy, and health information management students are members who are participating in chapter events, online activities and QI projects.⁷

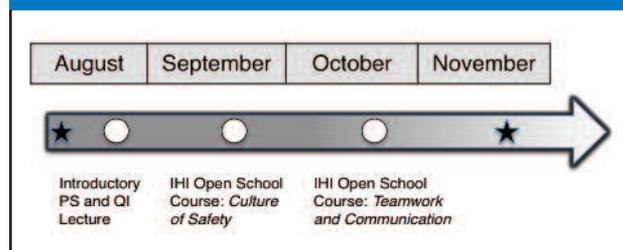
This project was created as a part of a Scholarship Pathways project (a student-designed longitudinal scholarly project within the school of medicine) and represents the first attempt within the chapter to demonstrate the legitimacy of the Open School online modules within a curriculum. The project introduced basic concepts of PS and QI into first-year medical and allied health curriculum using an introductory lecture and Open School courses in small interprofessional teams.

Methods

A one-hour introductory lecture discussing general PS and QI topics was given by one of the authors (WVH). Students completed two courses, PS 106: Introduction to the Culture of Safety and PS 103:

Teamwork and Communication, chosen because of their topic relevance and potential for group discussion.⁸ An existing interprofessional Gross Anatomy course at the University of South Dakota (USD) provided an ideal framework for the pilot project because students were already divided into interprofessional teams, and the project objectives coincided with existing Gross Anatomy objectives. The Gross Anatomy course included first-year medical, physical therapy, occupational therapy and physician assistant students, and all students enrolled in Gross Anatomy in the fall of 2011 were given the opportunity to participate. Students completed the courses in groups of four on the afternoon that their group was not in anatomy lab. One student per group was assigned as the facilitator, and he or she was provided a handout to help guide the group and foster discussion. The timeline for the project is shown in Figure 1.

Figure 1. Timeline for the interprofessional PS and QI project. Stars indicate pre- and post-project surveys.



Students completed a pre-project survey prior to the initial introductory lecture and a post-project survey following the completion of the two Open School courses. For most of the survey questions, students were presented with a statement and responded using a 5-point Likert scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. The full list of survey items can be found in Appendix 1. The 16 primary items on the investigator-developed surveys were adopted from the Open School course objectives. Other survey items were included to obtain feedback regarding the introductory lecture, the small group setting and the overall educational experience. The mean student ratings were compared using mixed model repeated measures in PROC MIXED in SAS. Clearance for the project was provided by the USD

Table 1. Means for responses related to overall Anatomy educational experience with QI and PS project added (Scale 1-5 with 5=strongly agree).

Overall Anatomy Educational Experience with QI and PS concepts added	Allied Health Students	Medical Students
My exposure to the larger context of medicine as taught by including patient safety and quality improvement topics such as culture of safety, teamwork and communication in medicine, and patient centered care enhanced my educational experience in Anatomy.	3.339	3.263

Table 2. Student preferences for individual versus group completion of the IHI Open School courses and whether they thought the courses were beneficial at this early point of their education.

	Allied Health Students	Medical Students
Prefer individual work	23 (45%)	24 (69%)
Prefer work group	28 (55%)	11 (31%)
Beneficial at this time	23 (50%)	18 (53%)
Not beneficial at this time	23 (50%)	16 (47%)

Institutional Review Board.

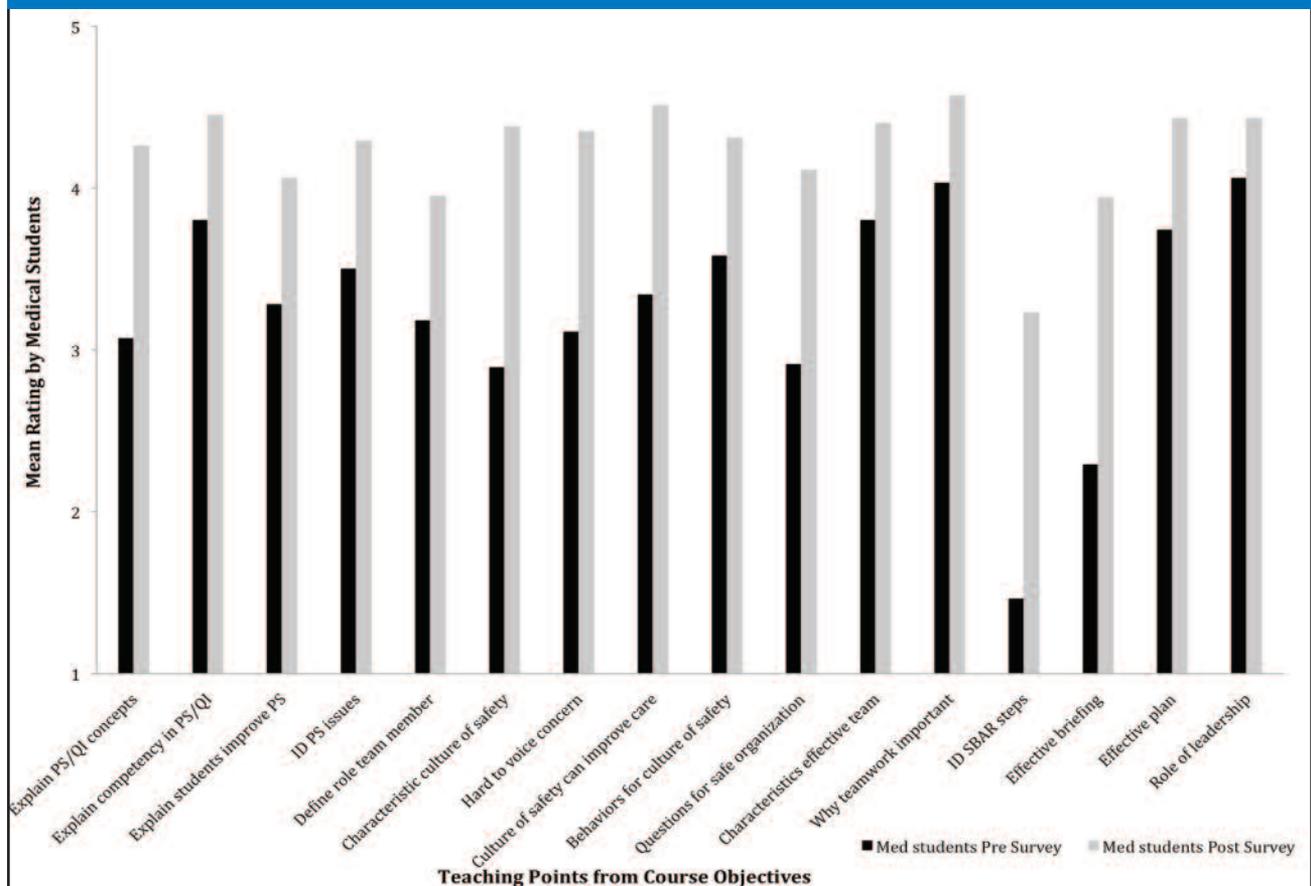
Results

Pre- and post-project surveys were completed by 110 students, representing 87 percent of all students enrolled in the Gross Anatomy course. Figures 2 and 3 show mean student ratings for 16 primary items for medical students and allied health students, respectively; statistically significant differences are noted in each figure. The medical student means showed significant difference in all items ($p=0.05$), while allied health students showed differences on 13 of 16 items ($p=0.05$). When evaluating

medical and allied health students as a whole, the overall group showed a difference in all cases except item 16.

Students felt that the short introductory lecture was beneficial and relevant to their education, and mean values were 3.9 and 4.4 (5=strongly agree) for allied health and medical students, respectively. Additionally, students were asked to respond on how the courses related to their overall educational experience. The students generally agreed with the statement that these courses enhanced their educational experience in Anatomy. When asked about the setting in which they preferred taking the courses, 55 percent of allied health students preferred small groups, while only 31 percent of medical students preferred the small group setting. Finally, students were asked about their impressions of the Open School courses as they relate to content and whether these courses were beneficial at this point of their education; 50 percent of allied health students and 53 percent of medical students agreed that the content was beneficial and timely. These post-survey questions were not subjected to statistical analysis but were used for future course improvement.

Figure 2. Mean medical student rating by teaching point (5=strongly agree). The pre-project survey data is in black and the post-project survey data is in gray. Pre-project and post-project changes were significant at all points ($p<0.05$).



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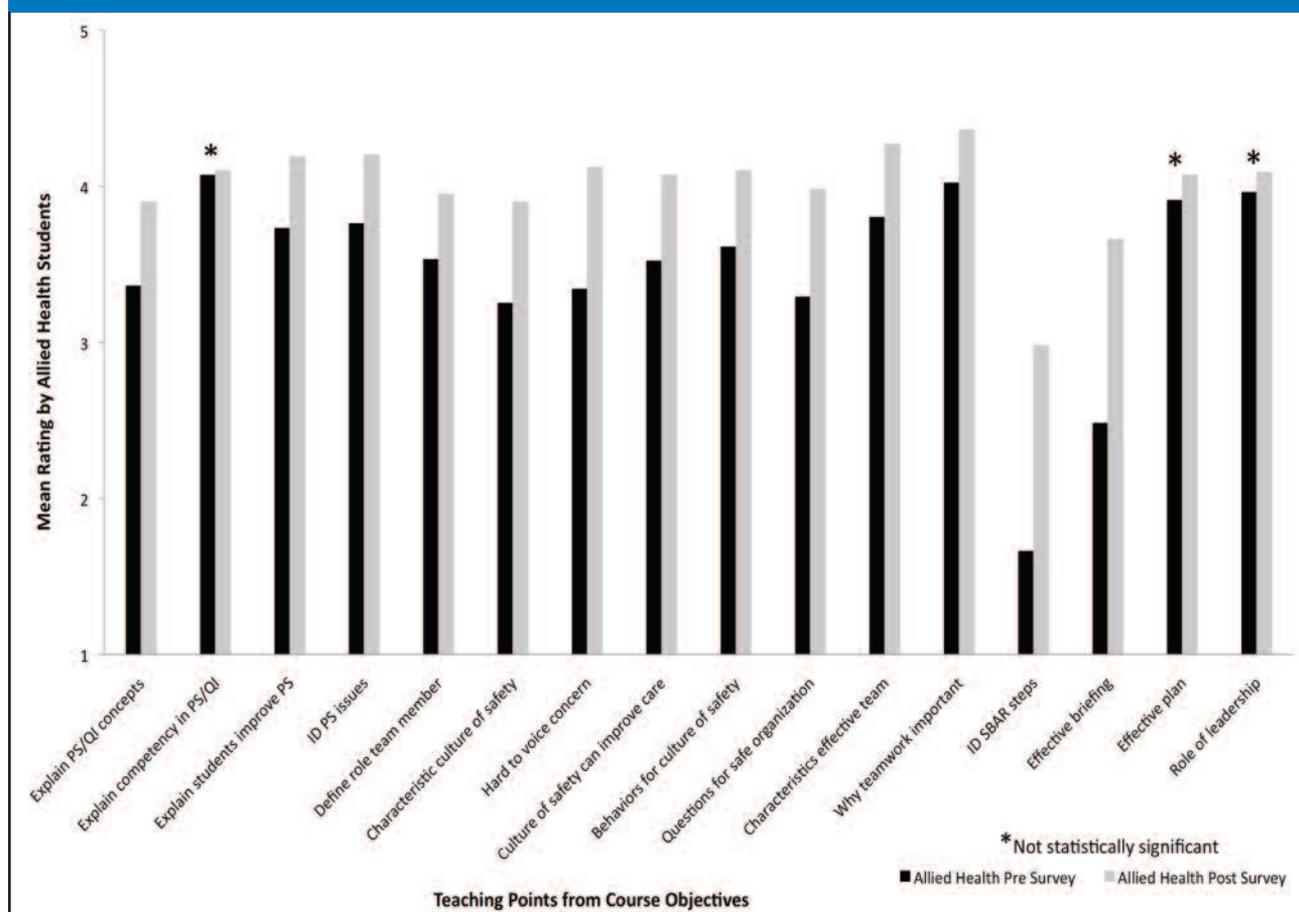
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Figure 3. Mean allied health student rating by teaching point (5=strongly agree). The pre-project survey data is in black and the post-project survey data is in gray. All teaching points were significant ($p < 0.05$) except for those indicated with asterisks.



Discussion

Our results show that significant learning took place in most categories. Some differences between allied health and medical student groups were noted (Figures 2 and 3). These differences may be attributed to prior clinical experience in the allied health students who are often required to have a number of patient contact hours prior to entering their programs. Response bias could also account for some of the pre- to post-survey changes, as students may have “expected to learn the material” and ranked the post-survey items higher. Additionally, how the courses are implemented and the enthusiasm of the instructor or facilitator is important for course success. For example, simply placing the Open School courses as an “add-on” in an already busy basic science course may not seem relevant to students, unless faculty advocate how the Open School can bring the basic science courses to life. Nonetheless, this method of integrating the Open School in an existing interprofessional Gross Anatomy course was effective in teaching students important quality and safety concepts early in their education.

As noted, there were mixed responses in terms of whether to take the courses individually or in groups. Allied health students tended to prefer groups, while medical students tended to prefer taking the courses individually. These responses were based on apparent perceptions of time constraints, group dynamics, or other aspects more related to the culture of each particular discipline. It would be interesting to study the best setting for student learning: small groups, individual study, or courses taken individually with subsequent discussion in small groups using related case studies. Since both small group and individual study seem acceptable to students, either could be implemented based on the needs of a particular course or curriculum.

We are encouraged that students generally appreciated the content of the courses, and this speaks highly of the quality of the Open School courses. On average, students believed the courses enhanced their educational experience in Gross Anatomy. This finding, while only slightly above neutral in terms of mean ratings, suggests that these PS and QI concepts are applicable in courses other than specifically designated quality/safety or clinical medicine

courses. In addition, while the responses were mixed, approximately half of students felt that the content was beneficial for first-year students just beginning their formal health care training. Of the students who did not feel that the courses were beneficial at this time, nearly all stated that placement closer to their clinical experiences would be more appropriate.

The study has several limitations. First, some key health care disciplines such as nursing and pharmacy were not included. Second, the Open School courses were studied in the context of a Gross Anatomy course and completed in a way that added additional work to an already busy course; had the Open School courses been implemented in a course that focused specifically on these topics, the responses may have been quite different. Third, student rather than faculty facilitation of the courses during the small group time may have influenced the perception of the courses. Finally, we are using one sample of students from a first-year class at a single university.

Overall, the responses from students were compelling enough that we feel confident in suggesting that the Open School be used as the foundational quality curriculum in a wide range of health professional programs. For students to have even a small amount of interest in the concepts within a required, student-developed pilot project is impressive and speaks to the importance which students place on these topics. Significant improvement was demonstrated in all disciplines in nearly all categories, suggesting that Open School courses are beneficial for multiple health disciplines.

Conclusion

Health care is in the midst of a knowledge revolution, and educationally will demand a new paradigm to build a whole new mind, one that admits that we can no longer teach just to the patient, but must also teach to the context of the patient. Our overriding goal is to integrate Open School courses and QI projects into health professions curriculum at all South Dakota health professions schools. We plan to create a community where students and health care providers in all disciplines use the same quality and safety language to work effectively in interprofessional teams, with a focus on patients and their safety. Open School courses prove to be a simple, inexpensive and effective way to quickly implement PS and QI concepts within health professions curricula. The tools are out there for us to make momentous change, and so we must start together to build that whole new mind.

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