ILLUMINATIONS

The use of Twitter and Zoom videoconferencing in healthcare professions seminar course benefits students at a commuter college

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INTRODUCTION

The Healthcare Professions Seminar, Intercollege (INCO) 403, is a required course for all prehealth majors at the University of New Hampshire. It is a two-credit pass/fail course, which provides information on the requirements for application to professional schools. Throughout the course, students create their resume, personal statement, and healthcare resume. The course meets twice a week face to face, and in the first class meeting of each week guest speakers from different healthcare professions speak with the students about their careers. In the second class meeting, a recitation, students discuss the presentations of the guest speakers and create the documents needed to apply for professional school. Exposing undergraduates to guest speakers from different healthcare professions increases their awareness and appreciation of the different responsibilities of each position and of the need for collaboration in providing patient care.

Undergraduate seminar courses have been shown to increase student content knowledge (5, 12). In addition, students value seminars because they are grouped with other students who share a common interest, they can make new friends, and they benefit by discussing common career goals and approaches to achieving these goals (2). When students actively participate in seminar courses, their enthusiasm for the subject increases, and their communication skills improve (11). Seminar courses provide the optimum approach to active learning because they are small in enrollment, students can share ideas with their peers, and the instructor has the opportunity to get to know them well (5). The development of a closer personal relationship with the instructor can benefit the student when it comes time to ask the instructor for a letter of recommendation, because the instructor can write a more in-depth letter (5).

The University of New Hampshire has six colleges, with one college, Manchester, located 45 min away from the main campus (Durham) to serve the urban population of the state. The Manchester College is nonresidential and enrolls students whose offices are located on the main campus: the Director of Undergraduate Research, Pre-Professional Health Advising, International Research Opportunities, Office of National Fellowships, and Center for Academic Resources. Through this coordination of schedules and use of Zoom, our students had the same content delivery from week 2 to week 5 of the semester. For the remaining 7 wk of the semester, guest speakers came to class or presented via Zoom to the students in Manchester (see APPENDIX A), while the main campus offering had their own set of guest speakers.

To accommodate our student population, we replaced the face-to-face recitation with asynchronous discussions on Twitter. Providing an asynchronous platform for student interactions and discussions allows students more time for reflection before answering questions (5). The use of Twitter as an asynchronous discussion tool has been shown to support robust student discussions in an educationally relevant manner (6, 7, 9, 10). In a prehealth major’s first-year seminar course, students used Twitter to continue the class discussion, on several different types of topics, after the weekly class session ended (9). Instructors are encouraged to try new modes of discussion, and Twitter has been shown to increase student engagement in course content (4, 9). This study evaluates the course redesign and describes how the students benefited through the use of Twitter to host a weekly class recitation and of Zoom to host guest speakers.

Course redesign. In the past, INCO 403 has only been offered on the main campus of our university. The location, time of day, and number of evening class meetings (2) per week made it inconvenient for our students to attend. In the spring of 2018, the course was redesigned as a hybrid course to provide our students with a valuable opportunity that would prepare them for applying to professional school. At this first-time offering at our college, 10 students enrolled in the course: 3 sophomores, 2 juniors, and 5 seniors. On Monday nights, the students met from 6 to 7:20 PM in a classroom on our Manchester campus. This class meeting time is the same as on the main campus (Durham) to coordinate face-to-face presentations (via Zoom videoconferencing) by university personnel whose offices are located on the main campus: the Director of Undergraduate Research, Pre-Professional Health Advising, International Research Opportunities, Office of National Fellowships, and Center for Academic Resources. Through this coordination of schedules and use of Zoom, our students had the same content delivery from week 2 to week 5 of the semester. For the remaining 7 wk of the semester, guest speakers came to class or presented via Zoom to the students in Manchester (see APPENDIX A), while the main campus offering had their own set of guest speakers.

The second class meeting of each week on the main campus was a face-to-face recitation held on Wednesday nights from 6 to 7:20 PM. At this recitation, students discussed the documents needed for application to professional school and the presentations of the weekly guest speakers. As our students work part-time and some full-time, the likelihood that they would be able to attend the course two nights a week was slim. To ensure they were getting the same content and experience as...
the students on the main campus, the recitation was held asynchronously on Twitter from Monday 7:30 PM to Wednesday midnight. After the first two Twitter recitations, the students asked if the deadline could be extended to Thursday at midnight, and the instructor obliged.

Twitter training and recitation design. Only four students had previously used Twitter, so time was spent during the first class meeting demonstrating how to sign up for an account and proper netiquette (net etiquette). After students created a username, they wrote it on the whiteboard so their classmates could “follow” them and the instructor (@BSCIPprof) on Twitter. The instructor divided the class into two groups and assigned a specific hashtag for each group to use in all of their tweets: #INCO4031 and #INCO4032. The instructor then tweeted a simple tweet to both groups: “How much snow did you get?” Each student then tweeted his or her answer with his or her designated group hashtag. Their tweets were projected on the screen in the front of the class. Anyone who had difficulty was given assistance. By the end of the class period, all students were following each other, as well as the instructor, and each had successfully participated in the practice discussion. The first class discussion started with the instructor asking each group a question about course content. The time period for the assignments was from the time class ended until midnight Thursday night. The students were required to answer the instructor’s question, and tweet at least two more times. These additional tweets could be a comment on class content, or a question or an answer to a student question. The first discussion was perfunctory, with 7 of 11 students tweeting from one to three times. The remaining students tweeted more: four to six times. The following week in class, it was reemphasized that this Twitter discussion was replacing a face-to-face recitation held on Wednesday night. The students were told to tweet at least three times per week. This clarified the expectation, and all but one student tweeted from 3 to 11 times. The participation in the remaining discussions met or exceeded the tweet requirement (3 tweets/student); the discussions were robust and brought in relevant topics that the in-class guest speaker presented.

Surveys. Pretest surveys (APPENDIX B) were distributed and collected at the end of the first face-to-face class meeting. The posttest surveys were distributed and collected at the last face-to-face class meeting. Institutional Review Board approval from the University of New Hampshire was granted for each survey administered (UNH IRB no. 6853).

RESULTS

On the pretest, the students were asked about their Twitter use, seven students stated that they had not used Twitter in the past, and four indicated that they had previously used Twitter. The most common use of Twitter was to communicate with friends and family. The next most common uses were to follow celebrities and news, with one response of networking. Twitter is a form of process-oriented guided inquiry learning (POGIL), due to the constant interaction between students (3) and were preferred over the traditional recitation (Table 1). Social media is a collaborative learning tool, which provides the students with a convenient platform to learn from each other (8).

An additional unexpected benefit of using Twitter was the recitation was never canceled due to stormy weather. The class on the main campus was canceled 3 wk in a row due to snowstorms, and the students fell behind in the material. In addition, several guest speakers who were driving to the Monday face-to-face class sessions on the main campus had to cancel due to bad weather, and these speakers were unable to reschedule. Thus the students lost the opportunity to meet a professional and hear their career insights. In contrast, using Zoom provided a broader geographic opportunity with guest speakers who presented from three different states. At the initial invitation, guest speakers were told they did not have to drive to campus, and all accepted the invitation to present via Zoom. None had used Zoom in the past, and all were successful in using it the first time. As the class meetings were held in the evenings, the speakers were all available, and some participated from their homes. They enjoyed the opportunity to talk with the students and liked

| Reasons                                                                 | Posttest Results, no. |
|------------------------------------------------------------------------|-----------------------|
| I would prefer to use Twitter as a discussion tool instead of in-class face-to-face meeting because: |
| a. It helped me fit the discussion into my schedule                     | 9                     |
| b. I did not have to be on campus for the discussion                    | 8                     |
| c. I could reflect on the questions before answering them               | 8                     |
| d. It allowed more interaction than an in-class discussion              | 4                     |
| e. It helps shy people participate because no one is looking at you     | 7                     |
| f. Other: It is effective, and we don’t have to drive to class          | 1                     |

Values are no. of responses for each reason.

Efficacy of Zoom videoconferencing to host guest speakers. Before this course, the instructor had not used Zoom to host a meeting. With the help of the Instructional Technology Staff, she created a Zoom link that was used each week. The link was sent via e-mail a few days in advance of the class time to each of the guest speakers. All of the invited guest speakers had never used Zoom previously, found it easy to use, and appreciated the convenience of not having to drive to our location. The guest speakers were from New Hampshire, Connecticut, and Maine. In addition to the guest speakers who participated remotely, there were also many who came to the class in person.

Conclusion. Using the hybrid model with recitations on Twitter was very successful, and this model will be used again in the spring of 2019. The benefits of using this model were threefold: the students could fit the recitation into their school work schedules, they had additional time to reflect on the questions before answering them, and the shy student could actively participate (Table 1). The 280-word limit lends itself to the writing style of prehealth majors, who tend to write concisely. The active group discussions held on Twitter are a form of process-oriented guided inquiry learning (POGIL), due to the constant interaction between students (3) and were preferred over the traditional recitation (Table 1).
using Zoom. All said they would return as guest speakers in the future.

The future of this course is bright, as it is serving the specific needs of our student population by making course content and discussions more accessible with the use of Twitter in the place of a face-to-face recitation session, and using Zoom to provide opportunities for guest speakers to talk with the students. As the instructor, I learned more specific information about what our students need to be prepared to apply to professional schools and more about the many different health professions from our guest speakers. Through our own academic advising, the enrollment of the course will grow and become part of the sophomore-year curriculum. With increased enrollment, there will be more discussion groups formed as needed, each with its own hashtag using the format #INCO4031, #INCO4032, and #INCO4033. By keeping the small-group format, it will ensure that the discussions remain robust. By offering this course in a mode that accommodates our student population, we are providing them with the information and skills needed so they can be successful in applying to, and being accepted into, professionals schools as the logical next step toward their future careers.

APPENDIX A

List of Guest Speakers
Week 1: No guest speakers
Week 2: Directors of Pre-Professional Health Program Advising and Center for Academic Resources
Week 3: Directors of University Advising and Career Center National Student Exchange Program and International Re-search Opportunities
Week 4: Director of Undergraduate Research Center
Week 5: University of New Hampshire Manchester Directo-ors of Study Abroad, Internship and Career Planning, Aca-demic Enrichment (Writing Center)
Week 6: Panel of Current Applicants to Dental, Pharmacy, and Physicians Assistant Schools
Week 7: Current Medical Students via Zoom
Week 8: Panel of Physicians via Zoom
Week 9: Panel of Pharmacists
Week 10: Panel of Physician Assistants
Week 11: Panel of Dentists
Week 12: Wrap up

APPENDIX B

Surveys

Pretest survey: INCO 403, Healthcare Professions Seminar. The pretest survey is as follows:

Name: _____________________________

1. Select your number one career choice.
   a. Medical doctor (MD)
   b. Medical doctor (DO)
   c. Dentist
   d. Physician’s assistant
   e. Nurse
   f. Pharmacist
   g. Optometry
   h. Other__________________________

2. Select your number two career choice.
   a. Medical doctor (MD)
   b. Medical doctor (DO)
   c. Dentist
   d. Physician’s assistant
   e. Nurse
   f. Pharmacist
   g. Optometry
   h. Other__________________________

3. Select five of the following that will be part of your 5-point action plan of what you need to accomplish this term, this summer, and next year to achieve your career goals.
   a. Shadow a healthcare professional
   b. Complete a healthcare resume
   c. Complete my personal statement
   d. Read more about healthcare professions
   e. Network with other students and learn about healthcare professions
   f. Meet with the prehealth advisor and talk about my career options
   g. Meet with my academic advisor and talk about my career options
   h. Other__________________________

4. Have you used Twitter in the past?
   a. Yes
   b. No

5. If you answered yes to question 4, please select all the ways you have used Twitter in the past.
   a. To follow celebrities
   b. To follow news
   c. To communicate with friends or family
   d. For class discussions
   e. For class announcements
   f. Other__________________________

Posttest survey: INCO 403, Healthcare Professions Seminar. The posttest survey is as follows:

Name: _____________________________

1. Select your number one career choice.
   a. Medical doctor (MD)
   b. Medical doctor (DO)
   c. Dentist
   d. Physician’s assistant
   e. Nurse
   f. Pharmacist
   g. Optometry
   h. Other__________________________

2. Select your number two career choice.
   a. Medical doctor (MD)
   b. Medical doctor (DO)
   c. Dentist
   d. Physician’s assistant
   e. Nurse
   f. Pharmacist
   g. Optometry
   h. Other__________________________

3. Select five of the following that will be part of your 5-point action plan of what you need to accomplish this term, this summer, and next year to achieve your career goals.
   a. Shadow a healthcare professional
   b. Complete a healthcare resume
   c. Complete my personal statement
   d. Read more about healthcare professions
   e. Network with other students and learn about healthcare professions
   f. Meet with the prehealth advisor and talk about my career options
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h. Other

4. If you changed your career choices or the order of career preference, explain why.

5. In future classes, I would prefer the asynchronous Twitter discussions.
   a. Yes
   b. No

If you answered yes to question 5, continue to question 6. If you answered no to question 5 continue to question 7.

6. I would prefer to use Twitter as the discussion tool instead of in-class face-to-face meeting because_________________________.

Select all the answers that apply to your experience.

a. It helped me to fit the discussion into my schedule because it was asynchronous.

b. I did not have to be on campus for the discussion.

c. I could reflect on the questions before answering them.

d. It allowed more interaction than an in-class discussion.

e. It helps shy people participate because no one is looking at you.

f. Other_________________________

7. I would prefer to have the discussions in-class face-to-face because_________________________.

Select all the answers that apply to your experience.

a. I can see everyone while they are participating.

b. The in-class face-to-face format is my preferred learning style.

c. I am not interested in using social media in this format.

d. Other_________________________

8. Other comments_________________________

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No conflicts of interest, financial or otherwise, are declared by the authors.

AUTHOR CONTRIBUTIONS

P.A.H. and M.K.K.L. conceived and designed research; P.A.H. and M.K.K.L. performed experiments; P.A.H. analyzed data; P.A.H. and M.K.K.L. interpreted results of experiments; P.A.H. prepared figures; P.A.H. drafted manuscript; P.A.H. and M.K.K.L. edited and revised manuscript; P.A.H. and M.K.K.L. approved final version of manuscript.

REFERENCES

1. Cino K, Austin R, Casa N, Nebocat C, Spencer A. Interprofessional ethics education seminar for undergraduate health science students: A pilot study. J Interprof Care 32: 239–241, 2018. doi:10.1080/13652929.2018.1587771.

2. Cochrane C. The attitudes of undergraduate Information Management students to seminars: a qualitative and a quantitative analysis. Educ Inf 16: 315–331, 1998. doi:10.3233/EFI-1998-16402.

3. Ebner M, Lienhardt C, Rohs M, Meyer I. Microblogs in higher education: a chance to facilitate informal and process-oriented learning? Comput Educ 55: 92–100, 2010. doi:10.1016/j.compedu.2009.12.006.

4. Feito Y, Brown C. A practical approach to incorporating Twitter in a college course. Adv Physiol Educ 42: 152–158, 2018. doi:10.1152/advan.00166.2017.

5. Finch JD, Hand LN. Using an E-mail tutorial and student seminars to improve an intermediate-level undergraduate physics course. Am J Phys 66: 914–919, 1998. doi:10.1119/1.18981.

6. Gamstso CW, Halpin PA. Tailoring library instruction for non-science majors taking hybrid and online science classes: student perceptions of information literacy in the virtual environment. Public Serv Q 14: 99–118, 2018. doi:10.1080/15228959.2017.1372729.

7. Halpin PA. Using Twitter in a non-science major science class increases students’ use of reputable science sources in class discussions. J Coll Sci Teach 45: 71–77, 2016. doi:10.25054/jcst16_045_06_71.

8. Jang Y. Convenience matters: a qualitative study on the impact of use of social media and collaboration technologies on learning experience and performance in higher education. Educ Inf 31: 73–98, 2015. doi:10.3233/EFI-150948.

9. Junco R, Heiberger G, Loken E. The effect of Twitter on college student engagement and grades. J Comput Assist Learn 27: 119–132, 2011. doi:10.1111/j.1365-2729.2010.00387.x.

10. Leilis-Santos C, Halpin PA. Workshop Report: “Using Social Media and Smartphone Applications in Practical Lessons to Enhance Student Learning” in Búzios, Brazil (Aug. 6 – 8, 2017). Adv Physiol Educ 42: 340–342, 2018. doi:10.1152/advan.00011.2018.

11. Palappallil DS, Sushama J, Ramnath SN. Effectiveness of modified seminars as a teaching-learning method in pharmacology. Int J Appl Basic Med Res 6: 195–200, 2016. doi:10.4103/2229-516X.186971.

12. Weberschock TB, Ginn TC, Reinhold J, Strametz R, Krug D, Bergold M, Schulze J. Change in knowledge and skills of year 3 undergraduates in evidence-based medicine seminars. Med Educ 39: 665–671, 2005. doi:10.1111/j.1365-2929.2005.02191.x.