

Student Feedback During COVID19: Considerations for Future Remote Learning Innovations

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The COVID-19 pandemic prompted faculty in higher education to deliver instruction and assessment via a fully remote learning environment (RLE) to accommodate the new social distance guidance.^{1,2} As the learning environments within pharmacy programs across the country were adapted to meet student needs in accordance with the Center for Disease Control (CDC) guidelines, students and faculty were faced with new challenges related to course delivery, communication, class participation, assessment, and ensuring curricular goals continued to be met. As schools moved forward with new plans for course delivery within the RLE, assurance that programs could adapt and meet student needs played an even greater role in the academic setting. Student-based feedback has traditionally been a valuable tool for ensuring quality improvement within a pharmacy curriculum, and with rapid conversion to full RLE, this feedback was sought out by many programs to enhance and ensure student competency was maintained. We aim to report student perceptions of implementation of RLE in two distinctive schools of pharmacy in order to provide further insight into optimization of RLE during the COVID-19 pandemic.

Methods

This study combined student course evaluation data from two schools of pharmacy. Surveys from both schools were administered electronically to students following the completion of courses in the spring of 2020 during the COVID-19 pandemic, following at least one round of RLE utilization within their respective curriculums. This project was approved by the University of Georgia (UGA) Institutional Review Board (IRB) and was

Abstract

Introduction: The COVID-19 pandemic abruptly changed higher education from face-to-face delivery to remote learning environments. Student feedback is a valuable tool that ensures innovations in content delivery are effective and challenges are addressed during the pandemic.

Objective: Evaluate student perceptions on remote learning in two distinctive schools of pharmacy.

Methods: This report details student feedback in the remote learning environment at two schools of pharmacy during the pandemic in spring 2020. Schools of pharmacy organized distinct surveys which included both Likert scale and qualitative questions reflecting on student experiences with remote learning. Responses were reported descriptively, and qualitative comments analyzed via content analysis.

Results: Student responses within both programs were positive regarding the transition to remote learning with students outlining several beneficial aspects of the change. Students also reported some challenges related to distractions, learning environment, engagement, and groupwork. Reported benefits include comments about technology, communication, self-paced materials, and lack of commute.

Conclusions: Student feedback should be utilized to ensure that challenges, barriers, and preferences of students are addressed as the remote learning environment persists.

deemed to be non-human subject research by the Medical College of Wisconsin (MCW) IRB.

The UGA College of Pharmacy offers a four-year Doctor of Pharmacy degree, with the first three years (P1, P2, and P3) primarily classroom based, including intermittent experiential educational requirements, Introductory Pharmacy Practice Experiences (IPPEs), and fourth year as experiential block rotations. In the P3 year, students attend classes in person through distance learning on one of four campuses. All P1 through P3 students

were systematically asked two questions regarding the change to RLE on a 4-point Likert scale (1=adversely impacted me, 4=positively impacted me) and a 5-point Likert scale (1= not well at all; 5=extremely well) during anonymous course evaluations at end of the spring 2020 semester. Likert questions asked students to reflect on their transition to remote learning, how students would rate the transition's impact on their ability to achieve course outcomes/objectives (4-point Likert), and how they would rate the faculty's ability to adapt their instruction to the fully RLE (5-point

TABLE 1. Quantitative Questionnaire Data from UGA College of Pharmacy

		<i>Reflecting on transition to remote learning, how would you rate its impact on your ability to achieve outcomes/objectives for this course? *</i>			<i>Overall, how would you rate the faculty's ability to adapt to fully remote/digital learning during COVID-19? †</i>		
<i>Groups</i>	<i>Required Courses Surveyed n (%)</i>	<i>Median (IQR)</i>	<i>P value</i>	<i>Survey Responses (n)</i>	<i>Median (IQR)</i>	<i>P value</i>	<i>Survey Responses (n)</i>
Total	15 (75%)	3.0 (2.0 – 3.0)		1779	5.0 (4.0 – 5.0)		1814
P1 (n=148 students)	6 (75%)‡	2.0 (2.0 – 3.0)	p<0.05 [§]	767	4.0 (4.0 – 5.0)	p<0.05 [§]	767
P2 (n=138 students)	5 (100%)	2.0 (2.0 – 3.0)		601	5.0 (4.0 – 5.0)		601
P3 (n=130 students)	4 (57%) [^]	3.0 (2.0 – 3.0)		406	5.0 (4.0 – 5.0)		406
Course Type							
Skills Courses	2 [^]	2.0 (2.0 – 3.0)	p>0.05 [§]	243	5.0 (4.0 – 5.0)	P<0.05 [§]	244
Didactic/Other Courses	13	3.0 (2.0 – 3.0)		1536	4.0 (4.0 – 5.0)		1570
[^] 1=adversely impacted me, 4=positively impacted me [†] 1=not well at all, 5=extremely well [‡] P1 courses not included in survey: Introductory Pharmacy Practice Experience, Career Opportunities [^] P3 courses not included in survey: 2 skills-based and 1 Health Services Outcomes course [§] Kruskal-Wallis test; [§] Mann Whitney U							

Likert) (Table 1). Results were reported by year and course type: skills or didactic, which included foundational and patient care-related courses. Further, students enrolled in the P3 Pharmacotherapy IV course were asked additional questions. Survey questions for P3 students included Likert-style questions that asked students to rate how likely they were to engage in the pre-class and in-classroom activities within the RLE (Table 2). This course traditionally required pre-class reading/lecture and unannounced in-class quizzes to incentivize attendance. During RLE, quizzes were

omitted due to the concern for potential variability in student access to internet and live class attendance, which could result in disadvantages for some students.

The MCW School of Pharmacy offers a three-year Doctor of Pharmacy degree, where the first two years are primarily didactic instruction with weekly IPPEs and patient care labs. The third academic year consists of experiential rotations. At the end of the spring session, all students in the didactic curriculum (P2 and P3 equivalence years) were provided with a voluntary 15-question de-identified survey

containing both five-point Likert scale and open response questions. Questions within this survey sought to address several areas. The 5-point Likert scale questions (1=functioned very poor/did not enhance at all, 5 =functioned very well/enhanced greatly) asked students to rate their perception of functionality of technology, achievement of course objectives, and overall communication (Table 4). Students were also provided with a list of perceived challenges that they could choose from in order to identify areas for improvement in course delivery (Table 5). Open-ended

TABLE 2. UGA College of Pharmacy – Impact of the Remote Learning Environment Questionnaire for Pharmacotherapy IV Course: “During remote learning as compared to on-site classroom environment, were you more likely to . . .”

	<i>Yes, more likely</i>	<i>Somewhat more likely</i>	<i>Neither</i>	<i>No, less likely</i>
Actively participate via electronic methods (i.e., chat), n (%)	35 (28%)	49 (40%)	21 (17%)	19 (15%)
Participate in pre-class groupwork, n (%)	11 (9%)	35 (28%)	9 (7%)	69 (56%)
Participate with group during class, n (%)	10 (8%)	44 (36%)	4 (3%)	66 (53%)
Attend class, n (%)	13 (11%)	11 (9%)	78 (63%)	22 (18%)
Ask questions of instructor, n (%)	16 (13%)	38 (31%)	37 (30%) (never, regardless) + 17 (14%) (always, regardless)	16 (13%)

qualitative questioning sought to organize additional student comments on perceived benefits and challenges of a RLE.

Results are descriptively reported using median and interquartile range. Nonparametric tests compared ordinal data. Statistical analyses were completed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp, Armonk, NY). A multi-step content analysis was performed on open-ended responses where faculty categorized responses into individual statements, then further into summary themes.³

Results

UGA College of Pharmacy

Overall, 1,814 course evaluation responses were collected; students reported RLE had no impact on their ability to meet course objectives (Table 1). However, between cohorts, P1 and P2 students overall felt RLE adversely impacted their learning. Skills-based courses were particularly affected, according to student responses, with RLE reported as “somewhat impacting” students’ ability to achieve course outcomes ($p > 0.05$). P1 students rated the instructor’s ability to adapt instruction to RLE as a 4.0 on a 5-point scale, while the P2 and P3 students rated a 5.0 ($p < 0.05$) (Table 1). P1 and P2 students rated the skills-based instructor’s ability higher than foundational course instructors in adapting to a RLE ($p < 0.05$).

UGA College of Pharmacy - Pharmacotherapy Course Data

Despite the majority of students favorably rating adaptation to RLE (84% very well or extremely well), more students reported being adversely impacted by the change to RLE (59%) than those reporting benefit (23%). Overall, 47% of students reported RLE hindered learning in the course (10% significantly, 37% somewhat, with 7% unknown impact) while only 12% reported benefit.

Most students (79%) reported continued likelihood of preparing for class despite lack of quiz incentive (41% extremely likely, 38% likely). Additionally, most students appeared to be more likely to participate during in-class discussion within the RLE, although their likelihood of participating in groupwork was lesser. Notably, attendance did not seem to be impacted according to

TABLE 3. Qualitative Student Feedback Regarding Benefits and Challenges of a Remote Learning Environment

	UGA (n = 98)	MCW* (n = 32)
Benefits of the Remote Learning Environment		
Technology/Virtual Communication/Collaboration (e.g. audience response/chat, prefer to distance technology of multi-campus, better microphone/audio)	21	8
Pre-Recorded Lectures	2	12
Flexible Attendance and Reduced Commute Burden	9	4
Fewer In-Class Distractions/Improved Focus	5	0
Virtual Organization/Assessment Policies	1	4
Student Identified Challenges with the Remote Learning Environment		
Lack of Engagement/Participation/Active Learning & Difficulty Focusing	25	2
Ineffective Groupwork/Difficulty Communicating/Collaborating	15	14
Managing Home Environment/Distractions	12	6
Time /Workload Management	--	14
Prefer Face-to-Face	8	0
Technology	2	7
Lack of Motivation	4	1
Virtual Assessment Process/Calculations	1	3
Pre-recorded Lecture	--	1
Mental Health	--	1
*12 responses omitted (blank or responded ‘nothing’, etc.)		

survey results (Table 2).

When asked about potential preference for RLE over a traditional classroom setting, 50 comments stated “no,” 33 “somewhat,” and 15 “yes.” Collation of individual comments into content areas are listed in Table 3.

MCW School of Pharmacy

Overall, 32 of 96 students (33%) voluntarily responded to the 15-question survey. Technology functioned well for most students with the live breakout sessions being least functional according to collected responses (Table 4). P3-equivalent students felt virtual adaptation somewhat enhanced learning independent of the instructional delivery. No differences existed between cohorts regarding functionality of technology or the enhancement to learning based on instructional delivery (4.0). However, P2 class reported a general preference for asynchronous over synchronous virtual learning ($p < 0.05$).

Regarding qualitative comments, the most common challenge students cited

was “not having a dedicated home learning space” as reported by 62.5% of respondents between P2 and P3 cohorts (Table 5). Further, categorized open-ended responses determined that technological issues and virtual assessment processes were the most commonly mentioned for P3 cohort, while time-management and communication issues arose for P2 cohort (Table 5). Overall, the most cited aspect of virtual learning to continue was use of pre-recorded lecture material. The most commonly reported challenges were related to time management and ineffective groupwork (Table 3).

Discussion

Innovations in higher education are desperately needed to ensure consistency in quality education, achievement of learning outcomes, and student satisfaction. Student data should be used in overcoming barriers and enhancing any potential benefits with RLE. Overall, despite generally positive student satisfaction with faculty ability to transition to RLE, this survey revealed several student-identified barriers: lack of

TABLE 4. MCW School of Pharmacy Functionality of Technology and Enhancement to Learning

	<i>P3 Students (N=14)</i>	<i>P2 Students (N=18)</i>	<i>Cumulative (N=32)</i>
Functionality of Technology* How well did the technology function for you during virtual learning?	Median (IQR)		
Email/Announcements	4.0, (4.0-5.0)	4.0, (4.0-5.0)	4.0, (4.0-5.0)
Learning Management Software	4.0, (4.0-5.0)	4.0, (4.0-5.0)	4.0, (4.0-5.0)
Assessment Software	4.0, (3.3-5.0)	4.0, (4.0-4.0)	4.0, (4.0-5.0)
Live Video Conferencing Software [†]	4.0, (3.3-4.0)	3.5, (2.0-4.0)	4.0, (2.0-4.0)
Breakout Room Software [§]	3.5, (3.0-4.3)	3.5, (3.0-4.0)	3.5, (3.0-4.0)
Enhancement to Learning* How well did these things assist you in learning the necessary content and achieving course objectives during virtual learning?	Median (IQR)		
Synchronous Teaching [†]	4.0, (3.3-5.0)	3.0, (1.0-4.0)	4.0, (2.8-5.0)
Asynchronous Teaching [†]	4.0, (2.5-4.8)	4.5, (4.0-5.0)	4.0, (4.0-5.0)
Breakout Rooms	4.0, (3.0-4.8)	4.0, (3.0-4.0)	4.0, (3.0-4.3)
Online Class Exercises / Polling	4.0, (4.0-4.8)	4.0, (3.3-5.0)	4.0, (4.0-5.0)
Communication from Faculty	4.0, (4.0-5.0)	4.0, (2.0-5.0)	4.0, (3.0-5.0)
Communication[‡]	Median (IQR)		
Amount of communication	2.0, (1.3-2.0)	2.0, (1.3-2.0)	2.0, (1.0-2.0)
*1=functioned very poor/did not enhance at all, 5 =functioned very well/enhanced greatly			
[‡] 3-point Likert scale [1=too little, 2=just right, 3=too much]			
[†] Mann Whitney U test performed with all comparisons between cohorts having p > 0.05			
[§] Breakout rooms primarily used with P2 cohort			

TABLE 5. MCW School of Pharmacy Qualitative Student Reported Challenges with the Remote Learning Environment

	<i>P3, Class of 2021, P3 Students (N=14)</i>	<i>P2, Class of 2022, P2 Students (N=18)</i>	<i>Cumulative (N=32)</i>
Which of the following elements have been so challenging for you that it affected your ability to learn during virtual learning?*	Number of Students (%)	Number of Responses (%)	Number of Responses (%)
No dedicated home learning space	9 (64.3)	11 (61.1)	20 (62.5)
Not being able to study with classmates in person	5 (35.7)	14 (77.8)	19 (59.4)
Managing my feelings about the future	5 (35.7)	14 (77.8)	19 (59.4)
Maintaining my mental health	6 (42.9)	11 (61.1)	17 (53.1)
Instructors holding synchronous classes (e.g., live lectures or video conferencing at a set time)	4 (28.6)	13 (72.2)	17 (53.1)
Losing the ability to work with classmates on team assignments	4 (28.6)	12 (66.7)	16 (50.0)
Not seeing faculty in person / having to schedule virtual office session	5 (35.7)	8 (44.4)	13 (40.6)
Instructors holding asynchronous classes (e.g., recorded lectures you watch on your own)	5 (35.7)	1 (5.6)	6 (18.8)
*Number of challenges per response			
1-2	7	3	10
3-4	4	4	8
5-6	2	7	9
7-8	1	4	5

engagement and focus, home environment distractions or lacking space, technology issues with synchronous learning, as well as difficulty with groupwork. Results suggest RLE does not negatively impact attendance or participation.

Notably, students reported several potential benefits from RLE, which faculty can leverage—such as use of chat technology allowing for in-class discussion. Further, results suggest schools should provide ample mental health resources as well as assist students with building individual time management skills and the creation of dedicated workspaces at home, which can aid in overcoming some of the challenges reported by students to date.

Previous research on online learning has shown similar educational outcomes when compared to in person learning.⁴⁻⁷ These outcomes are consistent across a wide range of disciplines, including medicine, nursing, and pharmacy.⁶ Specific to synchronous versus asynchronous learning in the healthcare graduate and pharmacy professional communities, limited research is available prior to the COVID-19 pandemic.⁸ Past research investigated questions of performance and pharmacy student satisfaction within the RLE concluding while performance was maintained, students were typically more satisfied with synchronous (live interactive) learning compared to asynchronous virtual done at a student's own pace.⁹ However, what is different now in this environment is that courses were abruptly transitioned to RLE without time to mentally or physically prepare.^{2,10,11} This can be seen in our survey results as we report some students' subjective preference for pre-recorded lectures, which may reflect change over time in student learner preferences and updates in technology. Another study compared face-to-face, synchronous virtual, or asynchronous virtual in a group of dental residents.¹² Success and preference were highly dependent on the technology used to facilitate learning, but learners preferred face-to-face interaction as more conducive for interactions between instructors and learners. While this study found virtual learning to be an acceptable method, these postgraduate residents overall preferred either face-to-face or asynchronous remote learning over synchronous virtual.¹² These results more closely align with the subjective

reports within the results herein of UGA and MCW pharmacy students, particularly their comments about pre-recorded lecture material and technology being a focal point for students as both strengths and weaknesses, respectively.

Limitations of this study include response rate and lack of course-specific data from MCW that was focused on surveying entire cohorts and overall RLE experiences, while UGA gathered some course-specific data but cannot necessarily draw conclusions all aspects of their curriculum as a whole. Furthermore, minor differences existed in open-ended question wording between each school's student surveys, as they were developed by faculty at the respective institutions separately. Strengths are the timeliness of students response data in relation to the COVID-19 pandemic and different structures of the two pharmacy programs which enhances generalizability.

A few themes emerged from student feedback from the two colleges surveyed regarding the transition to a RLE due to COVID-19. Even though students appreciated the quality of efforts by faculty, the change led to new barriers and challenges such as distractions in home environment and lack of space leading to difficulty focusing as well as engaging in the material remotely, a lack of connection to colleagues with a lack of groupwork, and technology issues especially with synchronous instruction. With RLE, students had less structure to their schedule which likely benefited those with strong time management skills but hurt those who rely on external structure and oversight. Overall, a consistent theme to overcome the challenges was the use of asynchronous pre-recorded lectures, which allowed students to learn the material at their own time and pace without distractions. Pairing asynchronous lectures with either synchronous application-based practice cases or low-stakes asynchronous practice cases or quizzes was preferred by students. This minimizes the risk of technology impacting learning while also ensuring students are keeping up with the material. An area for future investigation should be evaluating how to effectively incorporate groupwork into RLE. A hybrid approach may be ideal given the inherent limitations of the RLE for skills-based learning, as evidenced by our quantitative results.

Conclusion

Schools should consider student perspective to ensure RLE is optimized. Barriers identified by students, such as difficulty with group work, time management, and mental health, should be specifically addressed in curricular structure during the COVID-19 pandemic. Further study is needed to evaluate specific teaching formats to determine optimal RLE for student success.

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New Statewide Standing Order for Naloxone

Starting April 7, 2022, Dr. Jasmine Zapata became the new physician signing the Wisconsin Statewide Standing Order for Naloxone.

What does this mean for your pharmacy?

For Pharmacies who Currently Use the Statewide Standing Order for Naloxone:

In order to continue providing naloxone through the Statewide Standing Order, use Dr. Jasmine Zapata's prescriber number going forward and [print the new copy of the standing order](#) to keep on file in your pharmacy. Dr. Jon Meiman's prescriber number can no longer be used.



You do not need to go into RedCap to re-sign or newly commit to the requirements of the Statewide Standing Order for Naloxone.

Under this new standing order, there are new resources available through the enhanced Dose of Reality Initiative. Patient education regarding overdose recognition and naloxone administration can be found on the following webpages:

- Review common questions about opioids and address risk factors that can put someone at increased risk of overdose: [Dose of Reality: Get the Facts on Opioids](#)
- Provide overview of how to recognize an overdose and proper procedure to respond to an overdose: [Dose of Reality: Overdose](#)
- Discuss how to administer naloxone and when: [Dose of Reality: Safer Use](#)
- Discuss how to safely dispose of opioids and other unused prescription medication: [Dose of Reality: Safe Disposal](#)

If you have questions, reach out to: DHSOpioids@dhs.wisconsin.gov.

For Pharmacies who Wish to Begin Using the Statewide Standing Order for Naloxone for the First Time: Follow instructions under "Information for Pharmacists" [here](#).