

Improving Medical Student Engagement Using Text Messaging: An Applied Improvement Project

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Abstract

The project involved an intervention involving fourth-year medical students. The local organizational issue at the University of Toledo College of Medicine and Life Sciences is the need for increased student engagement with the university's resources. Vygotsky's theory of student engagement was used to support the project. To address the problem and attempt to increase student engagement with university resources, medical students who agreed to participate in the AIP were asked to provide a valid phone number and receive text message communications from the medical college with valuable resources, advising links, and deadlines. Thematic analysis was implemented by gathering qualitative data via interviews and a brief open-ended questionnaire (Braun & Clarke, 2006). Interviews and questionnaire feedback were transcribed and coded to discover themes. The purpose of the intervention was to determine if medical students would feel more engaged with the college after receiving text message communications for three weeks. Interview and questionnaire data indicated that students felt more engaged with text message communications than traditional email. These, such as a desire for deadlines and timelines via text, were prevalent, as well as receiving links that were easy to access on a cell phone.

Keywords

Student Engagement Theory, Medical Students, Vygotsky, Action Research, Qualitative Data

1. Introduction

The University College of Medicine (UCOM) is a prominent medical college in

the Midwest, serving over 750 medical students annually and graduating more than 160 students each year. The medical school is ideally located with a direct connection to a local hospital, where students can complete their four-year training as clinicians-in-training. The local organizational issue at the University College of Medicine is the need for more student engagement with the university system resources. The purpose of the applied improvement project was to implement text messaging to improve student engagement with the university system resources. The integration of text messaging communication with medical students addressed the lack of engagement with university system resources. The applied improvement project consisted of fourth-year medical student participants receiving timely and relevant text messages with deadlines and links to important resources for a period of three weeks. The applied improvement project used interviews and a questionnaire to measure student engagement.

2. The Problem

The local organizational issue at the University College of Medicine is the need for more student engagement with the university system resources. The local problem of practice was the gap between the ideal outcome of 80% student satisfaction on the Graduation Questionnaire and the current outcome of 60% satisfaction. The root cause analysis revealed multiple issues within the college that may have contributed to the organizational problem. Potential root causes that were explored included the need for a tracking system to assist the Office of Student Life in identifying students who were struggling, additional faculty mentoring, and improved student engagement with university resources, such as emails, newsletters, and other available resources. It was determined after meeting with stakeholders that the core root cause of lower-than-desired satisfaction was the lack of student engagement with university resources. Students often communicate to the college that they do not read newsletters or emails containing valuable resources, such as links to meet with advisors, workshops, events, and other important information relevant to the medical school.

2.1. Solution Development

A needs assessment determined that the root cause of medical students' lack of engagement with university system resources was linked to students not reading newsletter updates or emails that contain resources. GQ responses from past years depicted a theme of students commenting that they did not feel the Office of Student Life communicated enough with students. Previous research conducted by [Tippetts et al. \(2022\)](#) and [Tippetts et al. \(2024\)](#) was reviewed to determine that similar needs in previous institutions were addressed using text messaging with great success. Students also indicated consistently that the office was not as accessible as it could be. The researcher met with the MyMed team to determine if texting capability could be integrated into the system. Once confirmed, the researcher met with the Senior Associate Dean to gain approval.

First, the MyMed system, which is the college's case management system, was adjusted to include text messaging permission. Once the system was updated to include text messaging, a cohort of eight medical students was selected to participate in the intervention, which consists of receiving timely text message alerts that provide information and resources to students.

Medical students were chosen at random and asked to participate to ensure there was no bias. Once selected, the medical students were asked to provide accurate cell phone numbers, which were added to the MyMed system. Students also received a recorded educational information session containing details about the resources they would receive during the three-week intervention. Gathering cell phone numbers to input into the MyMed system ensured that students were providing a cell phone number rather than a home number that could not receive text messages.

Students who received text messaging alerts with valuable residency-related resources and tutorials had immediate access to register for events and gain knowledge about fourth-year medical school processes. Students received text message alerts for three weeks to their approved number. Timely text message alerts related to deadlines, links to meet with advisors, tutorials regarding the residency match, and opportunities to register for events were sent to the students in the cohort. Following the intervention, students were interviewed to assess their experience with the intervention and determine its effectiveness. An open-ended questionnaire was also administered to provide anonymous feedback. The resources involved were the MyMed system and Microsoft Forms.

2.2. Rationale

By integrating text messaging as a means of communication with medical students, the college applied Vygotsky's theoretical concept of student engagement, which infers that students who have access to staff, resources, and opportunities for events are more satisfied and successful (Vygotsky, 1978). The applied researcher theorized that medical students who receive text messaging would have a more direct mode of communication with their advisors, as it would provide them with better access to setting advising appointments and signing up to attend events. Vygotsky (1978) connects student satisfaction and student success with active engagement with an institution. Students who receive text messaging alerts with valuable residency-related resources and tutorials will have immediate access to register for events and gain knowledge about the processes of fourth-year medical school. Text messaging will facilitate students' knowledge of the resources available at the institution and, therefore, improve their engagement with their education. The root cause analysis was referenced to determine that integrating a new mode of communication was the most cost-efficient solution to address the root cause. The solution addresses concerns about budget cuts and staffing shortages, as no additional staff were needed to complete the project and would not be needed if it were integrated as a permanent solution.

3. Abbreviations and Acronyms

UCOM refers to the University College of Medicine. AAMC refers to the Association of American Medical Colleges, and GQ refers to Graduation Questionnaire. ROL refers to Rank Order List. AIP refers to Applied Improvement Plan.

3.1. Process

Prior to implementing the intervention, the researcher frequently met with the MyMed software developer to determine the most effective way to integrate text messaging capabilities into the system. The software did not have this feature prior to the intervention, so the researcher had to create a list of developer objectives that would meet the project's expectations. The researcher met with MyMed developers for over five months to successfully integrate text messaging into the system. It was crucial to the researcher that the implementation was also documented via the MyMed system, which stores text messages sent in student files. This allowed the researcher to ensure that texts were sent and to document the dates and times at which the texts were sent. This addition helped maintain documentation that the project followed the documented timeline, thereby maintaining the project's credibility.

To monitor the project's implementation, the researcher maintained a detailed AIP implementation journal. This documentation tool was used to record any unexpected changes that occurred during the project's execution, such as an adjustment to the questionnaire questions as requested by a university faculty member, as well as unexpected MyMed barriers. An obstacle arose during implementation that required an amendment to the IRB, as the MyMed software was found to be incompatible with condensed URL links. The IRB had to be adjusted to include full URL links, which occupy significantly more space than the condensed versions. This required the planned text messages to be adjusted to include abbreviations, such as ROL for Rank Order List sessions.

While it added an unanticipated step for the researcher, it had little consequence for the participants, as they were accustomed to using abbreviations. Despite the late adjustment to the implementation plan, the intervention was able to continue with the same timeline as was initially intended. This was because the discovery was made during the first text message that was sent on a Monday. The IRB did not specify the days the texts would be sent, so the researcher had time to amend the text with the IRB office and sent the following text message with the adjusted links on Friday of the same week. Going forward, it was determined that all text messages should be sent on Monday and Friday in order to remain consistent for participants. This adjustment was documented in the AIP implementation journal and subsequently amended in the IRB. Although this adjustment did not impact the implementation timeline, it did determine which days the text messages would be sent each week.

Stakeholders were informed of the adjustments being made to MyMed to integrate text messaging and the barriers associated with the new development within

the system. This interaction provided support for the researcher and also documented potential future issues that could arise should the intervention be replicated with other medical school classes.

3.2. Student Selection

A stakeholder from the Office of Student Life, who has access to the student roster via her role at the university, sent out recruitment emails at random to fourth-year medical students. Over 120 students were asked to participate in the intervention for one week, with the hopes of ten agreeing to participate. Of those twenty, only eight participants volunteered. Additionally, only six of the eight participants responded to the invitations to complete the interviews and the questionnaire. Ideally, the project would have included ten participants to provide more saturated data; however, feedback from six participants proved to be adequate. Due to the student-centered nature of the project, the researcher assumed that obtaining ten participants would be an easy task. However, this assumption was wrong. This was an unexpected outcome during the recruitment process, which was also documented in the AIP implementation journal.

3.3. Recording

The researcher created an educational component for the project by recording information about the project's design and the expectations participants could have for the three weeks of its implementation. The recording was created using Microsoft Teams and was distributed via a link to the participants as the first text message they received during the intervention. The video did not feature an image of the researcher. Still, it included a voiceover with details about the intervention, such as the number of text messages to be sent and the duration of the intervention. The recording also included information provided in the recruitment email, reminding participants that they would be asked to interview with the researcher and complete a questionnaire following the intervention. The video communication was easily accessible via a link that appeared in the body of the first text, allowing students to select the link and view the video with minimal effort.

3.4. Text Messages

Text messages that were relevant to students in their fourth year of medical school were created by the researcher and approved by the Senior Associate Dean. These messages aligned with dates and upcoming deadlines that would impact the participants. Reminders about graduation and registration dates were created and timed according to the fourth-year medical student schedule.

During the intervention, participants received six text messages from the MyMed system over a three-week period. The text messages consisted of links to book an appointment with a dean, deadlines, and reminders about vital resources. The initial text was the aforementioned educational recording, which introduced the participants to the project and outlined the necessary expectations.

The second text message the participants received was a reminder to register for the National Residency Matching Portal by the required deadline. The text also included a link to schedule a meeting with a dean to discuss the match process. A third text message was sent, containing a reminder that the rank order list had been opened to medical students, as well as a link to attend a Blackboard workshop about the rank order list hosted by the college. As a follow-up to the workshop on the rank order list, a fourth text message was sent to students to remind them of the deadline to register for the rank order list and complete the residency application process, as well as to provide an appointment link to meet with a dean should they have any questions. These text messages were sent within a few days of each other, ensuring the item remained relevant to the participant.

The fifth text message was sent on the Monday of the final week of the intervention. It contained a reminder to register for the commencement ceremony and graduation, with the deadline approaching in the upcoming weeks. Finally, students received a sixth text message containing a link to schedule their post-intervention interview with the researcher to discuss their feelings about the intervention. Students were sent a link to meet with the researcher via Microsoft Teams during the following week.

4. Findings

4.1. Interview Findings

Usefulness of Deadlines and Timelines. Participant feedback determined that receiving deadlines and timelines in text messaging was most helpful for medical students. Participants commented on the usefulness of the reminders to submit items such as registering for the National Residency Match Portal, as well as applying to walk in the commencement ceremony. Participant 1 commented, “The NMRP deadline reminder to sign up was really helpful, as I had already done it.” However, it is nice to receive that text a week in advance. It was a little reminder as well.” The theme of deadlines and timelines being found useful in text messaging emerged from all six interviews. This theme was anticipated based on research done during the literature review by [Arnold et al. \(2020\)](#).

Informational text messaging, which informed students of timelines and text messages, was the expected preference of the participants, based on research completed by [Arnold et al. \(2020\)](#), who also concluded in research that students receiving text messages respond better to timelines, deadlines, and resources, rather than requests to respond ([Arnold et al., 2020](#)). In interview feedback, it was determined that deadlines not only help students stay on track with their academic journey but also help them feel engaged with the college. Participant 6 reported that medical students in clinical rotations often lack access to their peers, who would serve as reminders about deadlines, as they did during their pre-clinical years. Having deadlines sent through a text message provided a way for students to feel connected. It reminded the participant of events happening in the academic environment while they spent the majority of their time in the clinical environ-

ment.

Prioritized Information that is Condensed. A common theme that emerged was an appreciation for concise messages over lengthy ones, like an email. Participants indicated that receiving text messages enabled them to prioritize items, gather necessary information quickly, complete required tasks, and proceed to the next item on their to-do list. As medical students are incredibly busy with clerkship rotations, courses, and extracurricular activities, having short, concise messages was a more efficient way to convey the information, as it did not require students to sift through unnecessary details to get to the point. The text messaging intervention included a brief informational video that students were asked to watch before receiving the remaining text messages.

While the video was informative about the intervention expectations, Participant 3 reported that it required more effort to log in and review than the other text messages, which were condensed and short. They indicated a preference for short text messages rather than more informative and elaborate information. Similarly, Participant 2 compared receiving text messages to the lengthy newsletter that the college sends out, stating, “I feel like this is most helpful when it’s condensed like this and one line”. Similarly, Participant 1 expressed a preference for receiving quick messages that were genuinely relevant to their class rather than reading through an entire newsletter to find the items that mattered to them.

Ease of Access to the Office Makes it Easy to Engage. Participants indicated that they found it easy to engage with deans because they had access to the links in a readily available text thread rather than needing to search through emails or the website. Participants indicated that they were now aware of the meeting availability and could easily use the Booking link if they needed to schedule an appointment. Participants also felt that they were able to attend events quickly due to the links sent in the text messages. Attending events is crucial to student engagement as it provides students with the opportunity to ask questions in real time and interact with their peers (Vygotsky, 1978). Participant 2 noted that “It was easy to find the access link to the Rank Order List session by simply following the thread of text messages that evening, rather than searching through their email inbox”. Links to resources, such as the National Residency Matching Portal, were identified as the most helpful, and suggestions were made to utilize additional links for other resources that impact the student’s medical school career, including registration links for away rotations. Participant 2 noted the Blackboard link that was sent to students, which was easy to use on their phones, allowing them to log in from anywhere while rotating through busy clinical experiences.

Notably, three participants informed the researcher that their Apple computers support a feature that enables text message links to appear on their home screen. One participant estimated that around three-fourths of the class has Apple laptops, and using text messaging would allow students greater access to links to required events. Links to the Bookings website were also popular with the participants. Participant 3 reported that they are more likely to use a cell phone when

making an appointment, making it easier to use than logging into a computer to sign up.

4.2. Questionnaire Findings

Usefulness of Deadlines and Timelines. Participants in the questionnaire provided feedback that the most valuable types of messaging provided to students were timelines and deadlines. Participants indicated that being reminded of events or registration dates was helpful, as they are inundated with deadlines during this period as fourth-year medical students. Participant G notes that deadline reminders, which also refer to emails sent to the class, are helpful as an additional source of reminders for students. Participant C responded, “Deadlines are super helpful”. Deadlines were a common theme throughout the questionnaire feedback, indicating that students appreciated and valued reminders about due dates and critical timelines.

Prioritized Information that is Condensed. Respondents to the questionnaire indicated a preference for concise, synthesized messaging, as found in text messages, over lengthy emails and newsletters. Participant B noted, “I prefer reading a text message to find information, rather than sifting through long emails”. This response aligned with that of Participant A, who noted, “I prefer a quick reference that I can find in a text message”. Participants appeared to prefer text messages that were short and did not require any further action on their part, such as logging in to access resources.

Ease of Access to the Office Makes it Easy to Engage. While respondents did not indicate using the Bookings links to make an appointment during the intervention, it was reported that some found it a friendly reminder that appointments were available and had easy access to making an appointment should they need one. Participant F noted, “It was nice to know how to make an appointment, even if I never needed one”. One participant also noted that it was easier to find a link to make an appointment through text messages than to look for the Bookings link in emails.

Knowledge of Resource Availability. Participants noted that after receiving text messages with resources and deadlines, they felt their knowledge of resources and timelines increased. Participant B noted that the number of modalities to reach the college had also increased, as the link was more accessible via the internet than it would be via email. Participant C noted, “My knowledge has increased significantly; this is a much better way to communicate”. While some participants acknowledged knowing the resources existed, they often did not consistently utilize them without reminders. Text messaging seemed to provide a reminder of resources that were always available, and students were more likely to read and engage by opening links, completing deadlines, and attending events. **Table 1** displays process-guiding questions along with the themes that align with them. **Table 1** illustrates the guiding questions, along with the themes that align with each question.

Table 1. Process guiding questions and themes.

Process Guiding Questions	Themes
How will implementing text messaging to communicate valuable medical school resources with students prepare participants to improve student engagement?	<p><i>Ease of access to the office via links makes it easy to engage.</i> Participants noted they felt it was easier to engage with resources, as they were more accessible via text messaging.</p> <p><i>Knowledge of resource availability</i> Participants noted that reminders of resources, such as events and links to meetings, were helpful and more likely to be opened and engaged with via text.</p>
How will the intervention prepare participants to strengthen their engagement with the college?	<p><i>Prioritized information that is condensed.</i> Participants expressed that they felt short, concise information was more likely to be read by students than lengthy emails or newsletters. Participants found it easier to engage with the college through text messages rather than searching through old email chains.</p>
How will the participants make use of text messaging to stay informed and become more engaged with the college? How will the medical students respond to these strategies?	<p><i>Usefulness of deadlines and timelines.</i> Participants expressed appreciation for deadline reminders and prompts to complete tasks that are relevant to them. Participants had a positive response to receiving reminders.</p>

Note: **Table 1** illustrates Process Guiding Questions as they align with the themes that were discovered.

5. Conclusion

Interview and questionnaire feedback discovered that students felt more engaged with the college when receiving text messages, rather than through other communication methods such as email and newsletters. Participants reported a preference for receiving resources that were relevant to just their class, rather than receiving communication that refers to other cohorts. Participants also shared that they found receiving links to book with a dean via text message easier to engage with than receiving links in an email, which they would have to later find in their email inbox, or by searching through a website. The participants shared that they especially appreciated receiving deadlines through text message. This theme was consistently brought up in both the interview and questionnaire results by all six participants. The intervention proved that medical students felt more engaged when receiving text message communications.

Limitations

The applied improvement project had limitations in its design. By keeping the number of student participants to eight, the project is manageable. However, the results were not as robust as they would have been if more participants had been

involved in giving feedback on their experiences with the intervention. The strictly qualitative nature of the project also poses a limitation, as the results are quasi-statistical and do not provide an actual numerical value associated with positive or negative outcomes. The project also fails to establish a control group for comparison, a standard practice in quantitative studies. To ensure that enough participants could provide feedback, 121 students were asked to participate; however, only eight responded to participate, and only six engaged in interviews and the questionnaire. It was determined by the researcher to forgo gathering quantitative feedback, as there would not be enough participation to have data saturation. While an improvement to include quantitative data could be made by increasing the number of participants, it would have required the researcher to include other classes outside of the fourth-year class. This change would have required students to receive texts that may not have been relevant to them and would not have fulfilled the objectives of the project.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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