



ORIGINAL ARTICLE

Medicine Science 2026;15(1):257-61

Lessons delivered to emergency medicine residency students via Microsoft Teams; Supportive, continuous, accessible recording experience

Murat Muratoglu¹, Keziban Ucar Karabulut¹, Betul Gulalp¹, Caner Incekas²

¹Başkent University, Faculty of Medicine, Department of Emergency Medicine, Ankara, Türkiye

²Başkent University, Faculty of Science, Department of Biostatistics, Ankara, Türkiye

Received 08 October 2025; Accepted 03 November 2025

Available online 23 February 2026 with doi: 10.5455/medscience.2025.10.262

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial-NonDerivatives 4.0 International License.



Abstract

Technology-based recorded education has become a significant supportive method that transforms learning processes in today's world. With the advancement of technology opportunities and options, access to didactic educational materials and resources has become possible in different ways from anywhere. In this study, we aimed to evaluate the outcomes of using recorded live Microsoft Teams applications in the training processes during emergency medicine residency, and the incidence of utilization began at and afterwards of the pandemic. Approximately 10 residents attended each session on average, and attendance was automatically recorded via institutional Microsoft Teams accounts. Our study was conducted between September 2020 and March 2024, targeting technology-based supportive education in the training of medical residents. Educational materials and resources were presented on Microsoft Teams at specific days and times each week. The breaking point was the pandemic in this supportive approach. A total of 95 topics were delivered. The frequency of topics related to the national curriculum titles before and after the end of pandemic restrictions was analyzed ($p=0.394$). It was found that the use of imaging methods in the emergency department was higher before June 2022 compared to after. Additionally, Cardiopulmonary Resuscitation (CPR) was significantly more common before June 2022 than after. There was an increase in gastrointestinal emergencies and trauma. Technology-based supportive options have become an indispensable part of contemporary education systems, and it is expected to become even more widespread in the future. Continuous adaptation and innovative approaches are required for educators and students to utilize this new world effectively.

Keywords: Education, microsoft teams applications, emergency medicine

Introduction

In today's world, the rapid advancement of technology and the widespread adoption of digitalization have led to profound evolutions in the field of didactic education. These involve reaching, ability to recurrence, continuity, and review in many ways over a longer life.

Technology-based platforms are continuously evolving and becoming increasingly preferred as supplement options with their high-definition video conferencing features, communicating in real-time meetings, sharing screens, engaging in live education, and especially recording, with limitless improvements every day.

With these recent opportunities provided, learning now extends beyond the traditional classroom setting and momentarily

once, offering students flexibility. This method allows access to education globally, transcending physical boundaries and requirements [1].

Given the changes in the world due to unexpected circumstances such as the COVID-19 pandemic, environmental issues can physically lead to difficulties and face-to-face education disruptions for individuals. These have contributed to a shift in our perception of the outside world, our bodies, and our expectations of healthcare relationships [2].

Besides, the demanding and continuous nature of hospital work schedules could affect and even hinder the quality or continuity of medical education. Residency students in medical fields often need more time outside of the hospital. With the ability to access

CITATION

Muratoglu M, Ucar Karabulut K, Gulalp B, Incekas C. Lessons delivered to emergency medicine residency students via Microsoft Teams; supportive, continuous, accessible recording experience. Med Science. 2026;15(1):257-61.



Corresponding Author: Murat Muratoglu, Başkent University, Faculty of Medicine, Department of Emergency Medicine, Ankara, Türkiye
Email: muradov2000@mail.ru

content from anywhere and the ease of repeatability, online education presents a supportive supplement method.

Students can participate in classes conveniently, managing their learning processes according to their schedules. Moreover, recording lessons through platforms like Microsoft Teams using official institutional accounts allows for creating an indefinite and unlimited educational archive. It is precious for working adults, those who prefer remote learning, or students with demanding schedules. Additionally, this method often incorporates various media formats, such as videos, interactive simulations, and audio recordings, which go beyond texts and offer diverse learning experiences. This diversity creates environments suitable for different learning styles [3].

Particularly in medical education, which is governed by international and national standards, there is a growing trend toward technology-based learning methods, especially online education. The goal is to provide continuity, support, accessibility, and evaluability, regardless of external conditions [4,5].

In this study, we aimed to evaluate our live, recorded didactic lessons of emergency medicine residency students as a supplement and delivered via Microsoft Teams, which had to be initiated during the pandemic and continued thereafter.

Approximately 10 residents attended each session on average, and attendance was automatically recorded via institutional Microsoft Teams accounts.

Material and Methods

This retrospective study was conducted at the Department of Emergency Medicine between September 2020 and March 2024. This study was approved by the Başkent University Clinical Research Ethics Committee (Approval Date: 06/06/2024; Approval No: KA24/215). These sessions were presented weekly, and associated materials and resources were uploaded before the schedule.

Study Design

Each didactic session topic/s was attributed to a related section according to the national curriculum for emergency medicine residency [6].

There were two groups: before the release of pandemic restrictions and then. The timeline was accepted as June 2022.

Inclusion criteria: Live recorded online theoretical/didactic lessons from faculty members, attending physicians, and emergency medicine specialists.

Exclusion criteria: Practical lessons, non-recorded theoretical lessons, manuscripts, and case reports presented by residents.

Both instructors and students were granted access to all the resources and recordings. Additionally, they were interactive, and their system details were open-maintained.

Supportive lessons were taught and via the platform weekly,

following a pre-determined schedule. Faculty members presented the course content using materials such as PowerPoint, PDFs, and videos.

The materials were prepared from up-to-date sources, taking the latest guidelines into account.

Presentations were made live with the microphone and camera on. All presentations were recorded on the platform by pressing the record button. This ensured that students who missed the live sessions could access the materials repeatedly.

Residents in the department are given written exams twice a year.

Statistical Analysis

Statistical analyses were conducted using the Statistical Package of Social Science (SPSS) version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive analyses for categorical variables were presented using frequency and percentage values. Relationships between categorical variables were analyzed using the Fisher-Freeman-Halton Exact Test. A p-value of less than 0.05 was considered statistically significant.

Result

A total of 95 sessions were found on the system. The related national curriculum titles of these sessions are demonstrated in Table 1. The comparison between the frequency of topics within the national curriculum was analyzed before and after the lifting of pandemic restrictions (Figure 1). Although the proportion of curriculum increased after June 2022, this increase was not statistically significant ($p=0.098$). It was determined that the distribution of relevant competency headings to the medical specialization board curriculum.

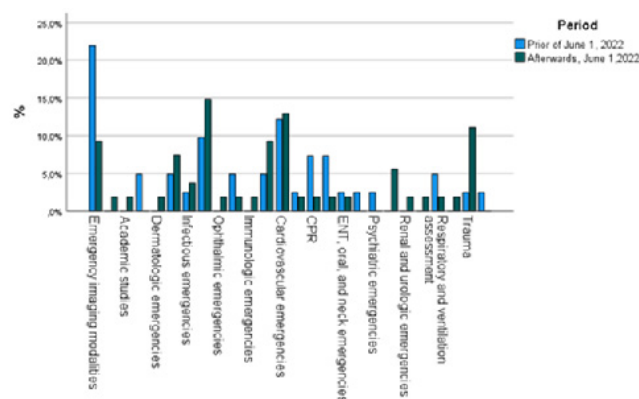


Figure 1. Didactics-related competency titles of the Turkish medical specialty board

Turkish Medical Specialty Board competency titles were statistically similar before and after the pandemic ($p=0.394$). However, it was observed that there was a significant decrease in the Turkish Medical Specialty Board competency rate for Emergency imaging methods after June 1, 2022. There was a substantial increase in the topics of gastrointestinal emergencies and trauma.

The highest number of didactics were the Emergency Clinical Ultrasound, topics of sessions included in the Emergency/Clinical Ultrasound list and the comparison is shown in Table 2.

No statistically significant change was detected in emergency clinical ultrasound course topics before and after the pandemic ($p=0.244$).

Table 1. The topics and numbers of live recording didactic/theoretical lessons via microsoft teams attributed to the national curriculum in emergency medicine residency training

Turkish medical specialty board competency title	Time					
	Before June 1, 2022		After June 1, 2022		Total	
	n	%	n	%	n	%
Imaging methods in emergency medicine	9	(21.95)	5	(9.26)	14	(14.74)
Judicial situations	-	-	1	(1.85)	1	(1.05)
Academic studies	-	-	1	(1.85)	1	(1.05)
Environmental emergencies	2	(4.88)	-	-	2	(2.11)
Dermatological emergencies	-	-	1	(1.85)	1	(1.05)
Endocrine and metabolic emergencies	2	(4.88)	4	(7.41)	6	(6.32)
Infectious emergencies	1	(2.44)	2	(3.70)	3	(3.16)
Gastrointestinal emergencies	4	(9.76)	8	(14.81)	12	(12.63)
Eye emergencies	-	-	1	(1.85)	1	(1.05)
Hematological and ontological emergencies	2	(4.88)	1	(1.85)	3	(3.16)
Immunological emergencies	-	-	1	(1.85)	1	(1.05)
Gynecological and obstetric emergencies	2	(4.88)	5	(9.26)	7	(7.37)
Cardiovascular emergencies	5	(12.20)	7	(12.96)	12	(12.63)
Musculoskeletal system emergencies	1	(2.44)	1	(1.85)	2	(2.11)
CPR	3	(7.32)	1	(1.85)	4	(4.21)
Critically Patient	3	(7.32)	1	(1.85)	4	(4.21)
Ear Nose Throat, Oral, and Neck Emergencies	1	(2.44)	1	(1.85)	2	(2.11)
Neurological emergencies	1	(2.44)	-	-	1	(1.05)
Psychiatric emergencies	1	(2.44)	-	-	1	(1.05)
Pulmonary emergencies	-	-	3	(5.56)	3	(3.16)
Renal and Urological emergencies	-	-	1	(1.85)	1	(1.05)
Fluid electrolyte disorders	-	-	1	(1.85)	1	(1.05)
Assessment of breathing and ventilation	2	(4.88)	1	(1.85)	3	(3.16)
Toxicology	-	-	1	(1.85)	1	(1.05)
Trauma	1	(2.44)	6	(11.11)	7	(7.37)
Wound care	1	(2.44)	-	-	1	(1.05)
Total	41	(100.00)	54	(100.00)	95	(100.00)

CPR: Cardiopulmonary resuscitation

Table 2. Topics of sessions included in the emergency/clinical ultrasound list and the comparison

Emergency Clinical Ultrasound Didactics	Time					
	Before June 1, 2022		After June 1, 2022		Total	
	n	%	n	%	n	%
Emergency Infections	1	(6.67)	-	-	1	(5.26)
ARDS	1	(6.67)	1	(25.00)	2	(10.53)
Arrest	2	(13.33)	-	-	2	(10.53)
Lung (3 adults + 1 pediatric)	3	(20.00)	1	(25.00)	4	(21.05)
Optic Nerve Sheath	-	-	1	(25.00)	1	(5.26)
Heart	4	(26.67)	-	-	4	(21.05)
Ultrasound Physics	1	(6.67)	-	-	1	(5.26)
Procedure Confirmation	-	-	1	(25.00)	1	(5.26)
Trauma	2	(13.33)	-	-	2	(10.53)
Hepatobiliary	1	(6.67)	-	-	1	(5.26)
Total	15	(100.00)	4	(100.00)	19	(100.00)

ARDS: Acute respiratory distress syndrome

Discussion

With the rapid development of technology, accessibility, continuity, and evaluable quality have become central elements of education, and software, applications, and platforms offer recorded content and diverse learning methods. These digital tools are gradually replacing traditional teaching methods, albeit partially and with limitations [7]. Unexpected and challenging events worldwide, such as the COVID-19 pandemic and natural disasters like the earthquake in Turkey, have significantly impacted social life and also education system. In April 2020, during the COVID pandemic, the International Emergency Medicine Education Project launched a social responsibility initiative to provide tools for overcoming educational challenges [8]. Our study results from efforts to support residency education to be maintained in the face of such situations. The implementation of similar programs could be beneficial in educational institutions.

The online lessons were recorded in a study conducted with the participation of 203 medical students from six continents [9]. During the education process's follow-up, it was noted that the recordings were accessed 3000 times. Similarly, the lessons were recorded in our study, allowing for future access.

According to the World Health Organization (WHO)'s 2006 reports, there was an estimated shortage of over 4 million healthcare workers across 57 countries. The most significant gap was observed in developing countries in Sub-Saharan Africa [10]. This shortage is predicted to triple by 2035, with an estimated deficit of more than 12.9 million health staff [11].

In our study, 95 lessons via formal institutional department account of Microsoft Teams were delivered and recorded before and after June 2022. This would prevent lost learning opportunities for those unable to attend due to demanding work schedules, saving both time and commute. Sharing recordings with regions and countries experiencing healthcare worker shortages could contribute to solving this issue.

Web-based health education can provide much-needed relief for the challenges many low- and middle-income countries (LMICs) face. Online teaching tools give students direct access to didactic and educational resources that they might not traditionally have reached. It also benefit, as online lessons offer scalable, flexible, easily updatable, and reusable platforms that can be shared across multiple health institutions while generating significant cost savings [12,13].

The institutional method we used in our study is relatively simple, making it easy to accompany the knowledge afterward. With the widespread use of such systems, time and circumstance management will become more manageable. A previous study showed no significant difference in knowledge acquisition between online and classroom-based groups, suggesting that both teaching methods provide equivalent learning outcomes [13]. This study, presenting a supportive option in weekly training

sessions to the residents via a formal account Microsoft Teams, more than online training, would be valuable in continuity and reachability even in difficult inside or outside circumstances and in changed or low numbers of the team. Yet, there has not been any report studying the contribution of this method to traditional education in literature.

Another study organized an online slide-based educational program for Emergency Medicine residents. Developing various strategies alongside face-to-face education would benefit training [14].

Our study is a novel supportive approach in this regard sourced from the situations and difficulties. Acquiring recorded didactic knowledge at any time and anywhere is essential for resident education support. Our study demonstrates that a total of 129 devoted lessons were realized live while recording at the same time via a platform with downloaded the references and materials. These lessons were related to 30 topics of the national curriculum of emergency medicine residency training.

This paper demonstrates the frequency ratio of newer supportive methods, which were initiated during the pandemic and continue to date, and their advantages, especially for students who could not previously be utilized. Following 2022 and it is continuing and available. However, the frequency of sessions of cardiopulmonary resuscitation and emergency imaging were significantly raised during the pandemic, which was an unexpected result, and could be related to the demands of the pandemic or the level of knowledge of students.

Increasing similar encouraging approaches could make resident education more accessible, practical, and applicable, allowing an archive to study in various ways through the choice of the students, criticism, and utilization of exams by lecturers. Further techno-based supportive methods studies would enlighten the value and practicability of them to the emergency medicine residency training.

The study was purely descriptive, without a control group or measurable educational outcomes such as exam performance or satisfaction surveys. Internet connectivity and material quality may have varied between sessions. Despite these limitations, the findings provide preliminary insights into the feasibility of recorded didactic sessions in residency training.

Limitations

There was one author researched the data from the Microsoft Teams recordings and two authors have checked.

Due to logistical quality of internet may have been delivered poorly. Additionally, difficulties may arise in providing the necessary materials to support web-based platforms while the session. The nature of this method may limit the ability to identify participants who struggle with personal discipline, focus, or adaptation to tech-based learning and those lacking motivation.

Conclusion

A comprehensive technology-based method in education program covering the fundamentals of emergency medicine presents a successful and feasible supportive availability to intensive, classroom-based programs taught by visiting instructors. Formal and partially web-based curricula can help alleviate the burden on universities in countries grappling with a critical shortage of healthcare educators while also meeting the growing demand for access to emergency medical care. As demonstrated in our study, recording and updating presentations periodically would help prevent time loss and allow for broader audience reach.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical Approval

The study received ethical approval from the Başkent University Clinical Research Ethics Committee (Approval Date: 06/06/2024; Approval No: KA24/215).

References

1. Sun A, Chen X. Online education and its effective practice: a research review. *J Inf Technol Educ Res*. 2016;15:157-90.
2. Roze E, Nilles C, Louapre C, Soumet-Leman B, et al. A medical school podcast to teach medical humanities: a text-mining study of students' lived experience. *Med Educ Online*. 2024;29:2367823.
3. Kim GC, Gurvitch R. Online education research: adopting the community of inquiry framework: a systematic review. *Quest*. 2020;72:395-409.
4. Goh PS, Sandars J. A vision of the use of technology in medical education after the COVID-19 pandemic. *MedEdPublish*. 2020;9:4.
5. Whelan A, Prescott J, Young G, et al. Guidance on medical students' participation in direct patient contact activities. Association of American Medical Colleges; 2020 Apr 14.
6. Republic of Türkiye Ministry of Health. Emergency Medicine Residency Training Core Curriculum. Ankara: Ministry of Health.
7. Anderson T, Dron J. Three generations of distance education theory. *Distance Educ*. 2011;32:273-9.
8. Hobgood C, Anantharaman V, Bandiera G, et al. International Federation for Emergency Medicine model curriculum for medical student education in emergency medicine. *Int J Emerg Med*. 2010;3:1-7.
9. Emergency Medicine Critical Care Course. International Emergency Medicine Course. <https://iem-course.org/courses/emergency-medicine-cc/>. Accessed August 30, 2025.
10. World Health Organization. The world health report 2006: working together for health. Geneva: World Health Organization; 2006.
11. World Health Organization. A universal truth: no health without a workforce. Geneva: World Health Organization; 2014.
12. Cook DA. Web-based learning: pros, cons and controversies. *Clin Med (Lond)*. 2007;7:37-42.
13. Mahadevan SV, Walker R, Kalanzi J, et al. Comparison of online and classroom-based formats for teaching emergency medicine to medical students in Uganda. *AEM Educ Train*. 2018;2:5-9.
14. Archambault PM, Thanh J, Blouin D, et al. Emergency medicine residents' beliefs about contributing to an online collaborative slideshow. *CJEM*. 2015;17:374-86.