



Becoming a Scholar of Teaching: Exploring Medical Students' and a Lecturer's Learning Stories During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic disrupted university teaching worldwide, including at the School of Medicine, Maldives National University. As medical educators, we experienced unique challenges when trying our teaching strategies to the new reality of remote learning. This period has marked a significant fetch in our professional practices, driven by the urgent need to transition from traditional in-person instruction to online platforms (Rose, 2020).

During this era of rapid technological advancement and digitalization (Selwyn, 2012; McFarlane, 2019), academic institutions must embrace e-learning solutions to continue delivering quality education. This paper presents a mixed-methods study integrating the Scholarship of Teaching and Learning (SoTL) framework. It examines how different teaching approaches were adapted to online formats and evaluates their effectiveness through student feedback. By using tools like Google Forms, Moodle, Prezi, and other digital resources, we aimed to enhance student engagement and learning outcomes.

Keywords: E-learning; Medical Education; Student Experience; Online Learning; Moodle; Prezi; Teaching Strategies

Introduction

The COVID-19 pandemic led to an abrupt shift from traditional face-to-face classroom teaching to virtual platforms. This transition was a challenge to various sectors, especially in educational

practices such as Medicine, where interactive learning and hands-on experience play an important role in learning. Since this shift was spontaneous, online platforms raised concerns about their effectiveness and the impact on teaching practices and student

outcomes. This study aims to address these concerns by exploring the experiences of medical students and lecturers at the Maldives National University School of Medicine, highlighting the changes and adaptations made during this time, and providing insight into various e-learning methods in medical education.

This study probes into various aspects of transformation in the learning experience and teaching methodologies at the Maldives National University School of Medicine during the COVID-19 pandemic. To assess the impact of this transformation to online learning on teaching and learning dynamics, mixed methods were used. This study not only focuses on the challenges and adaptations that arose during this period but also provides insight into the resilience and innovative strategies employed by students and educators, inspiring us with their adaptability.

Literature Review

The COVID-19 pandemic led to global adaptations in educational institutions worldwide. This literature review focuses on virtual learning and significant adjustments made by educational institutions globally. The education system was slowly transforming to virtual learning, as discussed by Dhawan [1], with the pandemic accelerating the acceptance of online learning platforms along with the challenges that came with it, such as limitations in technology and the requirement for new pedagogical approaches. A comprehensive review is provided by Moore, *et al.* [2] on the transition to virtual learning, emphasizing opportunities for innovation along with the challenges faced by students and educators. However, research specifically addressing the experience of medical students and educators in the Maldives is limited. Chan, Bista, and Allen [3] provide an international perspective on virtual teaching and learning, giving insight into various strategies and barriers across different educational systems. A case study conducted by Bao [4] at Peking University revealed that the transformation to online learning precipitated innovative methods but also posed significant limitations. Adnan and Anwar [5] addressed students' perspectives on virtual learning, highlighting challenges such as lack of engagement and motivation, which were coherent with findings from Georgia by Basilaia and Kavavadze [6].

This study aims to contribute to the existing literature by providing a detailed account of experiences at the Maldives

National University School of Medicine, offering insights into how a specific context managed the transition to online learning. The 2023 Health Workforce Report by WHO [7] reports a worldwide lack of healthcare workers, negatively impacting the universal health coverage program by 2030. This shortage is intensified by the requirement for facilities in low- to middle-income countries [8]. The Maldives National University School of Medicine, as the nation's first medical institution, faces the dual challenge of increasing student intake while maintaining high educational standards. Virtual learning provided potential solutions to counter these challenges, offering an opportunity to expand access to medical education despite limitations in resources, thus providing hope for the future of medical education [9].

As noted by Johnson [10], e-learning can be integrated effectively only if technological tools align with the local educational context. Promising results have been shown with the use of instructional mediums such as Prezi and Moodle, where students can engage and improve their understanding [11,12]. Nevertheless, these tools can be administered successfully based on institutional readiness and the capacity to adapt them to instructional needs. Oproiu [13] emphasizes the importance of institutional readiness, making audiences aware of essential preparations for successful virtual learning platforms.

According to South Asia Higher Education [14], the pandemic underscored the requirement for institutions to prepare for disruptions by adapting robust online teaching methods such as asynchronous learning modules and providing ongoing support for educators to facilitate effective remote instruction. E-learning can enhance student engagement and well-being while also balancing educational and personal aspects of students' lives [15].

Research questions

- How did the shift to online learning impact the teaching practices of the lecturer?
- What were the major challenges faced by medical students during the transition to online learning?
- How did the lecturer and students adapt to the new learning environment?
- What strategies were employed to overcome the challenges of online learning?

- How did these experiences influence the overall learning outcomes?

Methodology

- **Mixed-Methods Approach:** This study employed a mixed-methods approach to capture a comprehensive understanding of the impact of the COVID-19 pandemic on teaching and learning experiences at the Maldives National University School of Medicine. The approach combined quantitative and qualitative data collection and analysis techniques to provide a richer, more nuanced perspective.
- **Quantitative Data Collection and Analysis:** Quantitative data were collected through a structured Google form survey administered to 100 medical students from Academic Years 1 and 2 of Batches 1, 2 and 3 who were selected through convenience sampling. The survey included questions designed to assess:
 - **Challenges Faced:** Issues related to internet connectivity, motivation, and engagement during online learning.
 - **Adaptation Strategies:** The methods and tools used by students and the lecturer to navigate the online learning environment.
 - **Quantitative Analysis:** Descriptive statistics were used to analyze the survey responses. This involved calculating frequencies, percentages and means to identify common patterns and trends in the data.
 - **Qualitative Data Collection and Analysis:** Qualitative data were gathered through semi-structured interviews with the lecturer and a subset of students. The interviews aimed to explore:
 - **Impact on Teaching Practices:** The lecturer's experiences and changes in teaching methods during online teaching.
 - **Student Adaptations:** How students adapted to the online learning environment and their strategies for overcoming challenges.
 - **Overall Learning Outcomes:** Personal reflections on how the online learning experience influenced educational outcomes and personal growth.

- **Thematic Analysis:** Thematic analysis was employed to interpret the qualitative data collected from semi-structured interviews with the lecturer and subset of students. This process allowed for a detailed exploration of the experiences, adaptations, and outcomes associated with the shift to online learning during the COVID-19 pandemic. The analysis identified key themes that capture the core aspects of the transition and its impact.

Themes and sub-themes

Digital tool integration

- **Theme Description:** This theme explores how the use of digital tools and resources was integrated into teaching and learning practices. It examines the lecturer's adaptation to online teaching tools and how students leveraged various digital platforms to enhance their learning experience.

Sub-themes

- **Increased Use of Digital Platforms:** The lecturer reported a significant shift from traditional teaching methods to the use of digital platforms such as Zoom, Google Meet, and online learning management systems. This transition required adapting course materials and teaching methods to fit the online format.
- **Effectiveness of Digital Tools:** Students reported that tools like digital textbooks, online quizzes, and interactive forums were valuable in maintaining engagement and supporting their learning. However, some students experienced difficulties with unfamiliar technologies and required additional support.

Illustrative quotes

- **Lecturer:** "The switch to online teaching required a complete overhaul of my course materials. I had to become proficient in using various digital tools to deliver my lectures effectively."
- **Student:** "Using online resources helped me stay on track with my studies, but I initially struggled with the technical aspects. It took time to get used to the new way of learning."

Student engagement and interaction

- **Theme Description:** This theme focuses on the changes in student engagement and interaction resulting from the shift to online learning. It examines how the absence of physical classrooms impacted student participation and the sense of community.

Sub-themes

- **Reduced Physical Interaction:** Students and the lecturer noted a decrease in face-to-face interactions, which affected the sense of community and made it harder to gauge student understanding.
- **Increased Virtual Interaction:** To compensate, there was a marked increase in virtual interactions through discussion forums, group chats, and video conferencing.

Illustrative quotes

- **Lecturer:** "Without the ability to interact face-to-face, I had to find new ways to engage students. Virtual office hours and online discussion forums became critical tools".
- **Student:** "I missed the direct interaction with my peers and instructors. However, the online forums and group chats helped maintain a sense of connection".

Challenges and adaptation strategies

- **Theme Description:** This theme captures the various challenges faced by students and the lecturer during the transition to online learning, as well as the strategies they employed to overcome these challenges.

Sub-themes

- **Technological Challenges:** Many students faced issues related to internet connectivity, access to devices, and familiarity with online learning platforms.
- **Adaptation Strategies:** Students and the lecturer adapted by creating more flexible learning schedules, using asynchronous learning materials, and seeking technical support.

Illustrative quotes

- **Lecturer:** "Technological issues were a significant hurdle. I had to ensure that all materials were accessible and provide additional support for students facing technical difficulties".
- **Student:** "The inconsistent internet connection was frustrating at times. I found it helpful to download materials in advance and work at my own pace".

Impact on learning outcomes

- **Theme Description:** This theme examines the overall impact of the shift to online learning on educational outcomes, including knowledge retention, engagement, and performance.

Sub-themes

- **Knowledge Retention:** Despite initial challenges, many students reported that online learning helped them retain information through repetitive access to recorded lectures and digital resources.
- **Performance and Engagement:** The flexibility of online learning environments allowed students to engage with materials at their own pace, which some found beneficial for their performance.

Illustrative quotes

- **Lecturer:** "The ability to record lectures and make them available for review was a positive aspect. Students could revisit complex topics as needed".
- **Student:** "I felt more in control of my learning. The recorded lectures and flexible schedule helped me manage my studies more effectively".

Themes	Theme Description	Sub-Themes	Illustrative Quotes
Digital Tool Integration	This theme explores how the use of digital tools and resources was integrated into teaching and learning practices. It examines the lecturer's adaptation to online teaching tools and how students leveraged various digital platforms to enhance their learning experience.	<p>Increased Use of Digital Platforms The lecturer reported a significant shift from traditional teaching methods to the use of digital platforms such as Zoom, Google Meet, and online learning management systems. This transition required adapting course materials and teaching methods to fit the online format.</p> <p>Effectiveness of Digital Tools Students reported that tools like digital textbooks, online quizzes, and interactive forums were valuable in maintaining engagement and supporting their learning. However, some students experienced difficulties with unfamiliar technologies and required additional support.</p>	<p>Lecturer: "The switch to online teaching required a complete overhaul of my course materials. I had to become proficient in using various digital tools to deliver my lectures effectively."</p> <p>Student: "Using online resources helped me stay on track with my studies, but I initially struggled with the technical aspects. It took time to get used to the new way of learning."</p>

Student Engagement and Interaction	This theme focuses on the changes in student engagement and interaction resulting from the shift to online learning. It examines how the absence of physical classrooms impacted student participation and the sense of community.	Reduced Physical Interaction Students and the lecturer noted a decrease in face-to-face interactions, which affected the sense of community and made it harder to gauge student understanding.	Lecturer: "Without the ability to interact face-to-face, I had to find new ways to engage students. Virtual office hours and online discussion forums became critical tools." Student: "I missed the direct interaction with my peers and instructors. However, the online forums and group chats helped maintain a sense of connection."
		Increased Virtual Interaction To compensate, there was a marked increase in virtual interactions through discussion forums, group chats, and video conferencing.	
Challenges and Adaptation Strategies	This theme captures the various challenges faced by students and the lecturer during the transition to online learning, as well as the strategies they employed to overcome these challenges.	Technological Challenges Many students faced issues related to internet connectivity, access to devices, and familiarity with online learning platforms.	Lecturer: "Technological issues were a significant hurdle. I had to ensure that all materials were accessible and provide additional support for students facing technical difficulties." Student: "The inconsistent internet connection was frustrating at times. I found it helpful to download materials in advance and work at my own pace."
		Adaptation Strategies Students and the lecturer adapted by creating more flexible learning schedules, using asynchronous learning materials, and seeking technical support.	
Impact on Learning Outcomes	This theme examines the overall impact of the shift to online learning on educational outcomes, including knowledge retention, engagement, and performance.	Knowledge Retention Despite initial challenges, many students reported that online learning helped them retain information through repetitive access to recorded lectures and digital resources.	Lecturer: "The ability to record lectures and make them available for review was a positive aspect. Students could revisit complex topics as needed". Student: "I felt more in control of my learning. The recorded lectures and flexible schedule helped me manage my studies more effectively".
		Performance and Engagement The flexibility of online learning environments allowed students to engage with materials at their own pace, which some found beneficial for their performance.	

Table 1: Themes and Sub-Themes.

Results

Quantitative data analysis

A total of 100 medical students and one lecturer participated in the survey. The quantitative data from the survey provided insights into the challenges faced, adaptation strategies employed, and the overall impact on learning outcomes during the shift to online learning.

Challenges faced

- **Internet Connectivity:** 78% of students reported experiencing frequent internet connectivity issues, which hindered their ability to attend live sessions and access online materials.
- **Motivation and Engagement:** 65% of students found it challenging to stay motivated and engaged during online classes compared to traditional in-person learning.

- **Technical Difficulties:** 54% of students faced difficulties in navigating online platforms such as Moodle and Prezi, which affected their learning experience.

Challenge	Percentage of Students
Internet Connectivity	78%
Motivation and Engagement	65%
Technical Difficulties	54%

Table 2: Challenges faced by students.

Adaptation strategies

- **Flexible Learning Schedules:** 70% of students appreciated the flexibility of asynchronous learning, allowing them to access recorded lectures and study at their own pace.
- **Use of Digital Tools:** 80% of students found digital tools like online quizzes and interactive forums helpful in enhancing their understanding and engagement.
- **Technical Support:** 60% of students sought technical support from peers or university IT services to overcome initial challenges with online learning platforms.

Adaptation Strategy	Percentage of Students
Flexible Learning Schedules	70%
Use of Digital Tools	80%
Seeking Technical Support	60%

Table 3: Adaptation Strategies Employed by Students.

Overall impact on learning outcomes

- **Knowledge Retention:** 68% of students reported that the ability to revisit recorded lectures and digital resources helped improve their knowledge retention.
- **Performance:** 60% of students felt that their academic performance remained consistent or improved during online learning due to the flexible study environment.

Learning Outcome	Percentage of Students
Knowledge Retention	68%
Performance	60%

Table 4: Overall Impact on Learning Outcome.

Qualitative data analysis

Impact on teaching practices

- The lecturer highlighted a significant shift in teaching methods, from traditional in-person lectures to utilizing digital platforms like Zoom and Google Meet. This transition required extensive preparation and adaptation of course materials to suit the online format.
- **Quote from Lecturer:** "The switch to online teaching required a complete overhaul of my course materials. I had to become proficient in using various digital tools to deliver my lectures effectively."

Student adaptations

- Students described various strategies they employed to adapt to the online learning environment, including forming virtual study groups, utilizing online resources, and maintaining a structured study schedule.
- **Quote from Student:** "Using online resources helped me stay on track with my studies, but I initially struggled with the technical aspects. It took time to get used to the new way of learning".

Overall learning outcomes

- The shift to online learning had mixed impacts on students' educational outcomes. While some students benefited from the flexibility and accessibility of digital resources, others faced challenges related to reduced physical interaction and technological limitations.
- **Quote from Lecturer:** "The ability to record lectures and make them available for review was a positive aspect. Students could revisit complex topics as needed".
- **Quote from Student:** "I felt more in control of my learning. The recorded lectures and flexible schedule helped me manage my studies more effectively".

Discussion

The shift from traditional classroom learning to online learning during the COVID-19 pandemic posed complex challenges as well as opportunities for medical education at the Maldives National University. A mixed-method approach was implemented in the study to highlight the multifaceted outcomes of this shift, revealing barriers and adaptations that shaped the learning experience.

Firstly, several issues arose due to technological infrastructure. More than a quarter of students (78%) reported frequent problems with internet connection, which was a barrier to participating in live classes and accessing online materials. Moreover, more than half of the students (54%) had issues navigating online learning platforms, including Moodle and Prezi, which is a critical area for institutional improvement [1]. As reported by Means, *et al.* [16], these technological challenges necessitated the implementation of flexible learning schedules and asynchronous learning materials, allowing students to study at their own pace and revisit recorded lectures, thus enhancing knowledge retention for 68% of participants.

From a lecturer's perspective, the change in teaching mode to virtual learning necessitated substantial adjustments. A new mode of content delivery emerged with increased use of digital platforms such as Zoom and Google Meet, which in turn required significant preparation and proficiency in digital tools [17]. Although difficulties were faced initially, technological tools were functional in enabling student interaction and engagement. As Bon., *et al.* [18] found, 80% of students found digital resources like online quizzes and interactive forums beneficial in supporting their learning. Nevertheless, variations existed in the effectiveness of the tools, as some students faced technological challenges requiring additional support.

E-learning significantly impacted student engagement and interaction. The lack of physical classroom interactions led to a reduction in face-to-face engagement, negatively affecting students' sense of community and their ability to gauge understanding through direct feedback [19]. Efforts were made to counteract this by encouraging virtual interactions through discussion forums, group chats, and video conferencing. Martin, *et al.* [20] noted the vitality of online platforms in fostering a collaborative learning environment even without physical presence.

The overall outcome of online teaching was mixed. Students were able to engage with course content at their own pace in a flexible learning environment, which benefited some students' academic performance. Sixty percent of students agreed that their academic performance remained consistent or improved during virtual learning, acknowledging the ability to manage studies more productively via recorded lectures and flexible timings [4].

However, several hurdles were faced due to reduced physical interactions and technological limitations, which need to be considered for optimizing the virtual learning experience.

The findings of this study emphasize the importance of a balanced approach to virtual learning, combining the advantages of digital tools with alternatives and strategies to mitigate their limitations. Continuous professional development for lecturers and robust technical support for students, along with ongoing interactive feedback, are critical to tackling the difficulties in online education [21]. Moreover, improving institutional infrastructure to provide a reliable internet connection and user-friendly learning platforms is necessary to ensure a fruitful virtual learning experience.

Recommendations

Based on the study's findings, the following recommendations are proposed to improve remote medical education:

- **Invest in Professional Development:** Educators should receive ongoing training to enhance their ability to design and deliver online courses effectively.
- **Enhance Technological Infrastructure:** Institutions should invest in robust technological infrastructure to ensure reliable internet connectivity and access to digital tools for all students.
- **Develop Flexible Learning Strategies:** Adopting flexible learning schedules and providing asynchronous learning materials can help accommodate diverse student needs.
- **Foster Continuous Feedback:** Regular feedback from students is essential to refine online learning strategies and ensure they meet learners' needs.
- **Promote Virtual Interaction:** Encouraging the use of virtual forums, group chats, and video conferencing can help maintain student engagement and a sense of community.

Conclusion

The COVID-19 pandemic catalyzed significant changes in medical education at the Maldives National University, necessitating a rapid shift to online learning. This study highlights the challenges and adaptations experienced by both students and educators during this transition. The findings provide valuable insights into the

effectiveness of various online teaching strategies and underscore the importance of continuous adaptation and feedback to enhance remote learning experiences.

Competing Interests

The authors declare that they have no competing interests.

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Conflict of Interest Statement

The authors declare no conflicts of interest related to this study.

Ethics Approval

This study was approved under the blanket ethics approval from the SoTL Project at Maldives National University.

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