

Evaluating Students' Acceptance of and Readiness to Adopt E-Learning Practices: Moving Forward from a Pandemic

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Disclosures:

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I have the following professional relationship to disclose:

- Consulting role for Lecturio GmbH

All co-authors are professionally affiliated with Lecturio GmbH

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Introduction and Background

E-Learning in Medical Education

E-Learning Defined



1

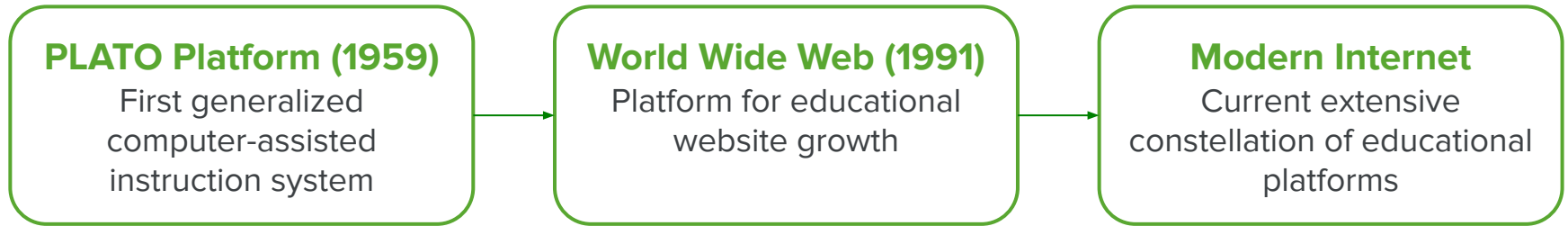
“An encompassing **pedagogical approach** that aspires to be **flexible, engaging, and learner-centered** while **encouraging interaction, collaboration,** and communication **synchronously** and **asynchronously**”

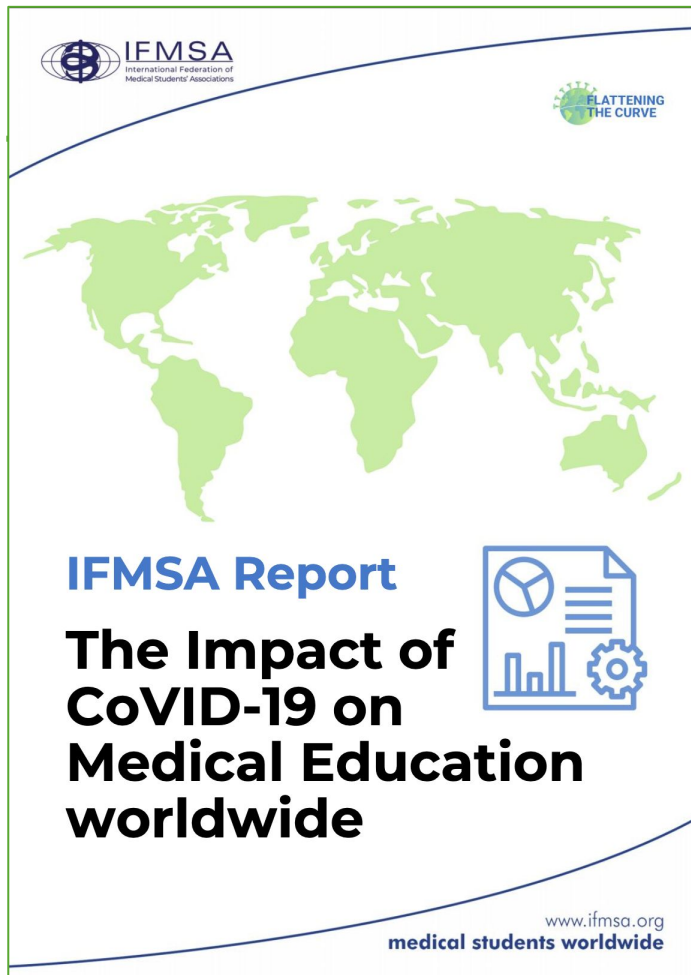
2

Learning through **electronic devices** with **internet connectivity** in **synchronous** or **asynchronous** conditions, potentially leading to education that is more **student-centered, creative, and flexible**

1. Ellaway R, Masters K. AMEE Guide 32: e-Learning in medical education Part 1: Learning, teaching and assessment. Medical Teacher. 2008 Jan;30(5):455–73.
2. Zalat MM, Hamed MS, Bolbol SA. The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff. Hwang G-J, editor. PLoS ONE. 2021 Mar 26;16(3):e0248758.

History and Journey of E-Learning





Impact of COVID-19

Analyzed sample: 2,761
medical schools in 103
countries

**Complete suspension of
offline learning (94.7%):** 2,614
medical schools in 95 countries

E-learning adoption (40.6%):
1,120 medical schools in 66
countries

Barriers to E-Learning Adoption

Technological

- Software issues
- Technological inaptitude
- Device incompatibility

Logistical

- Power interruptions
- Poor internet connectivity
- Limited domestic space
- Unfavourable learning environment
- Lower content quality
- Data, device, electricity costs
- Lack of institutional support

Psychological

- Self-determination issues
- Lack of sense of community
- Social support needs
- Reduced drive
- Dissatisfaction with modality
- Mental health and burnout
- Adjustment difficulties

Challenges Presented by the Pandemic

1

Maintaining **communication** with students on adaptations to their curricula¹

2

Quickly adapting the existing curricula to real-life **changes**¹ and building the faculty's capacity in the transition to e-learning modalities

3

Providing equitable access to **education**¹

4

Continuing to produce high-quality physicians despite the pandemic-imposed constraints¹

1. Lucey CR, Johnston SC. The Transformational Effects of COVID-19 on Medical Education. JAMA. 2020 Sep 15;324(11):1033.

How the Pandemic Is Driving Change



- **Awareness:** increased awareness and willingness to adopt e-learning strategies
- **Aptitude:** enhanced technological literacy and aptitude due to necessity
- **Independence:** increased self-directed learning among students

-
1. Barrot, J.S., Llenares, I.I. & del Rosario, L.S. Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Educ Inf Technol* (2021). <https://doi.org/10.1007/s10639-021-10589-x>
 2. Cathy Li, Farah Lalani. (2020, April 29).The COVID-19 pandemic has changed education forever. This is how. *World Economic Forum*. <https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/>

How the Pandemic Is Driving Change (2)



- **Infrastructure:** e-learning infrastructure with greater functionality became available
- **Innovation:** educational technology innovation
- **Exposure of existing inequities:** highlighted existing gaps in society regarding education
- **Adoption:** greater focus on ways of teaching and learning

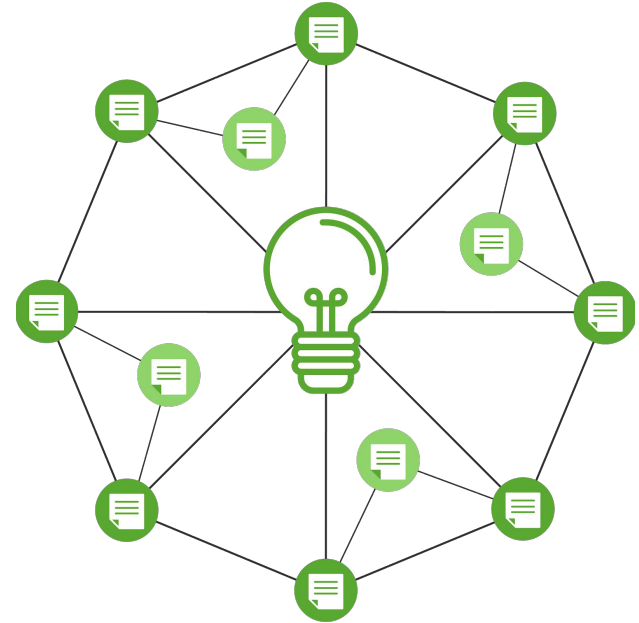
1. Barrot, J.S., Llenares, I.I. & del Rosario, L.S. Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Educ Inf Technol* (2021). <https://doi.org/10.1007/s10639-021-10589-x>
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Data on the Situation

Pandemic Adoption of E-Learning

What the Data Tells Us

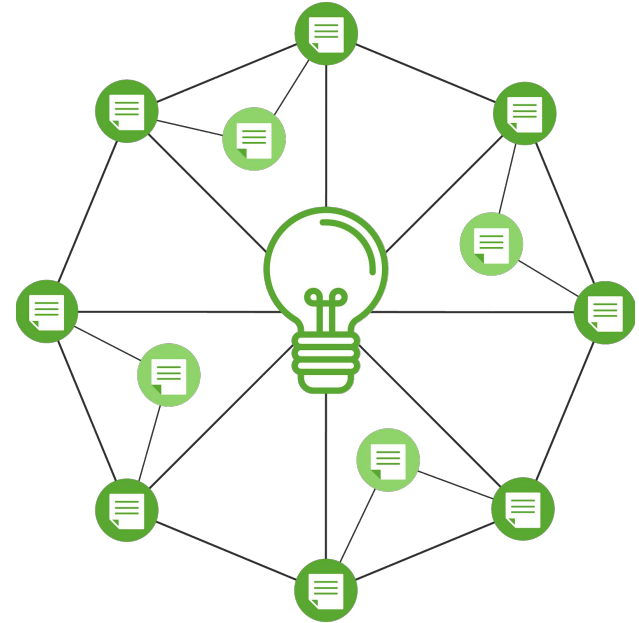
- **Data source:** Lecturio GmbH
- **Method:**
 - Anonymous data obtained from organization's database
 - Baseline period was March–August 2019 (pre-pandemic period)
 - Evaluated period was March–August 2020 (pandemic period)



What the Data Tells Us (2)

- **The following parameters** were evaluated:
 - a. Number of active users*
 - b. Number of lectures watched
 - c. Number of hours watched
 - d. Number of quiz questions answered
 - e. Number of question banks completed

* Active users were defined as those who logged in at least once during the evaluated periods on the platform.



Two Big Questions



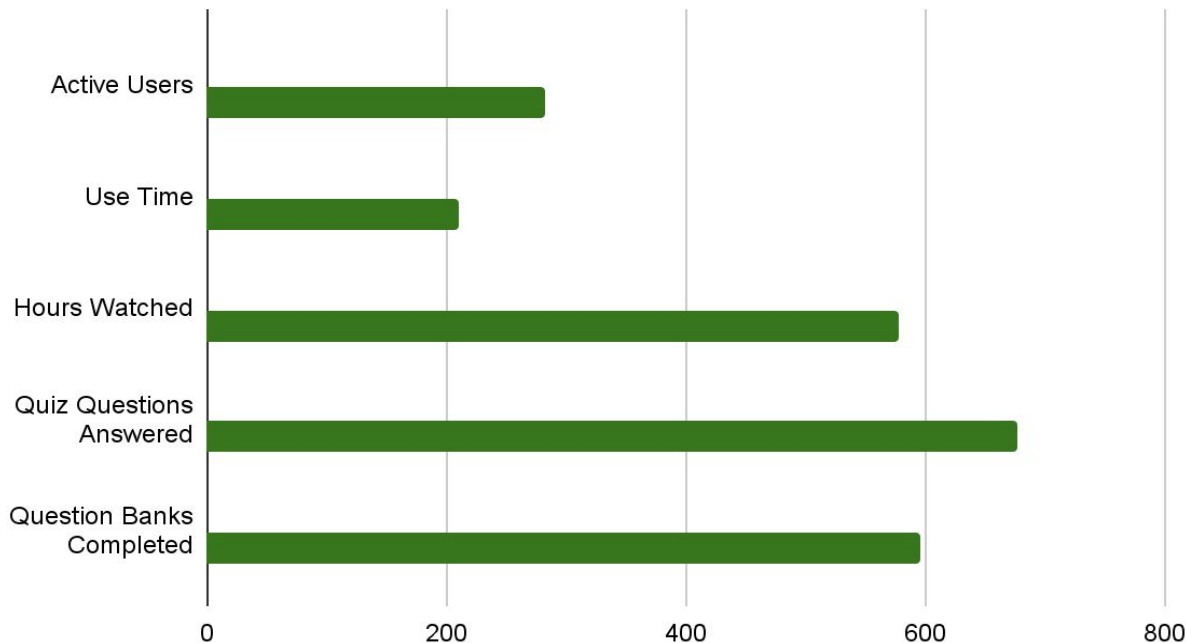
What does the data show?



What are the key takeaways from it?

Sharp Increase in University Usage of Lecturio's Platform during the Pandemic

■ % change between base period (Mar-Aug 2019) versus evaluated period (Mar-Aug 2020)



+283%

active users

+211%

use time

+578%

hours watched

+676%

quiz questions
answered

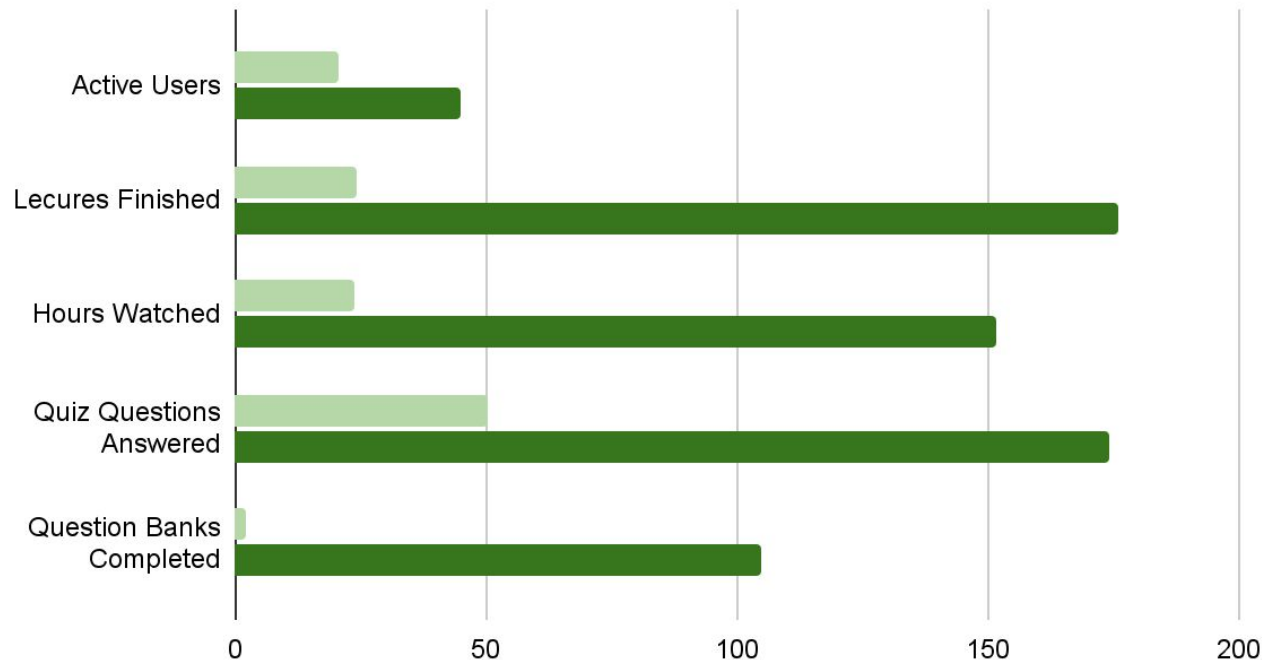
+596%

question banks
completed

Substantial Increase in Overall Usage of Lecturio's Platform during the Pandemic

■ % change between Mar–Aug 2018 and Mar–Aug 2019

■ % change between Mar–Aug 2019 and Mar–Aug 2020



+45%

active users

+176%

lectures finished

+152%

hours watched

+174%

quiz questions
answered

+105%

question banks
completed

Discussion and Conclusion

Toward the Future

Recommendations for Overcoming Barriers

- **Tackling Technology and Logistics Barriers**

- Infrastructure readiness
- Institutional and governmental commitment to ensuring access and quality
- Involvement of other sectors, like the telecommunication sector and tech sector
- Capacity building for teachers and students to make the best use of the available platforms

- **Tackling Learning and Psychological Barriers**

- Provision of online mental health and learning support
- Use of evidence-based learning science to optimize learning
- Involvement of students in decision-making that influences their learning
- Provision of faculty and student support for the transition to online learning
- Inclusion of evidence-based learning techniques

Recommendations for Further Research

- **Involve more students:** A larger sample size would allow us to reduce biases from multiple confounding variables.
- **Include a control period:** Adding more pre-pandemic control periods to compare growth would allow us to better evaluate normal year-over-year growth vs. pandemic-spurred growth.
- **Involve more e-learning platforms and institutions:** A large-scale public–private research project that gathers data from multiple platforms, both open source and paid, would allow us to see the real adoption rate and infer challenges that we could better strategize for.
- **Utilize more variables:** The basic variables used in this short communication aim to only illustrate the scope of growth. Numerous other effects can potentially be shown and proved, or misconceptions disproved, with the inclusion of more variables.



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