

Remote classes affected students and teachers differently worldwide

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As schools moved to a mode of emergency response teaching (ERT) at the beginning of the COVID-19 pandemic, there were distinct differences in the effect it had on students and teachers whether they

were in developed or developing countries, a new study shows.

Using [data science](#), researchers at the University of Waterloo analyzed the impact the shift to ERT in early 2020 had on both learning outcomes for students and teaching objectives for instructors. They collected data from developing countries, including Bangladesh, Malaysia and China, and [developed countries](#), including the U.S., Canada, Germany and Spain.

The research team generated the data for their study through a combination of surveys and interviews with students and [teachers](#). They then used data science methods and [statistical analysis](#) to sort through the massive amounts of information and draw conclusions.

"There were distinct differences in developed and developing countries," said Enamul Haque, a Ph.D. student in computer science at Waterloo and lead author of the study. "Students and teachers in developing countries experienced difficulties linked with infrastructure issues, such as lack of internet connectivity in some [rural areas](#). This was also an issue in some rural areas in developed countries, but not to the same extent."

The researchers also found that students in developing countries faced related difficulties around financial constraints. Because there was no reliable broadband internet connectivity, some students had to attend classes on their smartphones and use large amounts of data, which could be expensive.

In the developed countries they studied, students faced more difficulties related to distractions or to not having a dedicated space for their online learning inside their homes. For the teachers, they found that they consistently experienced a far higher workload when preparing and delivering classes remotely. In addition, for many teachers, it was their

first time using a tech-only approach, which presented unique challenges, depending on their experience or whether they needed labs for hands-on teaching.

"One important take-away is that planning and preparation for moving to ERT are vital, and [educational institutions](#) that had plans in place did much better," Haque said. "The experience of ERT can show cracks and weaknesses in educational systems where improvements can be made to increase resiliency and better support [students](#)."

The new research from Haque and co-authors Tanvir Mahmud, Shahana Shultana, Iqbal H. Sarker and Md Nour Hossain, "A Tale of Two Zones: Pandemic ERT Evaluation," was recently published as a chapter in *Smart and Sustainable Technology for Resilient Cities and Communities*.

More information: Enamul Haque et al, A Tale of Two Zones: Pandemic ERT Evaluation, *Smart and Sustainable Technology for Resilient Cities and Communities* (2022). [DOI: 10.1007/978-981-16-9101-0_17](#)

Provided by University of Waterloo

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