

In era of online learning, new testing method aims to reduce cheating

1 March 2021



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The era of widespread remote learning brought about by the COVID-19 pandemic requires online testing methods that effectively prevent cheating, especially in the form of collusion among students. With concerns about cheating on the rise across the country, a solution that also maintains student privacy is particularly valuable.

In research published today in *npj Science of Learning*, engineers from Rensselaer Polytechnic Institute demonstrate how a testing strategy they call "distanced online testing" can effectively reduce students' ability to receive help from one another in order to score higher on a test taken at individual homes during social distancing.

"Often in remote online exams, students can talk over the phone or internet to discuss answers," said Ge Wang, an endowed chair professor of biomedical engineering at Rensselaer and the corresponding author on this paper. "The key idea of our method is to minimize this chance via discrete optimization aided by knowledge of a student's competencies."

When a distanced online test is performed, students receive the same questions, but at varying times depending on their [skill level](#). For instance, students of highest mastery levels receive each question after other groups of students have already answered those questions. This approach, Wang said, reduces the incentive for students to receive help from those who have more mastery of the material. In order to determine the order of each [student's](#) questions, their competence levels are estimated using their [grade point averages](#), SAT scores, or midterm scores, depending on what is available at a specific point in the semester.

According to [statistical tests](#) and post-exam surveys, this method reduced the points gained through collusion by orders of magnitude when compared to conventional exam methods. As an added benefit, Wang said, when students knew collusion would not be possible, they were more motivated to study class material. Wang and his collaborators hope to share this pedagogical innovation beyond the Rensselaer campus.

"We plan to develop a good platform so that others can easily use this method," said Wang, a member of the Center for Biotechnology and Interdisciplinary Studies at Rensselaer.

More information: Mengzhou Li et al, Optimized collusion prevention for online exams during social distancing, *npj Science of Learning* (2021). [DOI: 10.1038/s41539-020-00083-3](https://doi.org/10.1038/s41539-020-00083-3)

Provided by Rensselaer Polytechnic Institute

APA citation: In era of online learning, new testing method aims to reduce cheating (2021, March 1)
retrieved 14 May 2021 from <https://phys.org/news/2021-03-era-online-method-aims.html>

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