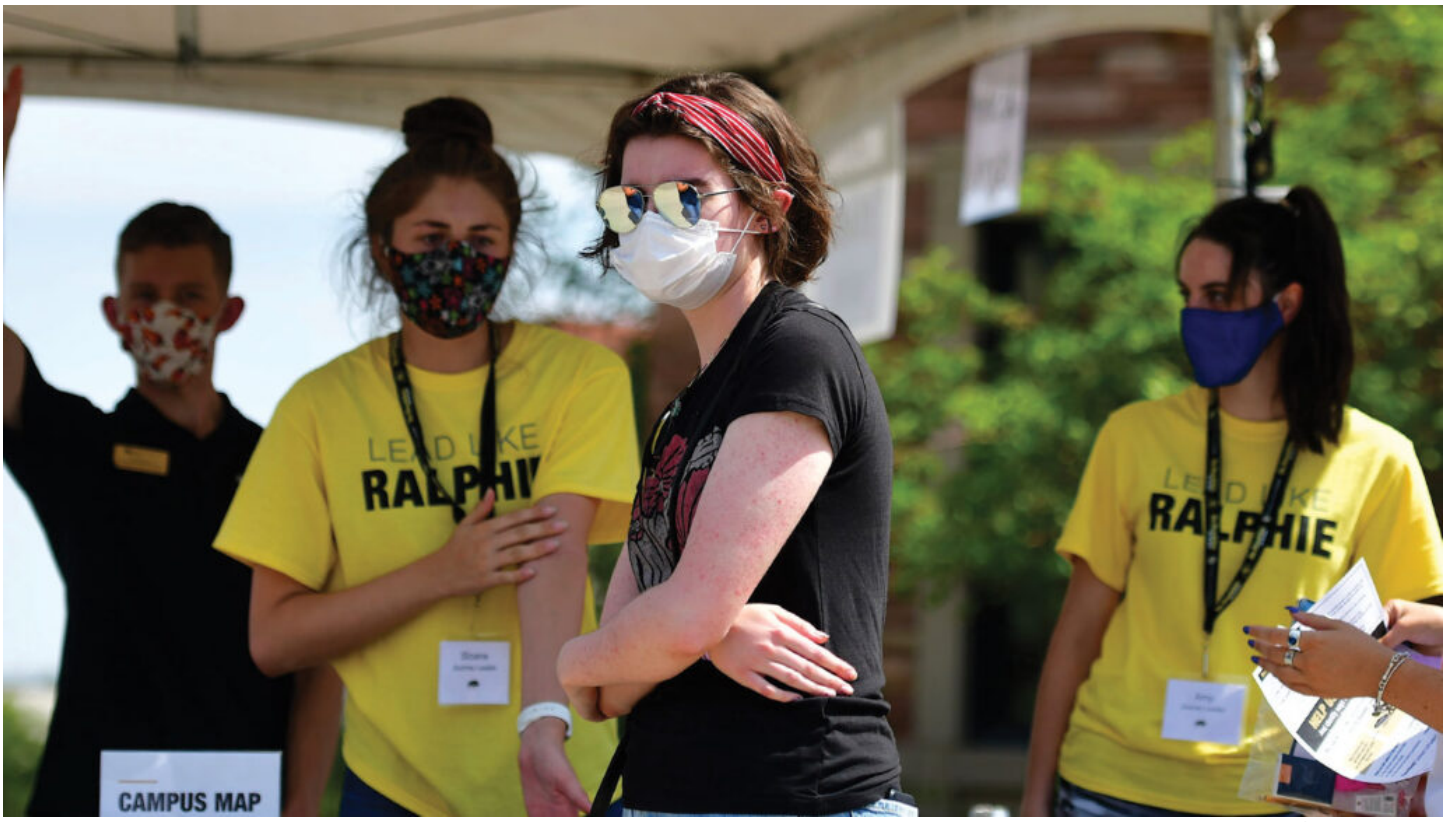
ScienceNews
EDUCATOR GUIDE



MARK MAKELA/GETTY IMAGES

February 27, 2021

COVID-19 On Campus

SOCIETY FOR SCIENCE

SN EDUCATOR GUIDE

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COVID-19 On Campus

About this Guide

In this Guide, based on the online *Science News* article "How 5 universities tried to handle COVID-19 on campus," students will learn about strategies that five universities used to monitor coronavirus cases on campuses, analyze the strategies' effectiveness at minimizing spread and reflect on the strategies used at their own school.

This Guide includes:

Article-based Comprehension Q&A — Students will answer questions about the online *Science News* article "How 5 universities tried to handle COVID-19 on campus," which explores five universities' strategies for monitoring and stemming the spread of the coronavirus on campuses. A version of the story, "COVID-19 on campus," appears in the February 27, 2021 issue of *Science News*. Related standards include NGSS-DCI: HS-ETS1; HS-LS1.

> **Student Comprehension Worksheet** — These questions are formatted so it's easy to print them out as a worksheet.

Cross-curricular Discussion Q&A — Students will explore and analyze various approaches some universities have taken to manage the COVID-19 pandemic on their campuses before comparing the strategies to those used at their own school. Related standards include NGSS-DCI: HS-ETS1; HS-LS1.

> **Student Discussion Worksheet** — These questions are formatted so it's easy to print them out as a worksheet.

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Article-based Comprehension, Q&A

Directions for teachers: Ask your students to read the introduction to the online *Science News* article "How 5 universities tried to handle COVID-19 on campus," which explores five universities' strategies for monitoring and stemming the spread of the coronavirus on campuses, and answer the following questions. A version of the story, "COVID-19 on campus," appears in the February 27, 2021 issue of *Science News*. For a deeper dive into each university's data as presented in the *Science News* story, see the discussion section of this Guide.

1. What factors make college campuses seem like risky places to be during the coronavirus pandemic?

The virus that causes COVID-19 spreads easily through large indoor gatherings and communal living spaces — similar to the dorms, cafeterias and lecture halls found on college campuses. And people can spread the virus to others before symptoms appear or while not ever showing symptoms.

2. What evidence supports the claim that in-person instruction on college campuses may contribute to the spread of COVID-19? What is the source of this evidence?

In the United States, counties with large colleges or universities that held in-person instruction last fall saw a 56 percent rise in COVID-19 cases in the three weeks after classes began compared with the three weeks before. Meanwhile, counties with large colleges or universities that offered only remote instruction saw an almost 18 percent drop in COVID-19 cases. The U.S. Centers for Disease Control and Prevention reported the findings.

3. Examine the graph titled "COVID-19 cases at five U.S. universities, fall 2020." What five universities are represented on the graph? Define the x- and y-axes and describe one trend the graph shows.

The graph shows the number of COVID-19 cases for five universities: Colorado Mesa University, North Carolina A&T State, Rice University, University of Washington and University of Wisconsin. The x-axis shows time using data from roughly August 9 to November 29, and the y-axis shows the number of new COVID-19 cases per 1,000 students. Four schools experienced a large spike in cases at least once in the fall, with some schools experiencing more than one spike.

4. What types of testing did the universities provide to students?

PCR testing, LAMP testing, antigen testing and wastewater sampling.

5. What were some similarities and differences among the universities' types of testing strategies? Explain how each type of testing impacted the university's strategy.

All five universities provided PCR testing — the gold standard for diagnosing coronavirus infection. One school added LAMP testing, which is less sensitive than PCR testing but provides results faster. Another school added antigen testing, which helped identify students to quarantine. And yet another school sampled wastewater to monitor when an outbreak might be starting. The frequency of testing varied across the schools, and the schools also had different rules about other safety measures including mask wearing and public gatherings.

6. Computational geneticist Pardis Sabeti says that colleges are high risk, but also are places of innovation. Give an example of how universities have innovated during the pandemic.

Phone apps for symptom monitoring and contact tracing is one example of innovation.

7. What advice does Pardis Sabeti have for universities that are open for in-person learning?

Schools should double their civic engagement with students and broader communities as well as their public health measures to ensure safe behavior among the communities.

8. Are the testing strategies used by the five universities profiled in the *Science News* article representative of how all colleges and universities across the United States have handled the pandemic? Explain.

No. Some universities and colleges switched to fully remote learning. Universities and colleges that remained open for in-person instruction during the pandemic had no manual to follow and had to come up with ways to control infection, through trial and error, that they thought would work best for them. There is no standard approach. If the article were to look at another five schools that remained open for in-person instruction, the outcomes for each would probably be different.

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Student Comprehension Worksheet

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2. What evidence supports the claim that in-person instruction on college campuses may contribute to the spread of COVID-19? What is the source of this evidence?

3. Examine the graph titled "COVID-19 cases at five U.S. universities, fall 2020." What five universities are represented on the graph? Define the x- and y-axes and describe one trend the graph shows.

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7. What advice does Pardis Sabeti have for universities that are open for in-person learning?

8. Are the testing strategies used by the five universities profiled in the *Science News* article representative of how all colleges and universities across the United States have handled the pandemic? Explain.

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Cross-curricular Discussion, Q&A

Directions for teachers:
Ask students to read the introduction of the online *Science News* article "How 5 universities tried to handle COVID-19 on campus." Ask them to review all university profiles in the article and choose one campus to focus on. Students should read about that university and answer the first set of questions on their own. Then have students partner with a classmate who chose a different university. Each pair should discuss and answer the two remaining sets of questions. A version of the story, "COVID-19 on campus," appears in the February 27, 2021 issue of *Science News*.

As an optional extension, have students write an article about how their high school has managed the COVID-19 pandemic. Students can follow a template similar to the one used to profile universities in the *Science News* article.

Want to make it a virtual lesson? Post the online *Science News* article "How 5 universities tried to handle COVID-19 on campus" to your virtual classroom and use the questions to discuss the article with your class.

Choose a campus
Answer the following questions for one of the universities profiled in the *Science News* article.

1. What university did you choose and how many students live on its campus?

Answers in this section will vary based on which campus students chose. Example answers are given for the University of Wisconsin-Madison — 31,650 students live on or near the UW-Madison campus.

2. What kind of testing did the university provide at the start of the fall semester? What were the requirements around testing?

Mandatory PCR tests were given biweekly to students and staff who were in university housing.

3. What other safety measures did the university put in place?

UW-Madison required masks on campus both indoors and outdoors, as well as contact tracing and event restrictions based on CDC guidelines.

4. When did the university see the largest spike in cases? Why did the spike occur? Did the school change its testing strategies after that spike? If so, how? Be sure to look at both graphs when answering the question.

The largest spike in cases occurred around September 10, 2020. Hundreds of students tested positive for the coronavirus when the campus opened in late August, and some students gathered in large groups without masks on campus despite restrictions on such gatherings. After the spike, the university started testing students twice a week.

5. Did the university include any unique approaches to its testing plan? Explain.

When the university moved to weekly testing of students in September 2020, the school created a staggered testing schedule where roommates and next-door neighbors were tested on consecutive days. The staggered testing helped administrators quickly determine outbreak sites.

6. Compare trends in data from new daily cases and new daily tests. Name a point where the two graphs had similar trends and one where the trends differed. Be sure to include the quantitative data and units associated with each point.

Around September 10, 2020, new daily cases peaked at above 120 cases per 7-day rolling average and new daily tests peaked at above 1,400 tests per 7-day rolling average. In late October, new daily cases were low, hovering around 20 cases per 7-day rolling average, and new daily tests remained relatively high, around 1,200 tests per 7-day rolling average.

7. How might trends in the graph of new daily cases relate to trends in the graph of new daily tests?

Early in the fall semester, both the number of new daily cases and number of new daily tests were high — before the university did a lot of testing, testing was done to confirm cases showing symptoms. Once the university began testing more frequently, the number of new daily cases decreased — tests were given regardless of the presence of symptoms, which helped the university track and prevent potential outbreaks.

8. What are the university's plans for the spring semester? How do the plans differ from the fall semester plans?

During the spring semester, the university plans to test undergraduate students twice a week, require testing for building access and ensure that faculty and staff have a negative test result within eight days of visiting campus. The university also is making symptom monitoring and contact tracing mandatory through an app. In the fall, the initial plan was to test students every other week. The plan changed to weekly tests after cases spiked.

Compare approaches

Before answering the following questions, briefly review your answers to the previous set of questions with your partner.

1. How are the campuses of the two schools similar and different? Consider population size, location, and other factors in your answer.

Answers in this section will vary based on which campuses students chose. Students may include the number of students who live on campus, the size of the school and where in the country the school is located.

2. Compare the graphs of new daily cases for your chosen university and your partner's chosen university. How are the trends in data of the two schools similar or different? How did major events affect the trends?

Students should be looking at the highest peaks on the graphs and comparing when those occurred and what events listed on the graphs may have contributed to the peaks. Groups can discuss how large the peaks were and how long each peak lasted. They should also compare the low points of the graphs.

3. Which school's approach to managing COVID-19 on campus was more successful? Explain using evidence from the article.

Students should analyze which school's strategies led to a decrease in cases and whether they were able to maintain that decrease over time.

Reflect on your experience

Before answering the following questions, discuss with your partner any safety measures that your own school has used during the pandemic.

1. Brainstorm similarities and differences that exist between a college campus and your high school environment.

Student answers will vary but could include population size, time students spend on the school campus, size of the school campus, groups of people who work or reside on campus, etc.

2. Is there a strategy you learned from one or both of the universities that you think would be beneficial for your school? Why or why not? Be sure to consider the factors required to implement the strategy.

Student answers will vary, but could include an increase in testing, use of contact tracing, testing incentives, etc.

Possible extension
Imagine you're writing an article on how high schools have managed the COVID-19 pandemic. Write a profile of your school from August 2020 to December 2020 following the template from the article, which is provided below.

Students:

Testing:

Safety measures:

Spring semester plans:

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Student Discussion Worksheet

Directions: Read the introduction of the online *Science News* article "How 5 universities tried to handle COVID-19 on campus," and choose one of the universities profiled in the article to explore. Use the profile and the associated graphs to answer the first set of questions. Then, partner with a classmate who chose a different university and discuss and answer the remaining questions. A version of the story, "COVID-19 on campus," appears in the February 27, 2021 issue of *Science News*.

Choose a campus

Answer the following questions for one of the universities profiled in the *Science News* article.

1. What university did you choose and how many students live on its campus?

2. What kind of testing did the university provide at the start of the fall semester? What were the requirements around testing?

3. What other safety measures did the university put in place?

4. When did the university see the largest spike in cases? Why did the spike occur? Did the school change its testing strategies after that spike? If so, how? Be sure to look at both graphs when answering the question.

5. Did the university include any unique approaches to its testing plan? Explain.

6. Compare trends in data from new daily cases and new daily tests. Name a point where the two graphs had similar trends and one where the trends differed. Be sure to include the quantitative data and units associated with each point.

7. How might trends in the graph of new daily cases relate to trends in the graph of new daily tests?

8. What are the university's plans for the spring semester? How do the plans differ from the fall semester plans?

Compare approaches

Before answering the following questions, briefly review your answers to the previous set of questions with your partner.

1. How are the campuses of the two schools similar and different? Consider population size, location, and other factors in your answer.

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3. Which school's approach to managing COVID-19 on campus was more successful? Explain using evidence from the article.

Reflect on your experience

Before answering the following questions, discuss with your partner any safety measures that your own school has used during the pandemic.

1. Brainstorm similarities and differences that exist between a college campus and your high school environment.

2. Is there a strategy you learned from one or both of the universities that you think would be beneficial for your school? Why or why not? Be sure to consider the factors required to implement the strategy.

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