Family edition

Landslide Lab: Forecast Tomorrow

Ages 11-14 · about 45 minutes, in one sitting

Your child becomes a forecaster in Landslide Lab: a few snow pits on a mountain they have not seen, a call about tomorrow, and then tomorrow shows whether they were right. Then a hillside storm, and which houses to warn.

What you need

- A computer or Chromebook with a current browser.
- The lesson link: mytekdev.com/try/landslidelab?lesson=forecast-tomorrow&ref=fam-landslidelab-4. No account, no email and nothing to install.

Before you start: try it once yourself

Open mytekdev.com/try/landslidelab?lesson=forecast-tomorrow&ref=fam-landslidelab-4. A short guide opens over the app on the winter forecast. The panel on the right lists the last days of weather, tomorrow's weather, your pits, and your forecast.

1. **Dig.** Click the mountain to dig a pit. The pit shows in the corner with its layers and column test score. Three checks are allowed.
2. **Call it.** Pick a danger for above the trees, near the tree line and below the trees, the problem (storm slab, wind slab or persistent slab, or none), and one of three routes.
3. **Publish.** Press `Publish the forecast`. Tomorrow plays. The check marks each band right, close or wrong, names the pit that showed the danger or says none did, and says whether your route was safe.
4. **Summer.** Pick `Summer` at the top of the panel. Walk the hill or read a soil sensor, pick `Mark houses`, click the houses to leave, and press `Send the warnings`. The check counts the houses reached that you warned, the ones you missed, and the false alarms.

> The moment that lands is the first check. Children who dug three pits side by side see the danger was in a place they never looked.

The ideas, in plain words

Avalanche centers publish a danger rating for three bands, above, near and below the tree line, from field observations, weather and snow pits. Forecasters never see the whole mountain; they choose where to look. A forecast also names the avalanche problem, because a storm slab heals in days while a persistent slab on a buried weak layer can last for weeks.

Every warning system weighs two errors. A missed hazard can cost lives; a false alarm costs a night away and makes the next warning easier to ignore. The app counts both. That trade is MS-ESS3-2: data on a hazard used to

forecast it and to decide what to do.

The forecasts come from the app's own rules and cutoffs. The app is a model of a made-up hill and mountain. It is not a tool for judging a real slope.

Do it together

1. Open mytekdev.com/try/landslidelab?lesson=forecast-tomorrow&ref=fam-landslidelab-4 together. A short guide opens over the app. Read the last days of weather and tomorrow on the right.

   > **You'll know it worked when:** Your child can say which day might have made trouble.

2. Click the mountain three times to dig three snow pits, each somewhere different.

   > **If you get stuck:** Try one high, one near the trees and one below them.
   >
   > **You'll know it worked when:** Three pits are listed, each with a column test score.

3. Pick the danger for each band, the problem and a route, then press `Publish the forecast`.

   > **You'll know it worked when:** Tomorrow plays, and the check says what was right and which pit showed the danger.

4. Press `Next forecast` and make two more.

   > **You'll know it worked when:** Your child chooses where to dig more carefully.

5. Pick `Summer` at the top of the panel. Walk the hill, mark the houses to leave, and press `Send the warnings`. Ask: is a false alarm worse than a missed house?

   > **You'll know it worked when:** The check counts the houses warned, missed and sent away for nothing.

Talk about it

Ask these while you work together. A child who has understood it can answer them without help:

- Why did you dig that pit there?
- Which pit showed the danger? What did its column test say?
- Which band did you get wrong, and what evidence would have changed your call?
- How many false alarms did you send in summer?
- If you had only two checks, where would you look?

> The third question is the real test: a child who names the evidence they were missing is thinking like a forecaster.

For younger and older kids

Younger: For a younger child, do the summer forecast together and talk about false alarms.

Older: For a teenager, pick High school in the level menu and write a short forecast for each band.

Keep going

- Switch the level to high school, where Extreme is on the scale, and make five forecasts.
- Set the checks to 2 in Setup and compare your score with 3 checks.
- Write the forecast for a real mountain from its avalanche center's weather, and compare it with the one they published.

Bring it into other subjects

- Math: from the whole class's logs, find the share of bands rated right, and the share of warnings that were false alarms.
- Social studies: read how a county decides on an evacuation order before a storm, and who pays for it.
- English: write tomorrow's forecast as a public message, short enough to read on a phone.
- Weather: compare the danger scale with a weather forecast's chance of rain: how is each one judged right or wrong?

For your records

Ready to copy into an hour log, a portfolio or a transcript.

LESSON	Landslide Lab: Forecast Tomorrow
SUBJECTS	Earth science
TIME	45 minutes
WHAT WE DID	Made avalanche and landslide forecasts in a model from limited evidence, compared them with what happened, and weighed missed warnings against false alarms.
SKILLS PRACTICED	Forecasting natural hazards; Using evidence; Hazard mitigation

Activity sheet (optional)

Name: _____ Date: _____

Open the app: scan the QR code, or go to mytekdev.com/try/landslidelab?lesson=forecast-tomorrow

Essential question: How can people forecast a natural hazard from a few pieces of evidence, and what does a wrong forecast cost?

Warm-up: A town warns of a storm three times and nothing happens. What will people do the fourth time?

_____

1. **Vocabulary.** Forecast, evidence, danger rating, false alarm, mitigation: write each in your own words.

2. **The forecast log.** For each winter forecast: where I dug _____; my ratings _____; bands right ____ of 3; the problem right? ____; my route safe? ____; the evidence I missed _____. One forecast on each line.

3. **Summer.** Houses warned that the slide reached: ____. Houses missed: ____. False alarms: ____.

1. Which pit or walk was the most useful evidence you found today? Why?

2. Which is worse, a missed house or a false alarm? Use your log.

Quick check

Name: _____

1. A forecaster digs all three pits on one slope. What is the problem? (A) too few pits (B) no evidence from other heights and slopes (C) nothing

2. A false alarm is (A) a warning for something that did not happen (B) a hazard nobody warned about (C) a forecast that came true

3. Why can too many false alarms be dangerous?

Answers

QUESTION	ANSWER	WHY
1	B	Danger changes with height and the way a slope faces. Spreading the checks gives evidence from more of the mountain.
2	A	A missed hazard is B.
3	People stop believing warnings	After many false alarms people ignore the next warning, which may be real. Saying it wastes time is half.

If your state or umbrella school asks, this lesson covers NGSS MS-ESS3-2.

Terms of use

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The app this lesson uses is free and runs in the browser, with nothing to install and no account needed. It is at mytekdev.com.

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