

Distance Learning – Free Math and Science Resources

Compiled by Karin Hess www.karin-hess.com

Here are some free resources to support lesson planning for distance learning in math and science. I've included a brief description of what you'll find at each link or website and some suggested grade levels. You'll probably have to register to access resources. I hope you'll find some of them useful.

Free Science Resources

1. Tips for Designing an Online Lesson Using the 5 Es Instructional Model

https://catlintucker.com/2020/03/designing-an-online-lesson/?utm_medium=Email&utm_source=ExactTarget&utm_campaign=20200322_News_MiNdShift_Newsletter&mc_key=00Q1Y00001me6OBUAY or get lesson planning templates at the Hyperdoc website <https://hyperdocs.co/templates>

2. PBL project ideas in different content areas can be found at <https://my.pblworks.org/projects>. Here are two examples:

- (gr5) **Shrinking our Footprints** <https://my.pblworks.org/project/shrinking-our-footprints> Students collect and graph data about their families' impact on the environment (in terms of water usage, food waste, etc.), develop plans to reduce this impact, and communicate these plans to their families by writing informative
- (gr6) **Quadrants to Biodiversity** <https://my.pblworks.org/project/quadrants-biodiversity> Students mark off a small natural area near their homes, make observations, collect and share data to make calculations about the density and frequency of different species, and write news articles about their quadrat survey results.

Free Math Resources

1. (grades k-8) **Would you rather?** <http://www.wouldyourathermath.com/> Use these visual prompts submitted by math teachers to encourage students to use a mathematical argument with supporting evidence to justify “what they would rather” have or do and why.
2. (ages 5-15) **Alice Keeler's Math website** <https://alicekeeler.com/> provides personalized, interactive practice with increasingly more complex skills. Lessons feature self-pacing and student engagement in fun ways. Alice's blog posts demonstrate her expertise in using technology and Google Classroom tools to engage students.
3. (preK-12) **IXL Basic Math and ELA Skills Practice and Spanish Instruction** https://www.ixl.com/?partner=google&campaign=57558065&adGroup=2210068865&gclid=CjwKCAjwssDoBRBIEiWA-JP5rAcGsfNjhT6KqwaDPem_NIBgQyLiwV2OyeOWDH9GUYeiSTIjinrcvBoCrQ8QAvD_BwE provides personalized, interactive practice. Students (prek-2) can click for problems to be read aloud. Students submit answers and get immediate feedback. Explanations are provided for incorrect responses.
4. **PBL project ideas** in different content areas can be found at <https://my.pblworks.org/projects>. Here are two examples:
 - **Shapes Museum** <https://my.pblworks.org/project/shapes-museum>: Children learn about the different geometric shapes in their immediate environment (homes, yard, or street). They conduct observations (drawing pictures or taking photographs) of everyday items and structures to identify shapes in the world and create pieces for a “museum” (hanging art around the house or sharing the work digitally with friends in an online “museum”) as they teach others about the shapes around them.

- **Comic book algebra** <https://my.pblworks.org/project/comic-book-algebra> Students are challenged by a comic book publisher to create an engaging and mathematically meaningful comic book that will teach others about algebraic reasoning and mathematical modeling. Students explore the imaginary world(s) of superheroes in order to generate problems that their favorite characters might face. They model these problems using algebraic expressions or equations and use these ideas to create their own algebra comic books. Throughout the project, students will reflect on the ways in which the problems they create in their comic books mirror real-life situations.

Related Free Informational Texts and Videos

1. (preK-5) **Conserve Our Wild** <https://www.conserveourwild.com/> is an environmentally friendly organization dedicated to improve literacy and wildlife awareness. They provide a free online reading platform for emergent readers and wildlife children's wildlife storybooks for prekindergarten to fifth grade students.
2. (K-8) **Amplify Education** has posted free self-guided science and ELA lesson videos that you can select by topic at https://freeresources.amplify.com/?utm_campaign=20200407_FY20_General_remotelearning_public_National_generalform_freeresources_National&utm_medium=dedicatedsend&utm_source=edweek
3. (preK-12) **Readworks** www.readworks.org has short passages in literature, science, social studies, etc. by grade level with comprehension questions (and answer keys). Some also include short videos or a “read aloud” of the passage to support the first reading of the passage for students who might need extra support. Texts can be printed. I suggest ‘printing’ the text (with questions and no answer key) as a PDF file that can be saved to your computer. Then either print hard copies of the questions at the end, or have students just write their answers on notebook paper.
4. (K-12) **The Smithsonian Tween Tribune** <https://www.tweentribune.com/> is a free resource for teachers and students. It has a huge collection of articles written in English and Spanish at various Lexile levels. The articles also come with a quiz to assess comprehension and students can post a comment about what they read.
5. **Newsela** <https://newsela.com/> has a collection of articles on a range of topics, including the most current events. It's free to access and read the same articles at different complexity/Lexile levels; however, teachers who want to annotate articles or track student progress have to pay for the Pro version.

Free Writing Resources

(k-3) **Writing templates:** https://o1fd4346-c1bo-45d9-899e-3654cb2c37d5.filesusr.com/ugd/5e86bd_8e6479c484d440588539ceab2bbae9c7.pdf can be used with almost any text to summarize what was read or to create narrative texts.

(k-3) **Note Facts** https://o1fd4346-c1bo-45d9-899e-3654cb2c37d5.filesusr.com/ugd/5e86bd_e1d55d5486ba4357ae4a0a6c07cd6a1a.pdf helps students take notes on information read, cut the facts apart, and arrange them by topics and supporting details from one or more texts.

One Pagers are an alternative to summarizing and can be simple as - https://01fd4346-c1b0-45d9-899e-3654cb2c37d5.filesusr.com/ugd/5e86bd_2d1ffd8964be4e8a9783e49ed023ab27.pdf or as detailed as these <http://www.nowsparkcreativity.com/p/ready-for-one-pager-success.html>

Infographics are another alternative to reading/summarizing/using data. See examples and a teaching guide at <https://venngage.com/blog/how-to-make-an-infographic-in-5-steps/> or students can view a “how to” **Video** (17 min.) https://www.youtube.com/watch?v=uQXf_d5Mgig