Lamont-Doherty Earth Observatory
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Best Practices - Online Teaching for K12 Students

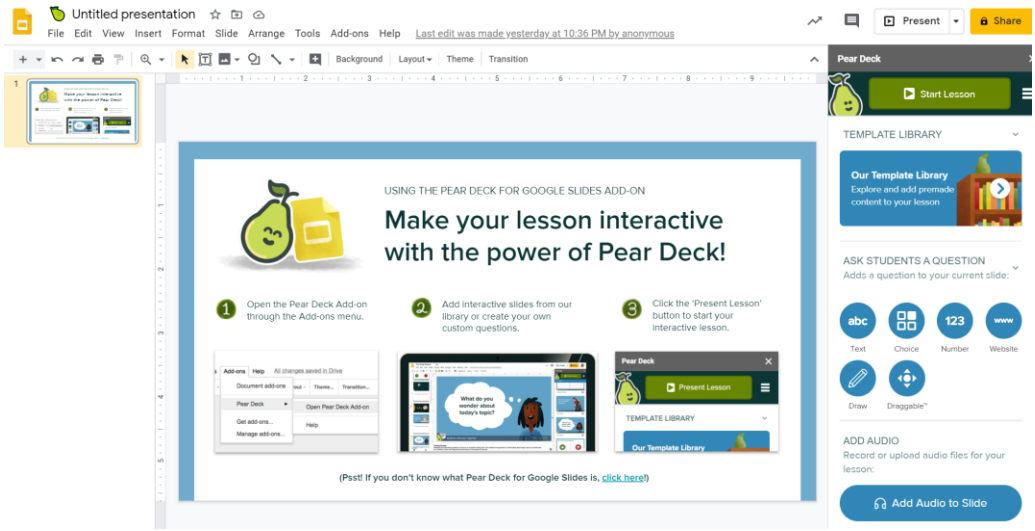
This document is meant to provide instructors with examples of best practices that are used for online learning.

Example 1: Add-ons and other technologies

- Instructors should explore different technologies that can assist them in creating engaging online curricula that aligns with their own teaching style and is accessible to their learners.

Pear Deck

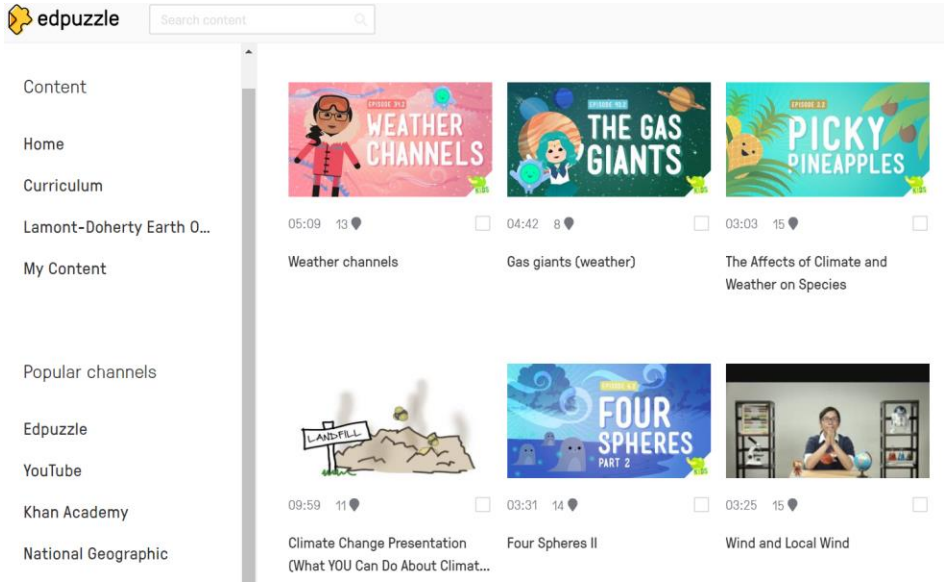
- Pear Deck is an add-on for Google Slides. This add-on is meant to allow instructors to create interactive presentations to engage online learners more effectively. It can help educators to design lessons that students go through at their own pace while the instructor views student work in real-time.
- Includes a drawing tool instructors can use to markup slide content for discussions, reflections, or during activities.
- Free basic plan available. Click the sign up link and choose which Google account you'd like Pear Deck to use and confirm your email. To use Pear Deck, you must grant permission for the add-on to access components of your Google account.
- To access Pear Deck, open Google Slides and click on the Add-ons drop option on the toolbar
- The image below shows a Google Slides document open with the Pear Deck tool open on the right.



Ed Puzzle

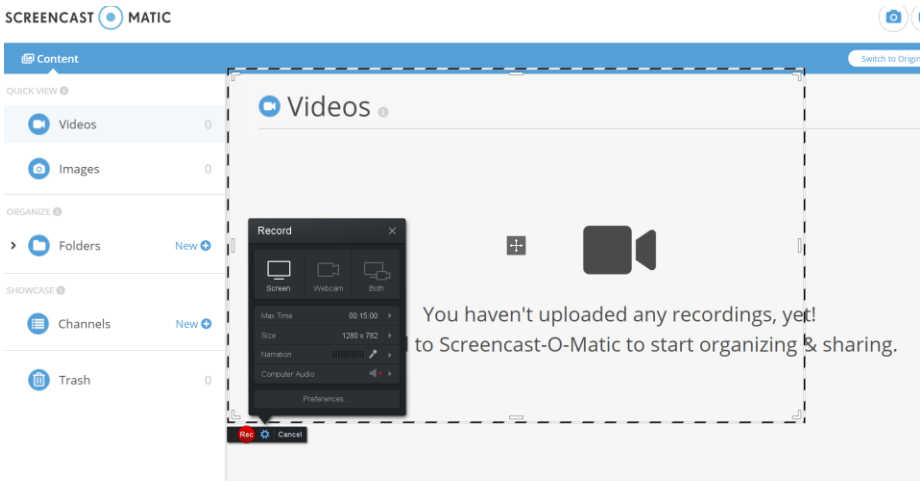
- This tool allows instructors to make videos more interactive for their students. Videos can be off of websites like YouTube, or be uploaded by the educator. Educators can then narrate or add other features, like Q&A, to the video.

- It tracks which students have watched the videos, and if any students have re-watched sections etc.
- There are links to the most popular educational videos organized by topic.
- Free basic plans for teachers and students available. When signing up, choose 'I am a Teacher.' It will sign you up with your Google account. There is a prompt for a school or organization, one does not necessarily need to be a formal educator to sign up.



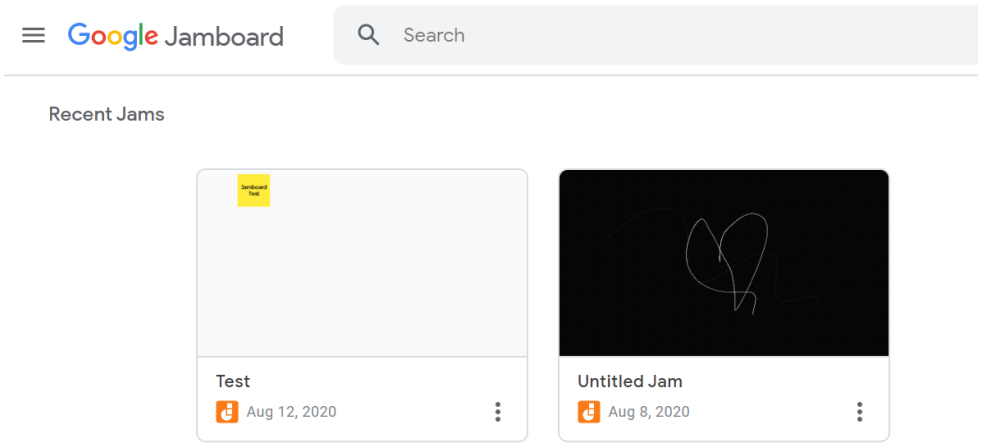
Screencast-o-Matic

- This tool allows educators to record their computer screen to create videos with step-by-step instructions and many other applications.
- To record your screen, you'll need to download the free recorder.
- The website includes video editing applications which can be used with uploaded videos.
- Accounts are free but you need to sign up with your email.
- Below is an image of an account main page with the video editor open.



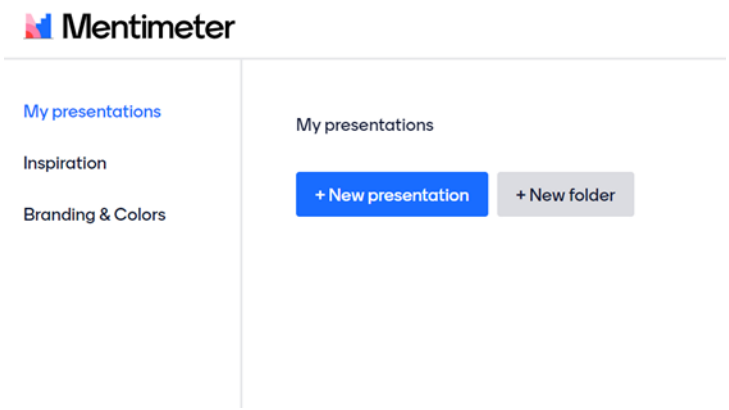
Jamboard

- Google suite whiteboard that can be used for collaboration/brainstorming activities – can be used like any other application in the google shared drive.
- A group can join the same jam from other laptops, phones, or tablets with the Jamboard app.
- Free, download the app or get to it through your google suite options.
- Below is an example of what Jamboard will look like when opened in Google.



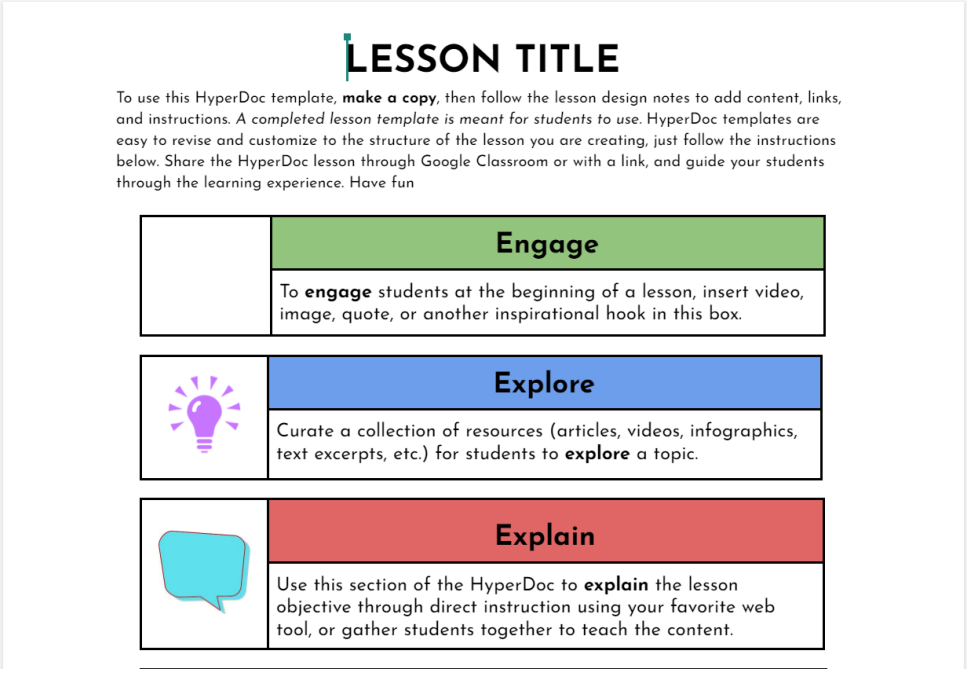
Mentimeter

- This tool helps educators create interactive content using word clouds, live polls, Q&A, etc.
- Educators can use this tool to ask questions in a fun way and get responses from all students in real time.
- Participant answers can be reported back to the group as different types of graphs, word clouds, or other options.
- Free plan available but you will need to create an account.
- Below is what Mentimeter looks like once an account has been created.



HyperDoc

- Help educators create interactive documents through google suite, add links, videos, connect to slide decks, etc.
- Mainly set-up so students create a copy of the original HyperDoc and share it with the educator once it's complete.
- Free basic plan available. Hyperdocs uses Google Suite so you need to sign up with your Google account.
- Below is an image of the most basic HyperDoc lesson planning template:



Example 2: Tips from The Wonder of Science

- Free website for science educators, includes lessons, assessments, rubrics, and advice. Connects everything back to NGSS learning standards.
- Create a learning plan.
- Use graphic organizers during class when you can.
- Instructors can work to design their own or use this rubric to make sure all elements of a good online class are in place.

1) Moving Your Class Online: A Survival Guide for Teachers
   - Keep the class simple, remember that you can't replicate the face-to-face classroom exactly.
   - Be conscious of the different situations your learners are in, and make any lessons or content as accessible as possible.
   - Instructors may want to create an introductory video introducing themselves and the class to help establish rapport.
   - Use clear instructions and as few tools as possible.

- Establish a home: In some places this may just be a class website or other meeting platform. Make sure to establish the home and communicate that with your students. Everything needs to be easily found in one place including assignments with clear instructions, assessments, etc.
- Instructors should establish a routine.
- Establish how you will communicate with students and make sure that they have access to tutorials or anything else they need to use these tools.
- Communication should be shifted to asynchronous so not everyone has to be on at the same time.
- The simplest way to move your class online is just to shoot videos of yourself and upload them.
- It's important to show your face on the videos to give students a connection.
- Create slide decks and narrate, use the drawing function that many programs have to write on the screen and emphasize points.
- When choosing new learning tools, educators should just focus on one so as not to overwhelm students, especially if different teachers are choosing different tools, students will need to learn different tools for each class and you don't want to overwhelm them.

2) Teaching Remotely
   - Instructors should work to make their homes their classrooms, get comfortable, and bring anything you would normally use in your classroom and use it at home.
   - Instructors should think about what used to work in the classroom and how that can be brought to online learning.
   - Host synchronous mini-lessons – have synchronous meetings last only 10 to 15 minutes. Make sure to record all of the lessons so students can come back to them or watch them if they were unable to join the synchronous meeting.
   - Focus lesson plan types on ones that can have the most student engagement. For example, for science classes focus on observational science, or provide datasets for independent exploration projects.
   - Make sure to get communications going both ways, instructors should use chats, emails, or discussion boards. Instructors can also ask students what way they prefer to communicate.
   - Try to incorporate small group work or projects, in Zoom you can utilize the breakout room feature.
   - When assigning group projects, make sure students have a clear understanding of what they are doing. An anchor guide which gives instructions and assigns rolls can help students stay focused.

Example 3: Teacher's College Educator Resources

1) Inclusive Teaching and Learning Online
   - This inclusive teaching tool is based on 5 principles to ensure that students feel like they belong, can access all materials needed, and are supported in achieving learning goals.

Principle 1: Establish and support a class climate that fosters belonging for all students.

- Instructors should think about course participants and their prior experiences with online learning while designing a class.
- Instructors can survey their students on their online course preferences to help them plan how the class will be structured. This will also help instructors learn about their students and the specific learning barriers they may have.

- Instructors should share their own fears and struggles with students surrounding online teaching to help break down barriers.
- Instructors should provide opportunities for students to interact with each other by developing group activities like having them break out in smaller discussion groups.
- Instructors should make sure the proper support is in place, like virtual office hours, check-ins with learners, and making sure they know how you will respond to emails or messages.

Principle 2: Set explicit student expectations.

- Instructors should make sure students know expectations of them, this can be done with written guidelines or community agreements.
- Instructors should decide what knowledge and skills are the most essential for students to obtain from the course and ensure that assignments are aligned with the goal of learners obtaining the knowledge.
- Instructors should have explicit expectations set in advance for assignments, make sure you have clean instructions to provide, and a rubric can be provided to students in advance.
- Make sure students know how to use the learning platform and will be able to hand in assignments.
- Instructors should provide feedback in a timely manner.
- Instructors should be a model for how they want learners to be present in the online space.

Principle 3: Select course content that recognizes diversity and acknowledges barriers to inclusion.

- Use resources available to you to bring in course materials that include diverse perspectives/examples.
- Invite students to share diverse perspectives that they have, or have found.
- Instructors should make sure to evaluate all course materials, and make sure to point out any shortcomings, for example materials incorporate stereotypes. These should only be used if other appropriate materials are unavailable.
- Instructors should use examples in their lectures/materials that can speak across diverse populations.

Principle 4: Design all course elements for accessibility.

- Instructors should be mindful that not all students with have the same access to technologies. It is important to be mindful of this and make sure accessibility is always thought through for all situations. One example is providing pdfs instead of videos because they would use less bandwidth.
- Offer synchronous and asynchronous elements to ensure that students can engage in different ways.
- Record all lectures or Zoom meetings so they can be reviewed at any time.
- During live sessions or recordings, be sure to describe any visuals verbally.
- Make sure to provide support materials and background information, and to use fonts or colors that are accessible to all learners.
- Instructors should provide frequent opportunities for informal assessments, and moments for students to pause and assess their own work on the course as well. They should also work to check-in with students periodically.
- Instructors should facilitate online discussion between students, or have student-led online meetings.
- Have students research topics of interest and do presentations, create slide decks, or short movies to help them stay motivated.

Principle 5: Reflect on one's beliefs about teaching (online) to maximize self-awareness and commitment to inclusion.

- Instructors should take time to reflect on their own beliefs surrounding online teaching, and then take time to learn who their students are and what situations they may be in.
- Instructors should re-watch their own recorded lectures or sessions and take notes on how they interact with students and how they might improve the interactions in the future. A colleague could also watch recordings and provide feedback.
- Instructors should make notes about what worked well, what didn't, and how they want to change things after each session.
- Ask students for feedback!