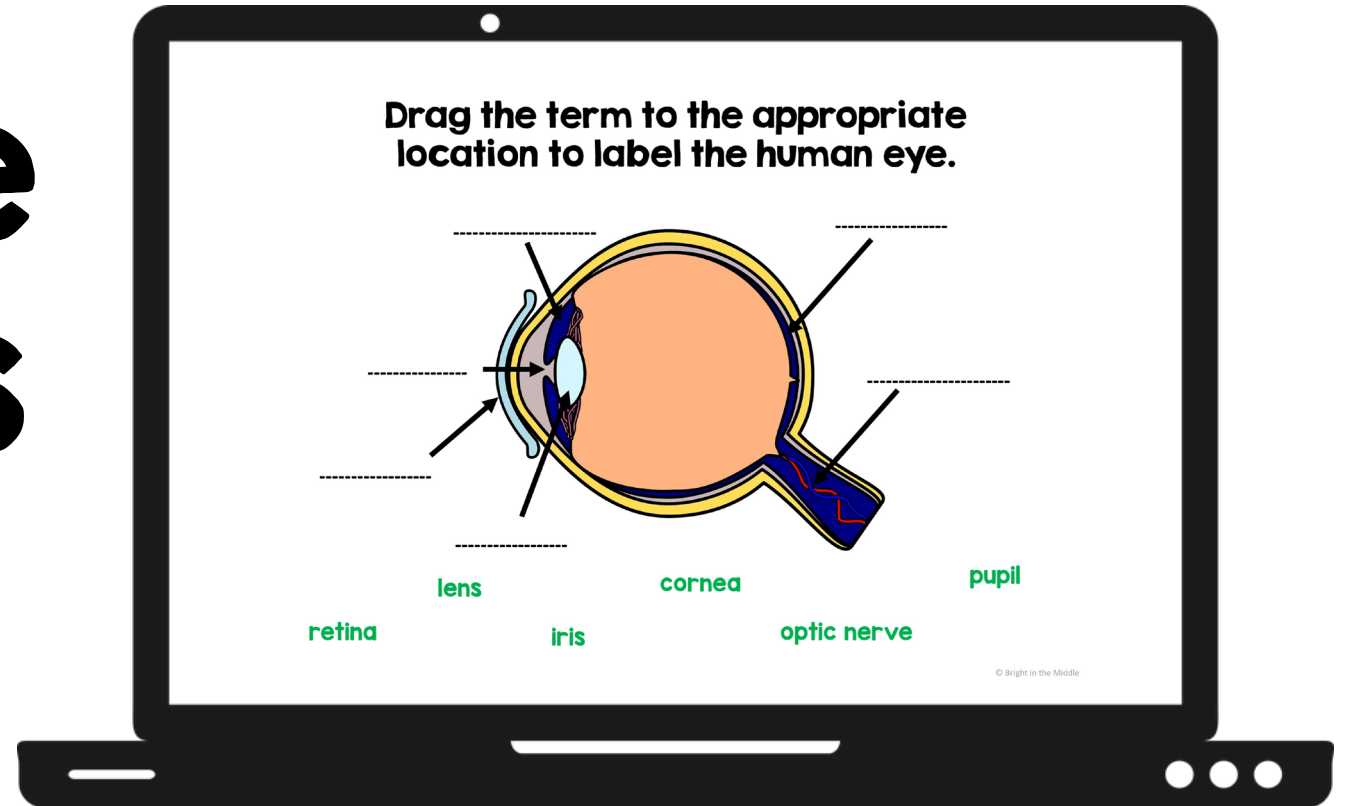


Human Eye and Optics

Interactive Lesson

PRINT and DIGITAL



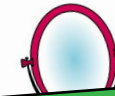
Compatible with Google Slides and PPT

Examples:

convex
side mirrors,
security mirrors



concave
shaving mirrors,
dentist mirrors,
telescopes



**A key is also
included!**

...to the
correct response.

Which of the following is
NOT a characteristic of
the pupil?

- ☐ the center of the iris
- ☐ appears black
- ☐ an opening in which light enters the eye
- ☐ transparent section in the front of the eye

Drag and Drop

Drag the term to the appropriate function.

white part of the eye	transparent section at the front of the eye	opening in which light enters the eye
_____	_____	_____
regulates the light by adjusting the size of the pupil	focuses to form image	back part of the eye
_____	_____	_____
	sends information from the brain (optic nerve)	
_____	_____	_____

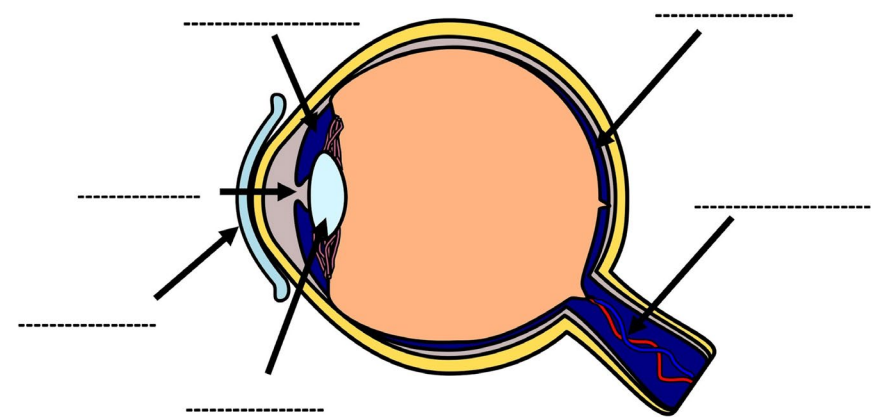
optic nerve

sclera

pupil

iris

Drag the term to the appropriate location to label the human eye.



retina

lens

iris

cornea

optic nerve

pupil

© Bright in the Middle

Type in the Text Box

Last Slide

Anticipation Guide

Before completing the lesson, read the statements below, think about your prior knowledge, and put an x in the box for true or false (column 1 and 2). As you go through the lesson, look for evidence to support or refute your ideas. You will revisit this anticipation guide after completing this lesson. For now, only complete columns 1 and 2.

True	False	Statement	True	False	Evidence
		The human eye is an organ.			
		The sclera is the opening where light enters the eye.			
		The lens of the eye bends light waves.			
		The optic nerve carries signals to the frontal lobe of the brain.			
		People that are nearsighted have a hard time seeing things far away.			
		Mirrors are surfaces that reflect light back.			
		With a convex mirror, objects appear further from the mirror.			
		A lens uses refraction to bend light.			
		A microscope uses lenses to magnify small objects.			
		Optical fibers are used for transmitting data, such as internet, cable, and phone signals.			

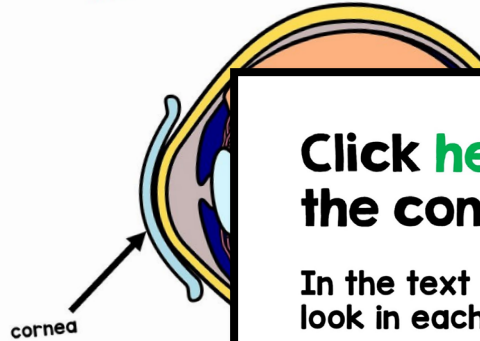
In the text box below, describe the relationship between the retina and optic nerve.

Type here.

**and
more!**

Cornea

transparent section at
the front of the eye

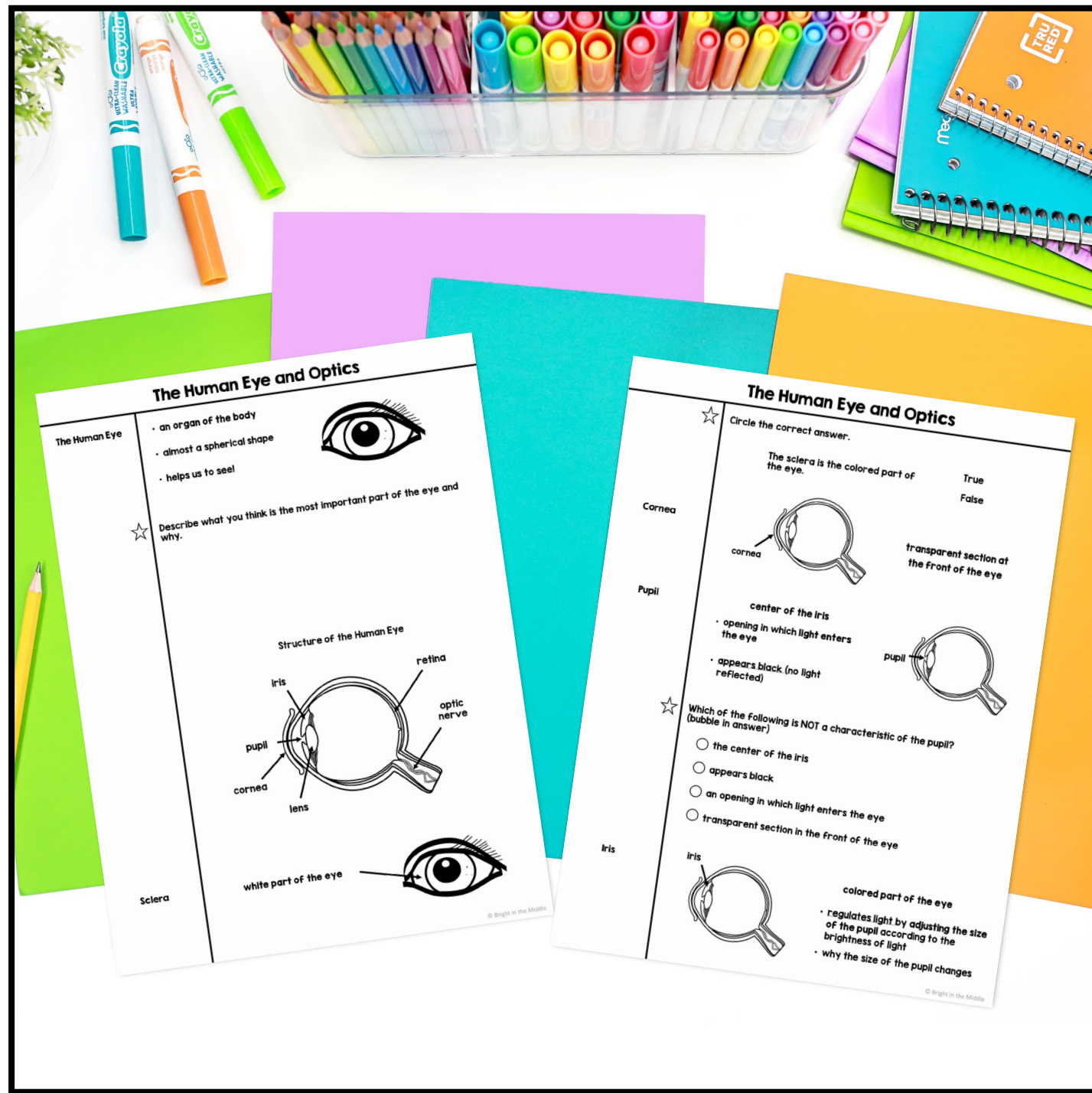


Click [here](#) to learn more about
the **convex** and **concave** mirrors.

In the text box below, describe how images
look in each of these types of mirrors.

Type here.

A paper version is also included with interactive activities embedded.



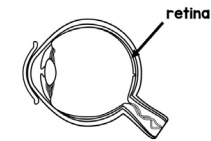
[illegible]

The Human Eye and Optics

Retina

----- part of the eye where the stimulation by light occurs

- has receptors: _____ (dim light) and cones (bright light)
- back part of the eye where the stimulation by light occurs
- turns light into _____ signals and sends to optic nerve



Circle the correct answer.

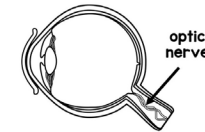
The retina has receptors called rods and cones.

True

False

Optic Nerve

sends information from the retina to the _____ (occipital lobe)



- lets you see!
- In the _____ lobe, the upside down and reversed image is turned the correct way.

Describe the relationship between the retina and optic nerve.

Ways to Use Digital Interactive Lessons

Science digital interactive lessons are a great way to teach or review science content with your students for many reasons.

They are fun. They are engaging. Another reason, which I think is the most important, is that they help decrease the cognitive load. The way that digital interactive lessons are set up is first, a little bit of content, and then practice with that content, and repeat the process.

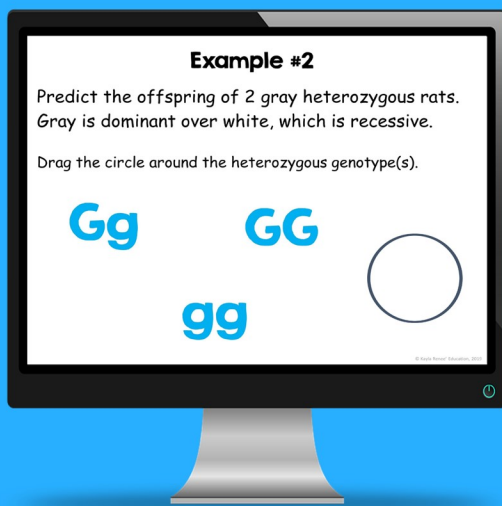
Students can digest small chunks of information a little at a time, apply that information, and then learn more! This will help keep their attention.

So, now, what are some ways that you can use them in your middle school science classroom?



Individual Learning

One way that interactive lessons can be used in the classroom is just for individual learning. These are digital lessons, so students can pull up the lesson on their computer, either via Google Classroom, Microsoft Teams, PowerPoint, or whatever you use in your classroom.



**Digital Science
INTERACTIVE
Lessons
for**

INDIVIDUAL LEARNING

Students read through the lessons themselves and **work through the practice** at their own pace.

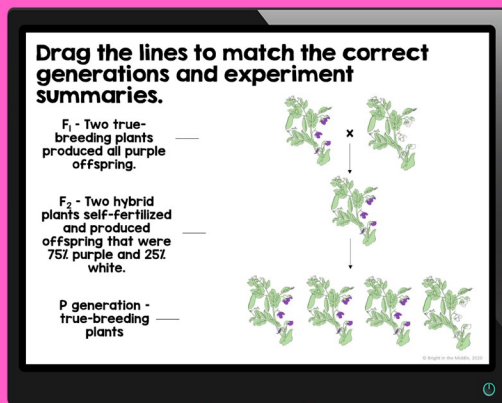
The benefits of doing this are that students can work at their own pace and you, as the teacher, can walk around the classroom as they are learning to answer any questions that they have. In addition, you can see what that particular student is learning. As you walk around the room and view their work, you can use it as a formative assessment to see if they are understanding the material.

You can also bump it up a notch. Since students will be working using the computer, you can embed related YouTube videos in the lesson for extra enrichment!



Distance Learning

Digital interactive science lessons are a great tool to use for individual learning at a distance for the middle school science classroom.



**Digital Science
INTERACTIVE
Lessons**
for

DISTANCE LEARNING

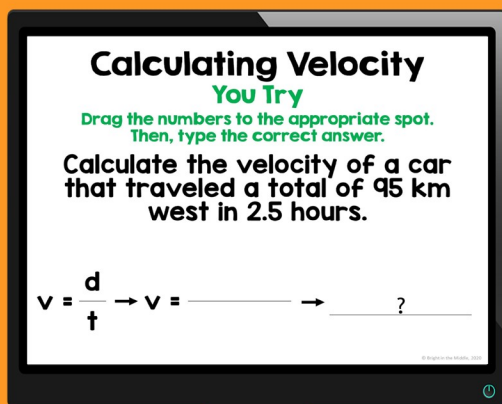
Students can read through the material, and after digesting chunks at a time, they can apply the information with embedded practice slides.

After completing the lessons, students can submit their work to their teacher.



Small Groups/ Partners

This works similarly to having students working as individuals except that students have the opportunity to work with one another. I think that this an awesome approach to differentiated learning in the classroom.



Digital Science
INTERACTIVE
Lessons
for

**SMALL GROUPS/
PARTNERS**

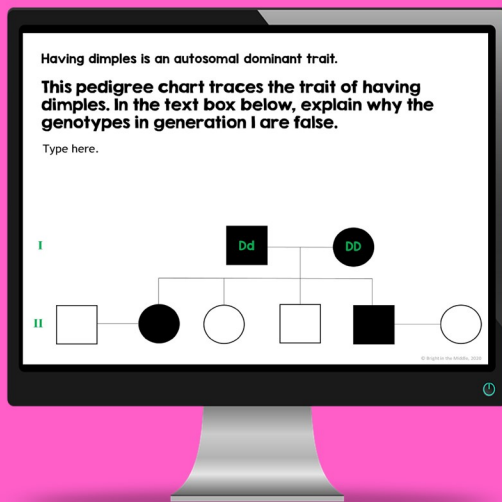
In small groups, or in partners, students are able to read the lesson together, discuss each practice slide, and apply the information together.

I prefer this method in many ways because I believe in the power of cooperative learning. As a teacher, you still have the opportunity to walk around and help the individual students as needed, but students also have each other for support.



Direct Instruction

As mentioned, digital interactive lessons are set up as a lesson with embedded practice to help decrease the cognitive load. If teachers choose to, they can pull up the lesson and teach it to their students and still take pieces of content and digest them bit by bit.



**Digital Science
INTERACTIVE
Lessons**
for

DIRECT INSTRUCTION

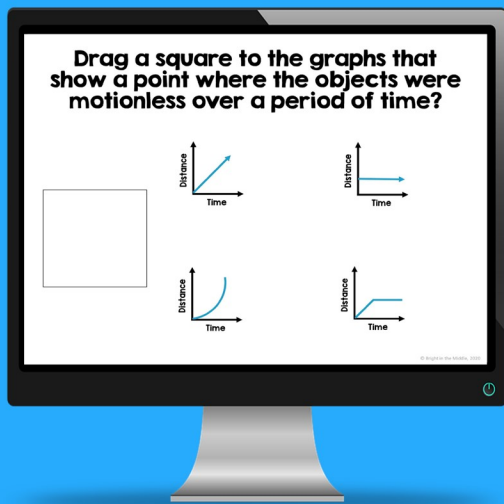
For example, when teaching about **pedigree charts**, the teacher can first discuss what a square and a circle represent in a pedigree chart.

After students digest this material, the teacher can ask students to discuss how they will remember this information and then apply the information in practice.



Science Centers

Digital interactive science lessons can be used in one of two ways for science centers. First, science centers on a particular topic. For example, say you are teaching distance-time graphs, and you are ready for students to complete science centers on this topic. You can have a center for a [digital interactive lesson](#) (make groups in Google Classroom, or another platform), [task cards](#), [story match](#), and a reading passage.



**Digital Science
INTERACTIVE
Lessons**
for

SCIENCE CENTERS

Another way that you can use interactive science lessons for science centers is only using digital interactive lessons. Time to review for a [genetics](#) test? You can have stations set up where students will move around the room.

They can work through individual lessons such as Gregor Mendel and an Introduction to Genetics, Asexual and Sexual Reproduction, Mitosis and the Cell Cycle, Meiosis, Punnett Squares, Pedigree Charts, and Variation of Traits and Genetics Disorders. This route may take more than one day. It just depends on how long your classes are and how much time you can devote to review. I personally like the first approach to using digital interactive lessons as a science center.



For ELL Students

With technology, there are so many awesome opportunities for students that do not speak English as their primary language to learn science content in schools that speak predominantly English. That goes vice versa as well. If you are trying to learn in any language you are unfamiliar with, technology is here to help!



**Digital Science
INTERACTIVE
Lessons**
for

ELL STUDENTS

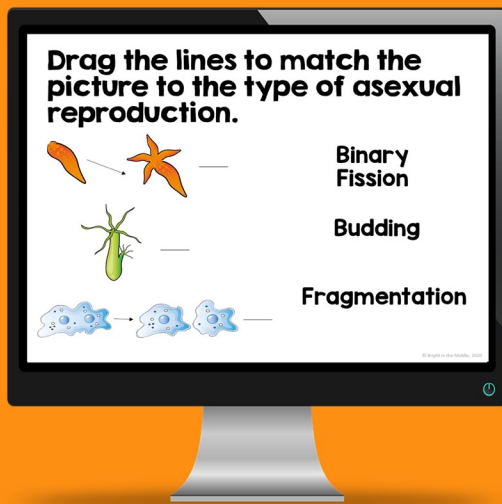
There are many options that students can use to learn science material. As a teacher that only speaks English, you can imagine how difficult it is to teach a student that speaks another language. I'm sure there are other teachers out there with the same dilemma.

With technology, I have been able to give my students the science lesson and have them use Google translate in order to understand what the lesson is saying. Now, I'm working on creating digital science lessons in Spanish, so that one step is taken out.



Enrichment/ Tutoring

I know that many schools set up a time during the day just for enrichment/tutoring.



**Digital Science
INTERACTIVE
Lessons**
for

**ENRICHMENT/
TUTORING**

Many schools only set up this time for reading/math, but some do science too! Especially those that test in science. Interactive lessons are a great way to review standards-based science material and practice!

