



DUKE ENERGY SCIENCE NIGHT

2020-2021 Program

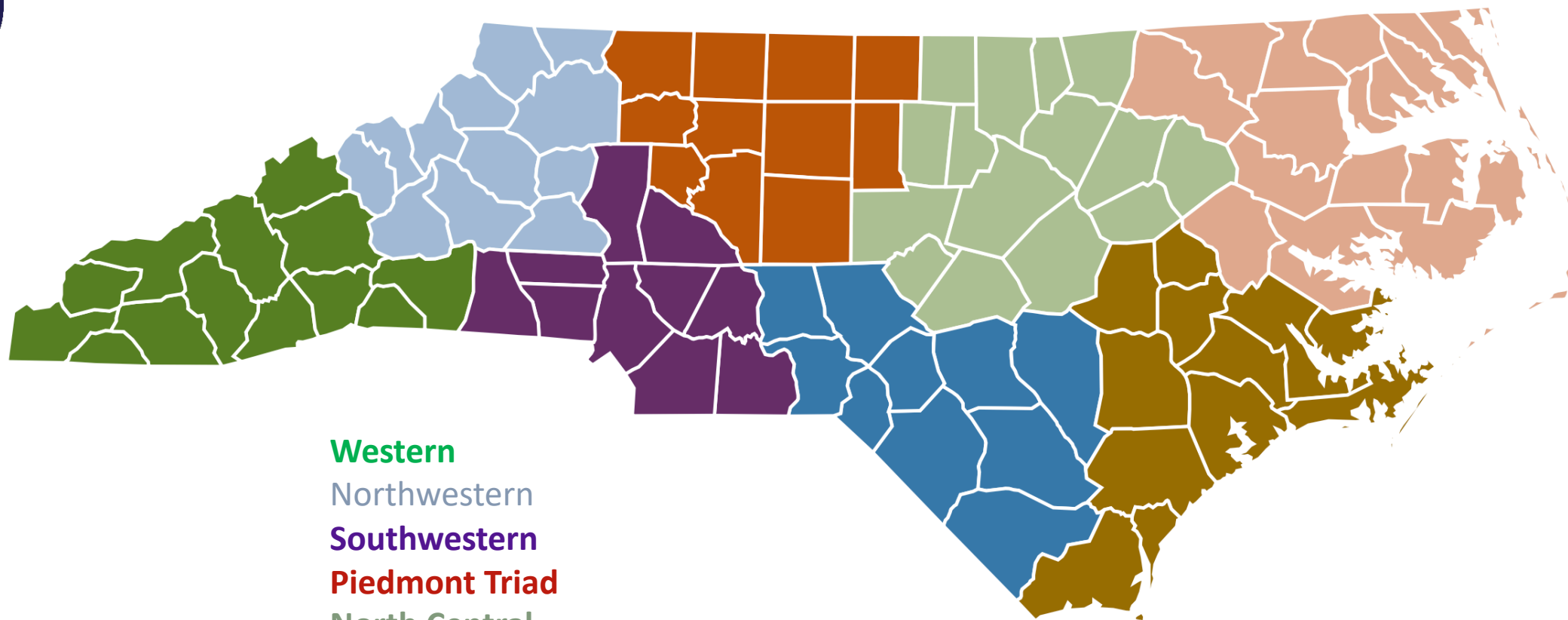
Digital Microscope Activity Overview Webinar

AGENDA



- Introductions and Poll Questions
- Timeline, Program, and Resources Updates
- Communications and Social Media
- I Spy with my Microscope Eye
 - Activity Overview, Tips, and Resources
 - Photo Contest Overview
- Questions and Discussions





Western

Northwestern

Southwestern

Piedmont Triad

North Central

Sandhills

Northeast

Southeast

TIMELINE



- *Oct 21, 2020: Welcome Webinar*
- *Nov 18, 2020: Virtual Learning Webinar*
- *Jan 2021: Online resources available*
- *Jan 20, 2021: Kit Unboxing and Activity Overview Webinar*
- *Feb 1, 2021: Kits shipped to schools*
- **Feb 24, 2021: Microscope Webinar and Photo Contest**
- *Mar 17, 2021: Galilean Cannon Webinar and Challenge*
- *Apr 2021: Use your DESN activity kits*
- *May 12, 2021: Program debrief and feedback Webinar*



PROGRAM UPDATES



- **Planning Guide - Timeline**
- **Kit Survey - Gathering information from each school**
 - Please submit how and when you plan to use the kit – use link in email
 - We understand that plans could be evolving
- **You can use the activity kits in flexible ways:**
 - Host an evening family science event – could be virtual
 - Do the activities by grades or in classrooms during the school day
 - Send activities home for students to do with their families
 - **Materials list online** - if want to gather supplies for more students
 - **Activities list online** – noting grades and NC Standards



- **NCSciFest Public Events Calendar: [NCSciFest.org](https://www.ncscifest.org)**

2021 ACTIVITIES LIST (GRADES AND STANDARDS)

Activity	Target Grade if need to separate in 2021	Indiv Materials ?	Grade	Broad Standard Science	NC Standard	NC Standard
I Spy with my Microscope Eye* **	All	N	all	Life	Structures of Living Organisms	
Galilean Cannon**	All	N	all	Physical	Forces and Motion	
Computer Vision	All	N	3,4,5	Computer	(Artificial Intelligence)	
Parachutes	K	Y	K,3	Physical	Forces and Motion	K.P.1.2
Garden in a Glove*	1	Y	1, 3	Life	Ecosystems	1.L.1.1
Genetic Traits Bracelet	2	Y	2,5	Life	Genetics	2.L.2.1&2
Fingerprints*	3	(Y)	3	Life	Structures of Living Organisms	3.L.1.2
Capillary Flowers*	4	(Y)	2,3,4	Physical	Matter Properties	4.P.2.1
Build a Cell*	5	Y	5	Life	Structures of Living Organisms/Genetics	5.L.1.1
Ring Gliders	All	(Y)	1,3,4,5	Physical	Forces and Motion	

* Could use digital microscope in classroom or virtual setting with this activity.

** Will cover in a webinar

RESOURCES UPDATES



2021 DESN Online Resources page:

- Use/ bookmark link in email:
 - <https://www.ncsciencefestival.org/DESN-resources/2021>
- One-stop shop for all our resource materials, including
 - Activities aligned with grades and NC Standards (as noted)
 - Materials List (as noted)
 - Webinar recordings
 - Extra resources
- Spanish versions of activities - by end of month



COMMUNICATIONS AND SOCIAL MEDIA

- We are emailing frequently with tips and reminders
- Questions – email ncscifestschools@unc.edu
- Take/ send photos
 - We are collecting them as documentation of Flat Kelvin's adventures!
- Follow us and post on Social Media
 - #GoKelvinGo, #ScienceForAll, #DEPowerfulCommunitates, and #NCSciFest
 - Tag NC Science Festival and Duke Energy

NC Science Festival handles:

Facebook: @ncsciencefestival

Twitter: @ncscifest

Instagram: @ncsciencefestival

Duke Energy handles:

Facebook: @duke.energy

Twitter: @DukeEnergy

Instagram: @Duke_Energy



I SPY WITH MY MICROSCOPE EYE ACTIVITY OVERVIEW



Scale of 1-5

**How comfortable are you
with this activity?**



DIGITAL MICROSCOPE - OVERVIEW



- Essentially a webcam with a small lens and sensor
 - Keep fingers and objects away from the lens
 - Plastic tip and removable cap to help protect it
- Plugged into computer with USB cable - adapters included
- Using your computer's camera application
 - Red buttons on the scope will not work
- Can be used with or without the stand
 - Suggest taping stand to table as scope is top heavy

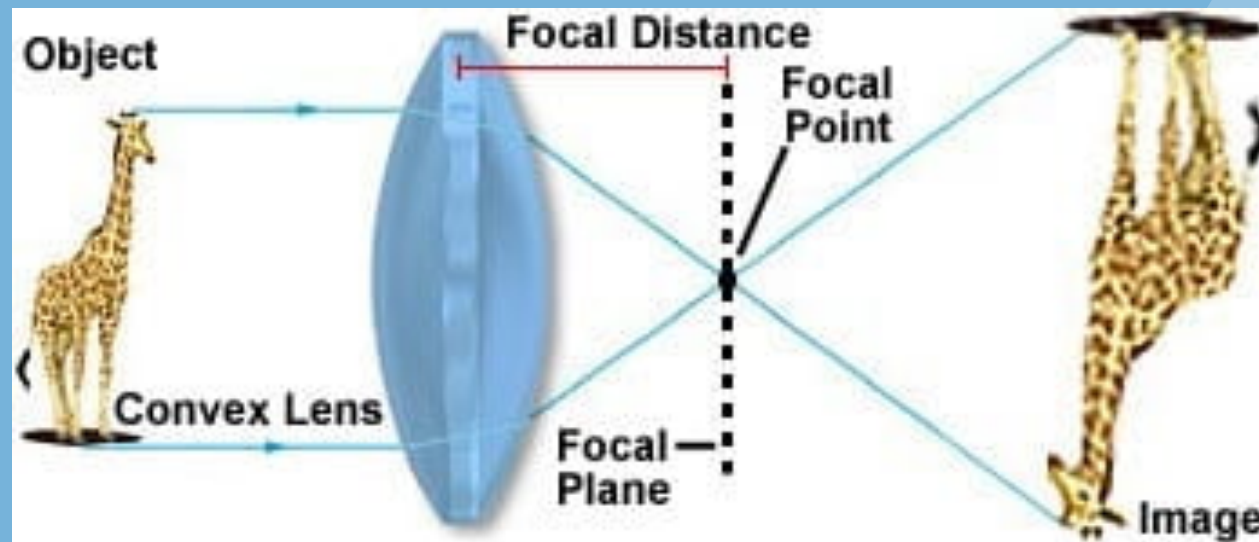
Built-in LED lights to illuminate the subject - adjustable

Able to focus at very close distances



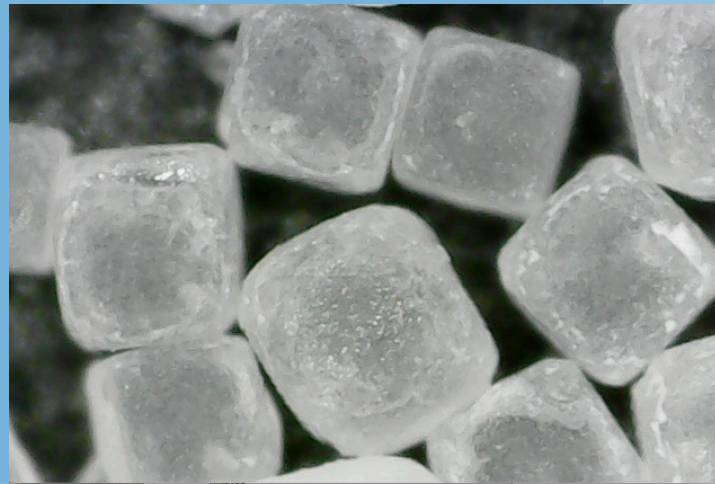
DIGITAL MICROSCOPE - LENS

- This microscope works by shining light onto object
- Light is reflected off object and back through lens to sensor
- Lens works by refraction – bends light rays as they pass through
- Light rays converge at the focal point
- Image is upside down/ backwards



DIGITAL MICROSCOPE - MAGNIFICATION

- Magnification level
 - Depends on distance from subject
 - Depends on focal point (set by zoom level with adjustable wheel)
- At 100x you will be able to see 2mm (2000 microns)
- At 400x you will be able to see 0.45mm (450 microns)
- At 1000x you will be able to see 0.18mm (180 microns)
- Grain of salt is approx. 0.3mm (300 microns)



DIGITAL MICROSCOPE – GENERAL TIPS

- Practice using the microscope!
 - Get used to the upside-down/ backwards image
 - Can put microscope tip right up against object
 - To get best image adjust light, distance from object, and zoom level
- Microscope slides not necessary – do give them a try if you have them!
- Can look at pretty much anything with this!
 - May want an adult to show their skin and hair
 - Mindful of living things
- Integrate with other DESN Activities:
 - Garden in a Glove, Fingerprints, Capillary Flowers, Build a Cell
- Integrate with your grade-level science
 - Plants, seeds, rocks, minerals, insect exoskeletons, snake skins
 - Paper, wood, coins, dollar, fabric, salt, sugar
 - Pond water



DIGITAL MICROSCOPE – WEBINAR TIPS



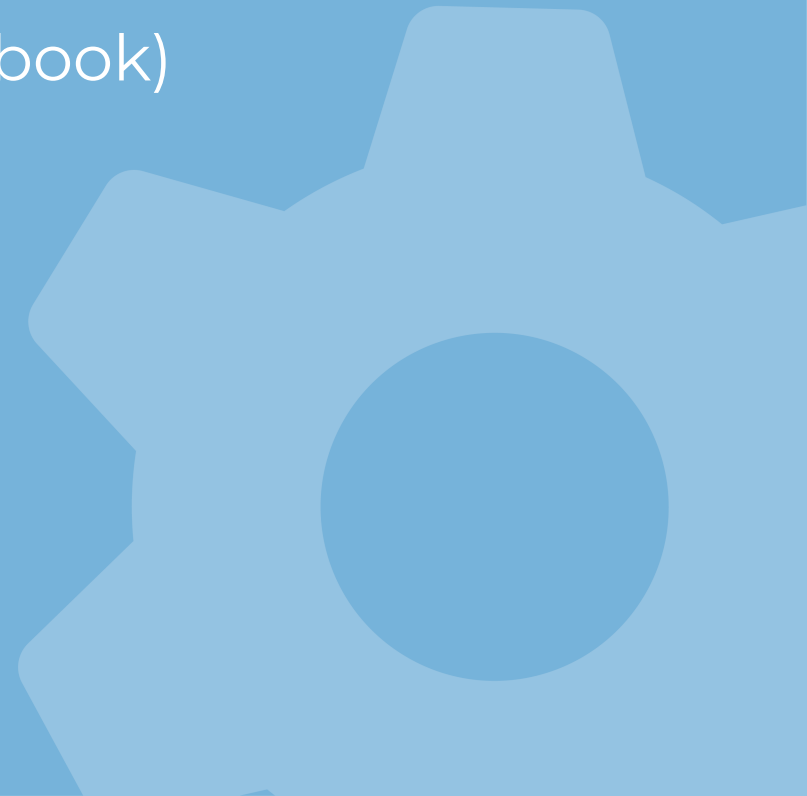
- Have a practice run before the webinar!
- Have a partner in the webinar
 - Manage meeting tools, questions, etc.
 - Give feedback to you if image not clear, etc.
- Show life size object as well as image through microscope
- Asynchronous
 - Create a slide show or video using your camera application
- Synchronous
 - Show slide show
 - Have students guess what they are seeing
 - Show live images
 - Share your camera application window
 - Switch meeting application camera to the microscope
 - Zoom, Microsoft teams, Google meet



DIGITAL MICROSCOPE - RESOURCES



- Digital Microscope Kit (one of two brands)
- Activity guide and Instruction sheet
- Connection Instructions (Mac, PC, Chromebook)
- This presentation and webinar recording



DIGITAL MICROSCOPE – PHOTO CONTEST

- Submit your best image for a chance to be featured in our gallery: <https://www.ncsciencefestival.org/I-Spy>
 - File size less than 5MB
 - Brief Photo Description
 - Now through April 30th
 - OK to submit more than one image
- One image will be selected to win a prize pack including a free Morehead Planetarium and Science Center virtual program
- Don't forget to take pictures of you and Flat Kelvin using the scope as well!





Questions?

ncscifestschools@unc.edu



Scale of 1-5

**How comfortable are you
with this activity?**





LEARN MORE:

www.NCSiFest.org

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April 2020

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