EVIDENCE OF UNDERSTANDING

1ST - 3RD GRADE SCIENCE
The Oklahoma Library of Digital Resources is an innovative initiative to provide Oklahoma educators with high-quality, interactive teaching resources.

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GETTING TO KNOW OKLDR
WHO IS OSSBA?

The Oklahoma State School Boards Association (OSSBA) works to promote quality public education for the children of Oklahoma through training and information services to school board members. The Association is a leader among leaders in Oklahoma education and a visible presence in the local school districts and throughout the state.

The OSSBA was created in 1944 to provide support for local school board members with a variety of information, assistance, and representation services. OSSBA reaches every school board member through training opportunities. It creates and encouraged effective leaders to promote public education and cultivates productive alliances with governing bodies. OSSBA trains school board members to participate in an effective and supportive manner to provide direction for educational innovation and improves public perception of education in Oklahoma by sharing strategies and tools with our member school districts to focus on the success of Oklahoma public education.

OSSBA works with school boards to demonstrate the impact they have on student achievement. We work to provide meaningful two-way communication of advocacy, services, and training activities to local boards of education and their stakeholders. Other services we provide that have a direct impact on student achievement include strategic planning and superintendent searches. Our legal team provides free legal information to the school districts.
WHY OKLDR?

In the summer of 2016, OSSBA set out on a journey assist teachers in the integration of technology into their classrooms. The Oklahoma Library of Digital Resources (OKLDR) became a collection of digital content resources selected by Oklahoma educators to support the Oklahoma Academic Standards. The resources were curated by teachers from school districts across Oklahoma. Each collection contained a variety of learning resources, such as videos, apps, pdf documents, and websites, and are designed so that teachers can then build their lesson plans. The resources helped bridge the digital equity gap among students while helping schools make the most of limited resources.

After collaborating with educators, school and district leaders for a couple of years, OKLDR has been enhanced in the following ways:

- Resources are now an Open Education Resource (OER) “book” format, making it easier to use and accessible on multiple devices.
- Resources map to ESSA expectations for evidence of student understanding and students’ mastery of the academic standards.
- Tools are now agnostic and can be used on multiple devices.
- Lessons are now focused on student engagement through the use of technology. The first OKLDR version focused on teacher resources. This is a major change.
- To prioritize student learning, teacher resources are now located at the back of each book.
HOW TO USE OKLDR

The Oklahoma Academic Standards for this lesson are grouped together by key topics. Sometimes you will see only one standard, but other times you will see a grouping of standards.

Evidence of Understanding is the key. This is the concept you want your students to master that reinforces the standards. Mastery means deeper understanding, not just “skim the surface” learning.

Digital Tools are the recommended applications and/or tools for the lesson. Think of this element as the “supplies box.”

In Practice is a suggested activity to engage the students to demonstrate mastery of the standard. You will notice that this is just one suggested lesson, and sometimes there might be a second lesson. The suggested lesson, developed by Oklahoma teachers, is meant to give you a starting point. You might decide to use the lesson or it might give you an idea of something else you could do to teach the concept.
MOVING FORWARD

As you can see the OKLDR book has been designed to inspire educators to have students demonstrate their understanding of the Oklahoma Academic Standards through the use of technology as a productivity tool. While educators have limited time in the day to plan and research high quality content, this book is a jumping off point, with suggested peer-reviewed activities and resources.

While you might encounter extra white space in the book, it is intentional for growth. As you integrate the activities into your lessons, you are encouraged to send us student work samples that might be included in the book, as well as additional activities and resources that could be included in future revisions.

Next Steps:

• We would love to add samples of student work to the activities, so please send the work to: okldr@ossba.org.

• If you would like to be involved in future course creation, or know teachers who would like to be involved, please contact us at: okldr@ossba.org.

• See anything that needs to be changed or enhanced? Contact us at: okldr@ossba.org.
1ST GRADE
1. PS4.2 Make observations to construct an evidence-based account that objects can be seen only when illuminated.

CCC: Simple tests can be designed to gather evidence to support or refute student ideas about causes.

1. PS4.3 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

CCC: Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Evidence of Understanding

Students will be able to show their understanding of the forms of light through content applications and digital portfolios.

Students will be able to describe how light effects change with time or location using a video editor.
Digital Tools

- Camera
- Content Application - Bobo Explores Light App for Ipad
- WebSite - PBS Interactive Lesson: Explore How Light is Needed to See Things
- Digital Portfolio SeeSaw
- Video Editor- Clips, WeVideo, Do-Ink, iMovie

In Practice

- Students will use the camera app to take pictures showing various forms of light sources, as well as how light effects change with time or location, along with different types of materials.
- Students will use the Bobo Explores Light App to explore the 21 topics related to light.
- After exploration using the Bobo Explore Light App students will journal what they have learned using a digital portfolio and/or video editor.
1.ESS1.1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.

CCC: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

1.ESS1.2 Make observations at different times of year to relate the amount of daylight and relative temperature to the time of year.

CCC: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Evidence of Understanding

Students will be able to explain the relationship/motion of the sun, moon, and Earth in relation to one another using content applications and video editors.
Digital Tools

- **Content Application** - Interactive Minds: Solar System, Moon - Current Moon Phase, Solar Walk Lite, Simple Moon Phase Widget
- **Video Editor** - Clips, WeVideo, Do-Ink, iMovie
- **Video** - Earth and Sun, Moon Phases - Why Moon Changes Shape.

In Practice

- Students will use a content application over the Solar System to explore the relationships between the sun, moon, and Earth.
- Students will use content application over the Moon Phases to make observations about the change and repetition of moon phases.
- Students will view the video, "Earth and Sun" to develop an understanding of the relationship between the Earth, moon, and sun.
- Students will also view the video, “Moon Phases - Why Moon Changes Shape.”
- Students will create a video showing movement of sun and earth using their bodies as models.
1.LS1.2 Read text and use media to determine patterns in behavior of parents and offspring that help offspring survive.

CCC: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

1.LS3.1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly alike, their parents.

CCC: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Evidence for Understanding

Students can distinguish between adult and baby animals as well as identify patterns common between baby animals and their parents using presentations and video editor.
Digital Tools

- Camera
- Photo Library - Photos 4 Class
- Presentation - Keynote, Google Slides, Microsoft PowerPoint
- Video Editor - Clips, WeVideo, Do-Ink, iMovie
- Videos - Animals A to Z - Baby Animals, Parents Help Their Babies Survive

In Practice

- Students will watch the video “Animals A to Z - Baby Animals” and “Animals and their Parents” to explore the idea that baby animals look and behave similar to their parents.
- Students will use an online virtual library to find pictures of adult and baby animals as well as use the camera to take pictures.
- Students will use the camera app to document the growth of a fast growing plant as it grows from a seedling to an adult plant.
- Students will then create a time lapse video to show the results.
- Students will explain their knowledge of adult/baby animals while creating a presentation or use a video editor to document their understanding.
1. ESS3.1 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

CCC: Events have causes that generate observable patterns.

Evidence for Understanding

Students will be able to explain how people can harm and help the environment using content applications.
Digital Tools

- *Sketch Application* - Sketch Pad, Google Draw
- *Video* - Martha Speaks: Environment: Paws and Effect
- *Video* - The 3 R’s for Kids

In Practice

- Students will watch the Martha Speaks: Environment: Paws and Effect to learn about the harm of littering.
- Students and teacher will discuss specific examples of positive and negative environmental effects.
- Students will watch The 3 R’s for Kids to learn about recycling.
- Students will use a *Sketch Application* to show how people can have a harmful and positive effect on the environment.
1. LS1.1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

CCC: The shape and stability of structures of natural and designed objects are related to their function(s).

Evidence of Understanding

Students will be able to identify how various structures help plants and/or animals survive and succeed using a story telling application.
**Digital Tools**

- Camera
- **Website** - Do Ptarmigans Have Snowshoes
- **Story Telling Application** - Draw and Tell, Sketchpad
- **Royalty Free Photos** - Pics4Learning, Photos for Class, flickrCC

**In Practice**

- Students will complete the activity, “Do Ptarmigans Have Snowshoes” to create and design ptarmigan feet.
- Students will use royalty free photos of other animals' feet to compare and contrast their feet to (ie: duck, cat, dog, blue bird, and elephant).
- Students will then use storytelling app to show their ptarmigan design. Also within their storytelling app activity, students will determine the effectiveness of their feet as well as offer suggestions for design improvement.
**2ESS2.2**  Develop a model to represent the shapes and kind of land and bodies of water in an area.
CCC: Patterns in the natural world can be observed.

**Evidence of Understanding**

Students will be able to make a model landform and describe the characteristics of the landform through content applications and video editors.
Digital Tools

- Camera
- Geography Exploration Tool - Google Earth
- Video Editor - WeVideo, Clips
- Sketch Application - Sketches School, Apple Notes, Sketchpad

In Practice

- The students will use a Geography Exploration Tool to explore various landforms and bodies of water around the world.
- The information gained from this exploration will be used to make a model of a landform describing its characteristics.
- Students will use the camera app, sketch application and video editor app to record their observations of each landform.
2.PS1.1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2.PS1.2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

2.PS1.3 Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

2.PS1.4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

Evidence for Understanding

Students will be able to predict patterns useful for classifying materials using content applications and will modify the design of an object to make a new object.
Digital Tools

- *Sketch Application* - Sketches School, Notes, Sketchpad
- *Video Editor* - WeVideo, Clips

In Practice

- Students will create a Venn diagram using a *Sketch Application* to show the properties objects have in common as well as what properties can be used to distinguish between two objects or a group of objects.
- Students will use a video editor to explain and demonstrate differences between types of matter.
2.ESS1.1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

CCC: Things may change slowly or rapidly.

Evidence for Understanding

Students will be able to describe how various events occur as well as describe whether events occur rapidly or over an extended period of time using a video editor.
Digital Tools

- **Video Editor** - WeVideo, Clips
- **Video** - The D. Binocs Show: What is an Earthquake, *Natural Disasters Dr. Binocs Show*
- **Video Content Collection** - Edumedia

In Practice

- Students will watch the animations from a Video Content Collection over Earth Events and be able to describe how the events occur.
- Students will explore Earth events such as geography, climatology, and geodynamics using interactive maps.
- Students will view the videos to understand more about the causes of earthquakes and other natural disasters.
- Students will then make a video explaining in their own words types of Earth changes that can occur quickly or over a length of time.
**WIND & WATER (ES)**

2.ESS2.1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

CCC: Things may change slowly or rapidly.

2.ESS2.3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.

CCC: Patterns in the natural world can be observed.

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**Evidence for Understanding**

Students will be able to describe and locate water and its form on Earth as well as describe how wind and water can cause changes via the weathering and erosion processes using a geography exploration tool and video editors.
Digital Tools

- Geography Exploration Tool - Google Earth
- Video - Billy Blue Hair - What is Erosion?
- Video Editor- Clips, WeVideo, Do-Ink, iMovie

In Practice

- Students will use a Geography Exploration Tool to identify where water exists on Earth.
- Students will use a Geography Exploration Tool to identify whether water is in solid or liquid form at various locations on Earth.
- Students will watch the YouTube Video, “Billy Blue Hair - What is Erosion” to gain an understanding of how wind and water can change the shape of the land.
- Students will use an online virtual library to put together a time lapse presentation on the effects of erosion.
DIVERSITY IN HABITATS (LS)

2.LS4.1 Make observations of plants and animals to compare the diversity of life in different habitats.

CCC: A system is an organized group of related objects or components.

Evidence of Understanding

Students will be able to explain how plants and animals are different in different environments using presentations.
Digital Tools

- Video - Animals A to Z: Nests
- Video - Seed Dispersal Methods and Types
- Presentation - Keynote, Google Slides, Microsoft PowerPoint

In Practice

- Students will watch the video “Animals A to Z: Nests” to learn about nests animals create in different habitats.
- Students will watch the video “Seed Dispersal Methods and Types” to develop an understanding of how plants spread their seeds in order to reproduce.
- Students will create a presentation to show what types of animals and plants live and grow in different habitats.
ECOSYSTEMS (LS)

2.LS2.1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.

CC: Events have causes that generate observable patterns.

2.LS2.2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

CC: The shape and stability of structures of natural and designed objects are related to their functions.

Evidence for Understanding

Students will be able to appropriately design and conduct an investigation and collect and organize data for presentation.
Digital Tools

- **Graph Application** - Create a Graph, Kid Zone Graph Maker
- **Story Telling App** - Toontastic 3D, Draw and Tell, Sketchpad

In Practice

- Students plant sunflower seeds in plastic cups and once germinated, expose them to varying light or soil moisture conditions.

- Students will measure the seedlings’ growth every few days.

- After a few weeks, they compare the growth of plants exposed to the different conditions and make comparative bar graphs using a graph app and then analyze to draw conclusions about plant needs.

- Students can use a Story Telling App to build a science report showing their experiment.
3RD GRADE
MAGNETS (PS)

3.PS2.3 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

CCC: Cause and effect relationships are routinely identified.

3.PS2.4 Define a simple design problem that can be solved by applying scientific ideas about magnets.

CCC: Cause and effect relationships are routinely identified, tested, and used to explain change.

Evidence of Understanding
Students will correctly distinguish between magnetic attraction and repulsion.
**Digital Tools**

- **Video Editor** - Clips, WeVideo, Do-Ink, iMovie
- **Video** - The Science Behind Magnets: How Do They Work?
- **Website** - Science Whiz: Magnetism, Magnet or Not?

**In Practice**

- Students will watch the video, “The Science Behind Magnets: How Do They Work?” To develop a basic understanding of magnetism.

- Students can explore through the game, "Magnet or Not?", to better understand concepts associated with magnetism and electricity.

- Students can explore the animations on the “Science Whiz: Magnetism” webpage for additional information about magnetism.

- Students will make a video using a video editor application showing the magnetic properties of attraction and repulsion. As a part of their video, students should be able to verbally discuss the causes of magnetic attraction and repulsion.
3.PS2.1 Plan and conduct investigations on the effects of balanced and unbalanced forces on the motion of an object.

CCC: Cause and effect relationships are routinely identified.

3.PS2.2 Make observations and/or measurements of the object’s motion to provide evidence that a pattern can be used to predict future motion.

CCC: Patterns of change can be used to make predictions.

Evidence of Understanding

Students will be able to illustrate that they can correctly predict the motion of an object with different forces and then compare and contrast their predictions to real life outcomes.
Digital Tools

• Videos - Force and Motion Study Jam, Force, Work, and Energy Relationships
• Presentation - Keynote, Google Slides, Microsoft PowerPoint
• Video Editor- Clips, WeVideo, Do-Ink, iMovie
• Illustration Application - Venn Diagram, Sketches School, Sketchpad

In Practice

• Students will view the video, "Force and Motion Study Jam", to develop an understanding of Forces and Motion.
• Students will watch the video "Force, Work and Energy Relationships". Then, they will create a Venn diagram to show the relationships between the three motions.
• Students will take a picture of an object in motion.
• Student will predict the motion of the object by drawing on the photograph previously taken.
• Student will also predict the motion of the object based on the amount of force applied to the object.
• Students will then take the photos and add them to a presentation.
3. ESS2.1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

CCC: Patterns of change can be used to make predictions.

3. ESS2.2 Obtain and combine information to describe climates in different regions of the world.

CCC: Patterns of change can be used to make predictions.

3. ESS3.1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

CCC: Cause and effect relationships are routinely identified, tested, and used to explain change.

Evidence of Understanding

Students will be able to reasonably predict patterns of change in weather and different climates and explain that change in pattern.
Digital Tools

- **Video Editor**: Clips, WeVideo, Do-Ink, iMovie
- **Content Application**: Live Weather - track the weather, Weather Channel
- **Sketch Application**: Toontastic 3D, Draw and Tell, Sketchpad
- **Illustration Application**: Graphing for Kids, Kid Zone Graph Maker
- **Videos**: What is a Tornado, Weather and Climate Study Jams
In Practice

- Students will track the weather for four days.
- Based on the information they tracked for the previous days, they will make a prediction for what the weather will be like on the fifth day.
- Students will view the video, “What is a Tornado?,” to learn where tornados come from, how fast they go, and how scientists study them.
- Students will view the video "Weather and Climate Study Jams," and learn the difference between weather and climate.
- Students can view the video, “Weather Patterns for Kids” to learn about weather patterns.
- In the activity, “Weather Patterns,” students can explore patterns associated with weather and the seasons.
- Students will create a weather journal using the Sketch Pad app allowing them to incorporate both words and pictures and construct simple bar graphs to record weather information that can be used to make predictions.
- Students will then create a weather broadcast video to convey their predictions of the weather and how climate and patterns cause the change in weather.
3.LS4.1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

CCC: Observable phenomena exist from very short to very long time periods.

3.LS4.3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

CCC: Cause and effect relationships are routinely identified and used to explain change.

3.LS4.4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

CCC: A system can be described in terms of its components and their interactions.

Evidence of Understanding

Students will be able to explain why certain animals will/will not survive in different types of habitats.
Digital Tools

- Presentation - Keynote, Google Slides, Microsoft PowerPoint
- Video - Adaptations
- Website - Animal Habitats for Kids

In Practice

- Students will watch the video, “Adaptations” to learn about how organisms are adapted to the environments in which they live.
- Students will explore the different types of habitats using the Animal Habitats for Kids website.
- Students will research a particular habitat after exploring the different habitats.
- From their research, students will create a presentation showing one animal that will survive well in that habitat, one that will struggle to survive, and one that will not survive and why.
3.LS1.1 Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction and death.

CCC: Patterns of change can be used to make predictions.

3.LS3.1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variations of these traits exists in a group of similar organisms.

CCC: Similarities and differences in patterns can be used to sort and classify natural phenomena.

3.LS3.2 Use evidence to support the explanation that traits can be influenced by the environments.

CCC: Cause and effect relationships are routinely identified and used to explain changes.

Evidence of Understanding

Student diagrams will reflect traits inherited throughout their family.
Life cycle diagrams will reflect the correct order of a human life cycle.
Digital Tools

- **Video** - Heredity: Study Jams
- **Mind Mapping Application** - Popplet, Git Mind
- **Presentation** - Keynote, Google Slides, Microsoft PowerPoint
- **Photo Library** - pics4learning, photosforclass

In Practice

- Students will view the video, "Heredity: Study Jams". Then, they will use a mind mapping application to create a diagram showing the traits shared within generic family pictures found on Photos 4 Class or Pics4Learning.
- Read: "How Do Animals Change As They Grow?".
- Students will use a presentation tool to recreate a life cycle diagram of any animal they choose. Students will include similarities and differences in traits of that animal and identify environments that cause traits to change over time.
3.LS2.1 Construct an argument that some animals form groups that help members survive.

CCC: Cause and effect relationships are routinely identified and used to explain change.

3.LS4.2 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and reproducing.

CCC: Observable phenomena exist from very short to very long time periods.

Evidence of Understanding

Student will create a presentation that reflects the key adaptations and characteristics that help the animal survive in that environment.
Digital Tools

- Videos - *Why Do Animals Form Groups?*, *Greatest Animals of the Galapagos*
- *Presentation* - *Keynote*, *Google Slides*, *Microsoft PowerPoint*
- *Comic Maker* - *Comic Touch 2*, *Comic Puppets*, *Canva*, *Comic Maker*, *Toontastic*, *Pixton EDU*

In Practice

- Students will explore the three levels of the Galapagos Island website.
- Students will create a presentation which showcases one animal that is indigenous to the Galapagos Island.
RESOURCES
1ST GRADE

**Student**
- Sound & Waves Unit Lesson Plan
- Moon Lesson Plans
- Recycling Video
- PBS Video: What Do Animals Need?
- PBS Video: What Do Plants Need?
2ND GRADE

- NASA: Models of Land and Water Lesson
- NASA: Creating Models of Landforms and Water
- National Geographic: Map Skills for Elementary Students Resources
- Heat It Up, Cool It Down Activity
- Teach Engineering.org: See, Touch, and Discover Activity
- A Model of Three Faults Activity
- Teach Engineering.org Activity "Light Plants and Dark Plants, Wet Plants and Dry Ones"
3RD GRADE

- Forces and Interactions Unit Plans
- Teach Engineering.org "Swinging with Style"
- Teach Engineering.org "Strawkets and Weight"
- Teach Engineering.org "Strawkets and Thrust"
- Teach Engineering.org "The Science of Swinging" Lesson Plans
- Teach Engineering.org "How High Can a Super Ball Bounce?"
- "May the Best Force Win Activity"
- Teach Engineering.org "Tornado" Lesson
- Teach Engineering.org "Windstorm" Activity
- Teach Engineering.org "Weather Forecasting: How Predictable" Activity
- Teach Engineering.org "What to Wear and Drink? Weather Patterns and Climatic Regions Lesson"
- Suited for Survival Activity
- Desert Animal Adaptations
- Teach Engineering.org "Dam Impacts" Lesson
- PBS "Fun with Fossils" Activity
- Teach Engineering: Environments & Ecosystems
- Teach Engineering: Population Density: How Much Space Do you Have"
- Why do Animals Live in Groups? teachingscience.us