Lab Skills of Vet Techs

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Time Frame 105 Minutes

Essential Question(s)

- How do classroom science skills connect to veterinary technician careers?

Summary

In this learning experience, students will explore proper laboratory equipment usage and safety then apply this knowledge to hands-on laboratory experiments. Students are asked to make connections between these laboratory skills and professions that may use similar skills, with a primary focus on agriculture careers. Students conclude the activity by discussing the veterinary technician profession and connecting the skills gained in this lesson to those used by vet techs.

Learning Goals

- Apply laboratory knowledge and safety to hands-on experiments.
- Explore the connection between science skills and skills used by a veterinary technician.

Attachments

- Activity Slides—Lab Skills of Vet Techs.pptx
- Bone Identification Chart—Lab Skills of Vet Techs - Spanish.pdf
- Bone Identification Chart—Lab Skills of Vet Techs.pdf
- Color Diffusion (Teacher Guide)—Lab Skills of Vet Techs.docx
- Color Diffusion (Teacher Guide)—Lab Skills of Vet Techs.pdf
- Color Diffusion Lab—Lab Skills of Vet Techs - Spanish.docx
- Color Diffusion Lab—Lab Skills of Vet Techs - Spanish.pdf
- Color Diffusion Lab—Lab Skills of Vet Techs.docx
- Color Diffusion Lab—Lab Skills of Vet Techs.pdf
- Lab Equipment—Lab Skills of Vet Techs - Spanish.docx
- Lab Equipment—Lab Skills of Vet Techs - Spanish.pdf
- Lab Equipment—Lab Skills of Vet Techs.docx
- Lab Equipment—Lab Skills of Vet Techs.pdf
- Owl Pellet Investigation—Lab Skills of Vet Techs - Spanish.docx
- Owl Pellet Investigation—Lab Skills of Vet Techs - Spanish.pdf
- Owl Pellet Investigation—Lab Skills of Vet Techs.docx
- Owl Pellet Investigation—Lab Skills of Vet Techs.pdf
- Pond Water Observations—Lab Skills of Vet Techs - Spanish.docx
- Pond Water Observations—Lab Skills of Vet Techs - Spanish.pdf
- Pond Water Observations—Lab Skills of Vet Techs.docx
- Pond Water Observations—Lab Skills of Vet Techs.pdf

Materials

- Activity Slides (attached)
- Lab Equipment cards (attached; one set per pair; print one-sided)
- Color Diffusion Lab handout (attached; one per student; print one-sided)
- Color Diffusion (Teacher Guide) document (attached)
- Pond Water Observations handout (attached; one per student; print two-sided)
- Owl Pellet Investigation handout (attached; one per student; print two-sided)
- Bone Identification Chart handout (attached; one per student; print two-sided)
- Drying rack for lab glassware
- Sticky notes (one per student)

Lab 1 Materials:

- Beakers (3 per lab station)
- Liquid food coloring
- Stopwatch or timer (1 per lab station)
- Stir sticks or spoons (1 per lab station)
- Tap water
- Magnetic stirrer hot plate (1 per lab station)
- Thermometer (1 per lab station)
- Lab safety goggles (1 per student)

Lab 2 Materials:

- Water from a pond or lake
- Glass slides and slide covers (1 set per lab station)
- Microscopes (1 per lab station)

Lab 3 Materials:

- Precision lab scale (1 per lab station)
- Baking sheets (1 per student)
- Owl pellets (1 per student)
- Toothpicks (1 per student)
- Tweezers (1 per student)
- Gloves (1 pair per student)
- Rulers (1 per student)

20 minutes

Warm-Up

Teacher's Note: Card Matching Prep

The attached **Lab Equipment** cards handout is a five-page file, where the first four pages contain the cards for the students, and the fifth page contains the citations for those cards. If trying to save paper, consider only printing pages 1–4 (one copy per pair). Consider printing on cardstock paper, especially if you plan to reuse these cards.

Once printed, cut out the cards. All of these cards are the same size for easy cutting.

Use the attached **Activity Slides** to introduce students to the essential question on **slide 3** and the learning objectives on **slide 4**.

Display **slide 5** and ask students to think about careers in which they might use laboratory equipment. Introduce students to the Think-Pair-Share strategy and have students use it to think about possible careers. After students have discussed with a partner, ask for volunteers to share what careers they think might use lab equipment.

Explain to students that they will be learning about types of lab equipment, how to use the lab equipment, and safety procedures before conducting any laboratory experiments. Display **slide 6** and give each pair a set of the attached **Lab Equipment** cards. Preview the Card Matching activity by explaining to students they are expected to match each image card with its corresponding equipment name card and function (use) card. Give students 5 minutes to complete the activity.

Once students complete their card matching, transition through **slides 7–9** and have students check their work. Then facilitate a brief whole-class discussion about which cards they had trouble matching.

Transition through **slides 10–12** to review laboratory safety procedures and equipment care. Continue to **slide 13** and discuss the importance of knowing the lab safety procedures and lab equipment care.

Teacher's Note: Lab Safety Documentation

To emphasize the importance of lab safety, consider having your students complete and pass a lab safety contract and exam, if you have not already done so. There are middle and high school versions available from Flinn Scientific: Safety Contracts & Exams. These are available in both English and Spanish.

Flinn Scientific also has videos that demonstrate common laboratory safety mishaps.

20 minutes

Lab 1

Teacher's Note: Color Diffusion Lab Prep

Before beginning the following laboratory experiment, gather the needed materials: beakers, food coloring, stopwatches or timers, stir sticks, water, hot plates, thermometers, and safety goggles. Use the attached **Color Diffusion (Teacher Guide)** document for more detailed directions about how to set up each station for your students.

Ensure that you have a drying rack available near the sink for lab glassware.

Inform students that they should now use their knowledge of lab equipment and lab safety to conduct an experiment. Organize students into small groups of 3–4. Show **slide 14** and ask students in which beaker of water (hot, cold, or room temperature) they think the food coloring will most quickly diffuse. Have groups discuss the question and distribute one copy of the attached **Color Diffusion Lab** handout to each student. Preview the activity by explaining to students that they will make predictions about in which beaker of water (hot, cold, or room temperature) the food coloring will most quickly diffuse.

Have students conduct the experiment by following the instructions on their handouts. Actively monitor students during the experiment.

As groups begin to finish the lab, transition to **slide 15** and have students follow the instructions for lab clean-up. Once clean-up is complete, move to **slide 16** to discuss what students learned during the lab experiment.

Teacher's Note: Glass Safety

Hot glass can shatter if it is placed in cold water. To ensure student safety, once the lab is completed and students have been instructed to turn off the hot plates, confirm that each station has completed the task. Notify students when the glass has sufficiently cooled and it is safe for them to clean up.

30 minutes

Lab 2

Teacher's Note: Pond Water Lab Prep

During this lab experiment, students will observe the contents of water using a microscope. Prior to the lab, collect approximately one gallon of water from a local pond or lake. Consider collecting from the edge of the body of water where algae and plants are growing. This water will have the most microorganisms that can be seen under a microscope.

Gather the appropriate materials for this lab: water from a pond or lake, microscopes, glass slides, and slide covers. Ensure that you have a drying rack available near the sink for lab glassware.

Display **slide 17** and have students think about which careers involve laboratory equipment and animal encounters. Have students then follow the Think-Pair-Share strategy by discussing their responses with a partner, then sharing their responses with the class.

Show **slide 18** and share with students that they will be investigating a sample from a local body of water. Distribute one copy of the attached **Pond Water Observations** handout to each student. Show the water sample you collected from a pond or lake to students. Ask students to make predictions about what they think they will see if they examine the sample under a microscope.

Organize students into small lab groups of 3–4. Show **slide 19** and demonstrate to students how to prepare a glass slide of pond water. Have students study their prepared microscope slides of water and make observations about the sample. Encourage them to compare these observations to their earlier predictions.

Display **slide 20**. Have students place the prepared slides under the microscope at 30x magnification. Guide students to adjust the focus as needed. Have students describe what they see under the microscope and draw a representation of their observations on their handouts. Have students increase the magnification to 100x and repeat the process, drawing and describing their observations. Encourage each group member to look through the microscope at each magnification. Monitor students' use of equipment and assist them if they have trouble focusing the lense or cannot find organisms.

As groups begin to finish the lab, transition to **slide 21** and introduce the instructions for clean-up. After students have cleaned up their stations, move to **slide 22** and discuss what students found in the pond water.

25 minutes

Lab 3

Teacher's Note: Owl Pellet Lab Prep

Dedicate a space where students can obtain the necessary equipment for the lab. In that space, provide precision lab scales, baking sheets, owl pellets, toothpicks, tweezers, gloves, and rulers.

If there are not enough scales for each station, consider dedicating a space for the scales you do have. Consider placing some toward the front of the room and some toward the back of the room so students may share the available scales.

Display **slide 23** and introduce the owl pellet investigation by explaining what an owl pellet is. Distribute one copy of the attached **Owl Pellet Investigation** handout and one copy of the attached **Bone Identification Chart** handout to each student. Show **slide 24** and have students collect the necessary equipment including an owl pellet, a baking sheet, tweezers, toothpicks, a ruler, and gloves. Instruct students to write a description of the owl pellet's appearance on their handouts. Have students then use the supplies to measure the length, width, and mass of the owl pellet.

Move to **slide 25** and ask students to make predictions about what may be inside the owl pellet. If time allows, invite a few volunteers to share their responses and their reasoning.

Transition to **slide 26** and have students dissect the owl pellet using the materials provided. Monitor students as they separate the bones in the pellets. Assist them in using their Bone Identification Charts to identify the types of bones and the organisms they came from.

As groups begin to finish the lab, transition to **slide 27** and introduce the instructions for clean-up. After students have cleaned up their stations, move to **slide 28** and discuss what students found in the owl pellets.

Teacher's Note: Cultural Sensitivity

Some indigenous cultures regard the owl as taboo and therefore do not participate in owl pellet dissections. Be conscious of your students and their backgrounds as you teach this lab. Prepare an alternative assignment that focuses on ecosystems and identification for students that opt not to participate. The National Park Service offers classroom activities about animal bones, and BBC Bitesize offers activities about food chains.

10 minutes

Wrap-Up

Display **slide 29** and use the slide to briefly describe the veterinary technician profession. Organize students into pairs and transition to **slide 30**. Ask students to discuss what they think vet techs do at work and how vet techs might use lab equipment and skills. Allow pairs to discuss, then facilitate a whole-class discussion about the jobs of vet techs in which you invite pairs to share out their responses.

Teacher's Note: Guiding the Discussion

Vet techs work alongside veterinarians in many settings, including animal hospitals, clinics, research labs, and shelters. They specialize in providing medical care to animals, assisting with surgeries, conducting diagnostic tests, and offering preventative care. Vet techs are compassionate, detail-oriented, and skilled in handling a wide variety of animals while ensuring their well-being.

Show **slide 31** and give each student one sticky note. Introduce the How Am I Feeling? What Am I Thinking? strategy and ask students to respond to the prompts on the slide. Have students share one of their responses with their partner. If time allows, invite volunteers to share their responses with the whole class.

Research Rationale

Research demonstrates that early development of occupational knowledge through school career education programs supports students in building an understanding of the working world and available career opportunities (Ginevra et al., 2024; Godbey & Gordon, 2019; James, 2024; Kim & Lee, 2023). The middle and high school years are fundamental times for students to explore careers and develop transferable skills to help them succeed in middle school and beyond (James, 2024; Kim & Lee, 2023). When career exploration programs involve experiential learning, student engagement is increased, which improves graduation rates and college and career readiness (Godbey & Gordon, 2019; James, 2024; Kim & Lee, 2023).

Resources

- Advance CTE. (n.d.). *Career clusters*. The National Career Clusters Framework. https://careertech.org/career-clusters/
- BBC. (n.d.). *BBC bitesize*. https://www.bbc.co.uk/bitesize
- Capaya, J. (2016, June 5). *Glass slide with specimen* [Illustration]. The Noun Project. https://thenounproject.com/icon/glass-slide-with-specimen-497286/
- crf. (2024, May 16). *Graduated cylinder* [Illustration]. The Noun Project. https://thenounproject.com/icon/graduated-cylinder-6899272/
- Flinn Scientific. (2025). *Lab safety scientific contracts & classroom exams.* https://www.flinnsci.com/resources/safety-reference/safety-contracts--exams/
- Flinn Scientific. (2025). *Safety in the lab - Science lab safety.* https://www.flinnsci.com/safety/?srsltid=AfmBOoqJEl4s0PAawIeCcEIINZaXK201RNP8EMQR2iawqfT7rQoBZCh5
- Ginevra, M. C., Santilli, S., Hartung, P.J., & Nota, L. (2024). A career education program for early childhood youth: Development and initial evaluation. *The Career Development Quarterly, 72*(2), 78–92. https://doi.org/10.1002/cdq.12345
- Godbey, S., & Gordon, H. R. (2019). Career exploration at the middle school level: Barriers and opportunities. *Middle Grades Review, 5*(2). https://scholarworks.uvm.edu/mgreview/vol5/iss2/2
- James, S. L. (2024). *A mixed methods case study program evaluation of a middle school career exploration program* (Publication No. 31330513) [Doctoral dissertation, Oral Roberts University]. ProQuest Dissertations & Theses. https://www.proquest.com/docview/3066204650/abstract?parentSessionId=YWecl2ZOx6uG%2FNHotMuIhlZHJ88ha1PFEYvGbLyfWi4%3D&accountid=12964&sourcetype=Dissertations%20&%20Theses
- K20 Center. (n.d.). Card matching. Strategies. https://learn.k20center.ou.edu/strategy/1837
- K20 Center. (n.d.). How am I feeling? What am I thinking? Strategies. https://learn.k20center.ou.edu/strategy/187
- K20 Center. (n.d.). Think-Pair-Share. Strategies. https://learn.k20center.ou.edu/strategy/139
- K20 Center. (n.d.). *The career clusters* [Infographic]. Infogram. https://infogram.com/k20center-careerclusters-1hdw2jp8e9n1x2l
- Kim, Y., & Lee, H. (2023). Investigating the effects of career education programs on high school students' career development competencies in Korea. *Sustainability*, *15*(18), 13970. https://doi.org/10.3390/su151813970
- Mbarki, N. (2019, December 14). *Tongs* [Illustration]. The Noun Project. https://thenounproject.com/icon/tongs-3360313/
- Oh, I. (2022, August 30). *Owl* [Illustration]. The Noun Project. https://thenounproject.com/icon/owl-5190335/
- Oktaviana, F. (2023, February 28). *Beaker glass* [Illustration]. The Noun Project. https://thenounproject.com/icon/beaker-glass-5602435/
- Oktaviana, F. (2023, February 28). *Laboratory pipette* [Illustration]. The Noun Project. https://thenounproject.com/icon/laboratory-pipette-5602457/
- Pujiyono, Y. (2024, July 24). *Microscope* [Illustration]. The Noun Project. https://thenounproject.com/icon/microscope-7106858/
- rdesign. (2022, June 25). *Safety goggles* [Illustration]. The Noun Project. https://thenounproject.com/icon/safety-goggles-4977610/
- U.S. Department of Labor. (n.d.). *My next move*. My Next Move. https://www.mynextmove.org/
- U.S. Department of the Interior. (n.d.). *U.S. National Parks Service*. National Parks Service. https://www.nps.gov/index.htm
- yenaburger. (2024, September 1). *Scale* [Illustration]. The Noun Project. https://thenounproject.com/icon/scale-7214378/