

Teacher's Guide

Welcome to the **Raptor Lab**, an online learning environment focused on providing students with an authentic learning experience in science and environmental education. Using role play and inquiry-based learning, the Raptor Lab aims to put students in the shoes of real-world scientists, applying the process of scientific investigation to solve real-world problems. Developed by a team of educators at the University of Minnesota's The Raptor Center (TRC), Extension, and Learning Technologies Media Lab, the Raptor Lab strives to blend online learning with hands-on experiences to teach important principles in science and environmental education.

Sign up for Raptor Lab

View instructions to create an account and manage students at <https://z.umn.edu/RaptorLab>. Access the Teacher's Toolbox by clicking on your name once signed in. **Questions?** Contact us at raptorlab@umn.edu.

Vet in Training

Vet in Training models the process of scientific investigation through the work of veterinarians at TRC's world-renowned wildlife rehabilitation clinic. Through the use of pre-recorded videos, Dr. Julia Ponder teaches students how sick and injured raptors are rehabilitated as if the students were vets in training standing right next to her. Students experience firsthand the process of scientific investigation as Dr. Ponder diagnoses, treats, and rehabilitates a patient. Throughout the process, students record evidence in their patient's medical record, summarize the evidence gathered to support their patient's diagnosis (an evidence-based conclusion), and watch how their diagnosis informs their patient's treatment. After their patient is successfully rehabilitated and released back into the wild, students are asked to synthesize their learning by writing a patient summary that details the case from capture to release. Students end their summary by considering what their patient's diagnosis taught them about bald eagles and what questions were raised by their patient's diagnosis.

Intro Video (0:39)

Your Mission Video (2:28)

- [Scavenger Hunt Activity](#) – Student Version (Learn about raptors and The Raptor Center)
- [Midwest Raptor Identification Guide](#) (needed for the scavenger hunt and research project)
- [Scavenger Hunt Activity](#) – Teacher Version
- [Raptor Research Project](#) – Optional Activity
- [Raptor Research Project Sign-up Sheet](#)

Admission Video (3:22)

- [Patient Medical Record](#) – Student Version
- [Patient Medical Record](#) – Teacher Version
- [Patient Admission Form](#) – (needed to complete the patient medical record)

Physical Exam (6:18)

- [Patient Radiograph](#) – (needed to complete the patient medical record)
- [Patient Lab Work](#) – (needed to complete the patient medical record)

Diagnosis & Treatment (4:04)

Conditioning & Release (5:08)

- [Patient Summary Activity](#) – Student Version
- [Patient Summary Activity](#) – Teacher Version



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Wildlife Researcher

Wildlife Researcher shifts the role of students from being a vet in training to being a wildlife researcher investigating a question raised by their patient's diagnosis. Being guided by Dr. Pat Redig, a world-renowned expert in bald eagle toxicology, students use data collected at TRC to investigate a local environmental issue, the lead poisoning of bald eagles. Dr. Redig models each step of the process of scientific investigation for students. He has them conduct background research, consider a research question, create a hypothesis, look at the material and methods of their investigation, present the results of their data analysis, and discuss how their data (as evidence) confirms or rejects their hypothesis. To make this process relevant for students, the data they are analyzing is real; therefore, the conclusions students make are real and relevant.

Intro to Wildlife Research Video (1:35)

Your Mission Video (2:21)

[USFWS Letter](#)

[Student Guide](#) – Explains how to fill out the template using the investigation field guide

[Research Report Template](#) – Hypothesis 1 (Final product – model research report)

[Investigation Field Guide](#) – Hypothesis 1 (Student Version)

[Investigation Field Guide](#) – Hypothesis 1 (Teacher Version)

[Research Report Template](#) – Hypothesis 2 (Final product – model research report)

[Investigation Field Guide](#) – Hypothesis 2 (Student Version)

[Investigation Field Guide](#) – Hypothesis 2 (Teacher Version)

[Example of a Model Student Report](#)

The Problem Video (0:54)

Background Video (2:31)

[Get the Lead Out](#) – Hypothesis 1 Resource

[USGS Lead Poisoning in Wild Birds](#) – Hypothesis 2 Resource

***Investigation Field Guide Questions 1 – 12 Background Section*

Research Question & Hypothesis Video (4:03)

Additional Video: [Hypothesis VS Theory](#) (1:24)

***Investigation Field Guide Questions 13 – 16 Research Question/Hypothesis Section*

Material & Methods Video (2:15)

***Investigation Field Guide Questions 17 – 21 Methods/Materials Section*

Results Video (2:10)

[Bald Eagle Blood Lead Levels](#) – TRC Dataset

[Graphs for Data Analysis](#) – (Teacher Version; charts and graphs provided for analysis)

Additional Video: [Clinical Categories of Lead Poisoning](#) (1:59)

***Investigation Field Guide Questions 22 – 35 Results & Data Analysis Section*

Discussion Video (1:04)

***Investigation Field Guide Questions 36 – 51 Discussion Section*

Wrap-up Video (1:20)

[TRC Report: Lead Poisoning in Bald Eagles](#)

[Copper Opportunities](#)

