Entomology Escape: Dr. Blatt's Assistant
Educator Instructions
Time Allotted: 20-60 minutes (instructor discretion)
Adaptable for grades 4-8

Educator Instructions:

Your classroom has become an Entomology lab!

Below you will find instructions for setting up each puzzle for an entomology escape room in your classroom or educational venue. All the materials needed for the activity can be found in the Escape Room Kit, and are listed below.

List of items in the kit you will use for this game:

Notepads
Pens
One directional lock with combination set (see Puzzle 1)
One letter lock with combination set (Final Puzzle: ROACH)
4 code letters (O, A, C, H) in different sizes/fonts
Contract (Final Puzzle)
Dr. Blatt's letter: Should be laying in an easy to find location, such as a table or desk as soon as students walk in.
5 toy insects (grasshopper, weevil, praying mantis, cicada, rhinoceros beetle)
5 insect photo/informational sheets
Butterfly poem
Insect orders poem
Scorpion Word Find and Dr. Blatt letter
Blacklight
Blacklight marker
Butterfly book diversion lockbox
Ladybug timer (set for 20, 30, 45, 60 minutes, however long you wish to devote to the activity)
Reflection cards

General Instructions:

On the day of the activity, prepare all clues (cut out poems, code letters, etc.) and set up materials in your classroom where you'd like them. This is at your discretion, and depending on time allotment, you can either lay things in plain sight, hide them, or do a combination of the two. Ideas for this can be found in the "Game Time Adjustments" section.

Locks are already set to the correct codes, so you just need to lock the boxes and place them. You should test out the locks yourself to make sure you know how they work before the students play the game. The materials may need to be marked with numbers, blacklight letters, etc. depending on how you'd like to do the puzzle. Each puzzle is explained in this document.

Once the students come in, explain how the game will be set up, read off the scenario, and let them know the time limit that you are giving them. Provide them with notepads and pens/pencils to write down their clues. You may wish to divide them into small groups to help each other with the puzzles. Be on hand to give hints and guide the students if they get stuck.

Scenario (read out loud to students):

You are a young lab technician working with Dr. Blatt on some insect research. Today, you arrive at the lab and notice Dr. Blatt is gone but she has left a note for you saying that she has made a very important discovery! Now, she'd like to promote either you or her other technician, Randy, to be her assistant…this will result in scientific fame and fortune for whoever gets this job!

To decide who will be her new assistant, Dr. Blatt has set up some puzzles to test your problem solving skills. She has hidden the contract for the new assistant in a lockbox and you will have 20/30/45/60 minutes to find it before your rival technician does! Along the way, you'll learn a lot about insects and prove to Dr. Blatt that you are worthy!

After reading the scenario, set the timer and start the game!

Trivia: Dr. Blatt's full name is "Dr. Odea Blatt," as seen in the contract signed by her. Blattodea is the insect order for cockroaches. The final code is ROACH and the contract is in the final box, thus this is a fun play on words that you might mention after the game is over, since students would have learned about other orders of insects!

Puzzle 1:

Unlock directional lock combo:

There will be five photo/information sheets of insects and then a corresponding insect toy, scattered throughout the room. Each toy will have a number on it, and each photograph will have an arrow on it, written in marker.

The toy's number will indicate which order the corresponding arrow goes in the combination. For example, if the grasshopper toy had a "1" on it, and the photo of a grasshopper had a down arrow, then we know that the down arrow is the first part of the combination. The above is the set combination, so be sure to set up the toys/photos accordingly.

Once the combination is known, it will open up the directional/letter lock on a small box. When putting in the code, be sure that the arrows are lined up next to the left-pointing arrow as shown in the photo below. Then pull the lock up and out. *To reset the lock*, be sure the correct combination is in line with the arrow, then push the lock back into place and re-scramble the arrows. Be aware that the lock will not close if you don't have the correct combination first.

Opening the box will provide you with the letter "A," one of the letters needed for the final code, and a key and poem that will lead you to puzzle 2.

Poem:
Beautiful butterflies, green, blue, and pink.
Read all about them, see what you think.

Note: To make this more educational, each photograph will also include information about that insect, so that students are learning more about it while solving the puzzle.

Puzzle 2:

There is a lockbox disguised as a butterfly themed book. The key from Puzzle 1 will open this, which will include another of the letters to the code in it (O).

Hide the book in a bookcase among other books. The poem from Puzzle 1 should lead the students to it if they search around for the colors indicated in the poem.

Puzzle 3:

This puzzle includes a letter from Dr. Blatt and a Word Find pertaining to scorpions. Within the letter are 4 bolded words which, when unscrambled, read "Use Blacklight Below Puzzle."

Students can do the Word Find or go directly to solving the clue. They learn about scorpions either way as they have to read the letter to get the clue.

Below the Word find, using the Blacklight marker, write the letter "R," which is another letter needed for the final code. Students will see this when they shine the blacklight on the paper below the puzzle. The blacklight can be out in plain sight or it can be hidden somewhere in the room, depending on your time limit for the activity.

Note: This puzzle can be done before or after the other puzzles. It doesn't lead to any other puzzles in the room.

Technicians,

Scorpions are not insects, but are arachnids, just like spiders. Scorpions are predatory animals that are nocturnal, meaning they are active at night. They ***use*** *their large pinchers and venomous stinger to capture and subdue their prey. During the day, they hide* ***below*** *rocks or in holes. Did you know that if you shine a* ***blacklight*** *on them that they will glow in the dark? This is because they have fluorescent chemicals in their exoskeleton!*

Solve the ***puzzle*** *on this page and you will learn more about scorpions and be one step closer to becoming my assistant!*

Dr. Blatt

Scorpion Word Find

N S E L U D Y M F R I O D R A R I O B N Y V	ARACHNID BLACKLIGHT

Puzzle 4:

This puzzle will use the insect photo/information sheets from Puzzle 1.

Hide a small piece of paper (or have in plain sight) that reads:

Cicada and weevil orders are a clue,
Using the first letters will give it to you.

The orders are Hemiptera and Coleoptera (taken from the insect info sheets). The first letters are H and C, giving you the final two letters for the code.

Note: As an option, you can hide the poem within the boxes for Puzzle 1 or Puzzle 2.

Final puzzle:

The contract is located in a large box with a letter combination. After picking up the 5 letter clues and unscrambling them, the combination is ROACH.

When putting in the code, be sure that the letters are lined up next to the left-pointing arrow, as seen in the photo below. Then pull the lock up and out. *To reset the lock*, be sure the correct combination is in line with the arrow, then push the lock back into place and re-scramble the letters. Be aware that the lock will not close if you don't have the correct combination first.

Reflection Cards (optional):

A number of reflection cards are included in the kit. These can be distributed to students before or after the game to help them reflect about some aspect of their experience, such as teamwork, favorite puzzles, etc. If you have time, we encourage you to use these cards to help students think about their time playing the game! Students can discuss their assigned question in groups, report about them to the class, or write about them individually.

After the Game:

If students don't finish all the puzzles, that's OK! This is common with escape games so applaud them on their efforts and take them through the solutions. Also use the time to reemphasize some things they should have learned, such as orders of insects and information about scorpions.

Game Time Adjustments:

Activities have been designed to work for both long and short time frames. It can be done in as few as 20-30 minutes, or as long as 45-60. You also may adjust according to the grade level you are teaching. The game can be played by just about anyone, but targets 4^{th}-8^{th} grade. For younger children, you will likely want materials more available in plain sight and may need to provide more hints. Older children will likely enjoy the challenge of searching for elements of the puzzles and may spend more time on their own before asking for help.

Depending on the time allotted for and the age group playing the game, instructors can use their best judgement on placement of puzzles and related items. Any number of combinations are possible depending on your preferences.

Some adjustments you can make include:

Puzzle 1:
If you plan to offer a longer time frame for the escape game (and an older age group), this puzzle can be made more difficult by marking the photographs with blacklight arrows rather than using a regular marker. It will take students longer to discover this.

Puzzle 2:
The butterfly book can be well hidden among other books on a shelf if you'd like a longer game, or can be sitting on a table or counter if you want it to be more easily found, such as by younger children.

Puzzle 3:
If you are short on time, students can forego actually doing the Word find and just read the letter and solve the puzzle. If there is ample time, doing the puzzle adds another layer of complexity, even though it's actually a red herring. Also, the blacklight itself can be hidden somewhere else in the room, or left near the puzzle that is easy to find.

Puzzle 4:
This puzzle can be skipped if you have a shorter time frame (or for younger children in which the orders of insects may be too complicated). Instead, you can add the two letters that are meant for this puzzle to the boxes in Puzzle 1 and 2 (then each of these boxes would have two letters instead of one). If you have 45 minutes or an hour, you should be able to include this puzzle.

Final Puzzle:

The students already know from the scenario and Dr. Blatt's letter that the contract is hidden in a lockbox, so they will be looking for this. However, the lockbox can either be displayed in the open or hidden in a cabinet or closet. Either way, students will be intrigued by the lock and will be trying to open it before they find all the clues!

Reflection Cards:

These are useful to help students think about their experience. You may wish to spend time in class right after the game doing this activity, or it's something that students could do as homework.

Entomology Escape: Dr. Blatt's Assistant
Nebraska Science Standards

This activity addresses the following Nebraska Science Standards:

SC K-12.1 Comprehensive Science Standard – Inquiry, the Nature of Science, and Technology

Students will combine scientific processes and knowledge with scientific reasoning and critical thinking to ask questions about phenomena and propose explanations based on gathered evidence.

Abilities to do Scientific Inquiry

SC5.1.1 Students will plan and conduct investigations that lead to the development of explanations.
SC8.1.1 Students will design and conduct investigations that will lead to descriptions of relationships between evidence and explanations.

Scientific Investigations

SC5.1.1.b Plan and conduct investigations and identify factors that have the potential to impact an investigation
SC8.1.1.b Design and conduct logical and sequential investigations including repeated trials

Scientific Observations

SC5.1.1.d Make relevant observations and measurements
SC8.1.1.e Make qualitative and quantitative observations

Scientific Data Collection

SC5.1.1.e Collect and organize data
SC8.1.1.f Record and represent data appropriately and review for quality, accuracy, and relevancy

Scientific Interpretations, Reflections, and Applications

SC5.1.1.f Develop a reasonable explanation based on collected data
SC8.1.1.g Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information

Scientific Communication

SC5.1.1.g Share information, procedures, and results with peers and/or adults
SC8.1.1.h Share information, procedures, results, and conclusions with appropriate audiences

SC5.1.1.h Provide feedback on scientific investigations
SC8.1.1.i Analyze and provide appropriate critique of scientific investigations

Abilities to do Technical Design
SC5.1.3.a Identify a simple problem
SC5.1.3.b Propose a solution to a simple problem
SC5.1.3.c Implement the proposed solution
SC5.1.3.d Evaluate the implementation
SC5.1.3.e Communicate the problem, design, and solution
SC8.1.3.d Evaluate completed technological designs or products

SC K-12.3 Comprehensive Science Standard – Life Science

Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Life Sciences to make connections with the natural and engineered world.

3. Life Science
Structure and Function of Living Systems

Characteristics of Living Organisms
SC5.3.1.b Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect move, root of a plant helps the plant obtain water)

Reproduction
SC5.3.2.b Identify the life cycle of an organism