Blindman's Bluff: Experimental Design Simulation
Teacher's Guide

About

This is a first person game-like simulation where players take on the role of an undergraduate student who wants to join a research lab. The simulation is appropriate for high school, college, or life-long learners.

Learning Goals

Students will learn the following about research design:

- Dependent and independent variables
- How to alter one variable in an experiment
- Hypothesis generation
- Refinement of a hypothesis
- Supporting or rejecting hypotheses based on data **they interactively gather**
- Pattern-seeking in data
- **And writing practice** on open-ended responses

The Mechanics

This is a 20 to 30 minute-long Web-based simulation that can be run on both Windows and Mac.

The simulation starts at an "open house" graduate student lounge. The player takes on the role of an undergraduate who wishes to join a research lab. The player must answer a series of multiple-choice and open-ended questions relating to either ongoing research or a research poster to impress several graduate students.
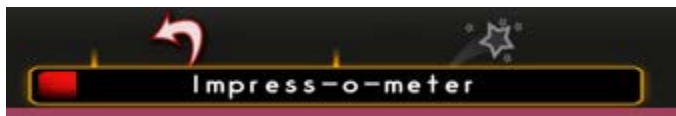
There is a dynamic "**Impress-o-meter**" at the bottom of the screen that shows how the player is doing during the game. Once the green star lights up the player can decide if s/he wants to play again. However, if the player does not make it past the half way mark, s/he will be automatically taken back to the beginning of play when done.

During the simulation, players (a) generate hypotheses, (b) vary independent variables, (c) control and observe trials of an experiment, (d) gather data, and (e) examine the data to identify which hypothesis was supported. The simulation gives players a chance to experience how trials are run without having to do them physically, or in vivo.

Data

All user-generated content is saved so instructors can access everything (approximately 50 variables) OR one cumulative % correct score that is based primarily on answers to the 18 multiple choice questions embedded in the simulation. Instructors can choose how much they want to see.

Log In

Since Blindman's Bluff is Web-based, teachers can ask students to open the simulation in their web browser on a Windows or Mac computer. Because there is much typing, we recommend a larger screen like a computer monitor.

It can be used as a homework module or in the classroom for live instruction.

Once you have set up your class (that is, given it a name like SocPsych101) and given the students the URL to the website tell them:

"If you see a **security alert – click Yes** you want to proceed.
If you do not have the **Unity Web Player,** you may have to also click yes to load or "accept" the plugin as well. This may take one minute to load."

You are now ready to play through the game.
Students need to enter class name and their name.
Teacher be aware: if you have two students with same name in the class, this needs to be addressed.

Vocabulary
There are several glossary terms an instructor may wish to go over first depending on students' prior knowledge. Several are defined during play, the first five below are not.

Students will encounter these terms:

- Introspection
- Sample selection
- Operationalize (definition is tested)
- Hypothesis
- Trial
- Proprioceptive system - defined
- Discrete variables - defined
- Independent variable - defined
- Dependent variable - defined
- Definitive experiment- defined later in game

The Back Story
After login, the players will meet the two graduate students (Cynthia and Kim) whom they need to impress. Players are told they will be running an experiment. Players choose an active poster (*The Blindman poster*) and follow Kim to the experimental room. They will learn about how blind people can navigate successfully in a room without using a cane.

The simulation includes three experiments with multiple variables and two participants (one is blind and one is sighted). The first two trials have been run for each condition, and the players watch simulations of the final two trials and score them. Players must analyze and understand the pattern in the data for the answer.

How to Use This Simulation
This simulation can be used in class. Teachers can have students play the simulation individually or in small groups that would encourage discussion, or they can play the simulation with the class asking students to provide answers to the questions asked during the simulation. Discussions can be used to enhance students' critical thinking and analytical skills. The simulation can also be used as a homework assignment.

Follow-up Activities

Other activities:

- No experiment was done to test the hypothesis that sunlight affects a blind person's navigation. Students can be asked to design an experiment to test this hypothesis.
- Students can be asked to explore introspection. Why might this be unreliable?
- Based on what they have learned, students can be asked to generate and test a different hypothesis and design a definitive experiment.
- What about gender?

References

The "INCA" mnemonic comes from McIntyre, L. (2005). "Need to Know", p. 56.

Blindman Bluff experiment based on real experiment performed by:

Supa, M., Cotzin, M., & Dallenbach, K. M. (1944). Facial vision: The perception of obstacles by the blind. *The American Journal of Psychology*, *57*, 133-183. doi: 10.2307/1416946

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