Title of Resource	Activity: Gaming your way to an understanding of factorial designs. Play in research methods!
Author(s)	Jessica A. Stansbury and Geoffrey D. Munro
Institution	Towson University
Brief Description:	This activity is designed to teach factorial designs in research method courses. Students design and conduct mini-studies using video games. Acting as researchers in a fun and novel way enhances an understanding of the research process.
Keywords:	Research Methods, Experimental Designs, Factorials
Author Contact Information:	Jstansbury@towson.edu Website: http://www.jessicaastansbury.weebly.com gmunro@towson.edu Website: https://www.towson.edu/cla/departments/psychology/facultystaff/gmunro.html
Additional Information:	Stansbury, J. A., & Munro, G. D. (2013). Gaming in the classroom: An innovative way to teach factorial designs. *Teaching of Psychology, 40*(2), 148-152.

Gaming your way to an understanding of factorial designs. Play in research methods!

Purpose:
To teach factorial design to research methods in psychology students. This activity should take place after students learn about factorial designs.

Materials Needed:
A Nintendo Wii Console and Games. If this is not possible, you could supplement the video game with games on a cell phone and project the cellphone screen onto the classroom projector.

Activity Time: 1.5 to 2 hours total between preparation and play. This can be distributed between two class periods.

Activity: In order to best illustrate the distribution of time between two class periods, the activity will be described within two classes.

Class 1: Students are presented with the following challenge: You are to pretend that you are gaming researchers and your goal is to figure out what variables affect game play performance. You have the following games to choose from (then provide games and allow them to choose). After you choose a game of interest that everyone is willing to play, you must create a mixed 2x2 factorial design that begins to investigate two variables that could potentially affect performance. We usually give the class a few examples such as does lighting effect performance or does being watched effect performance? Then, we propose the following list of goals to keep the class on task and let them begin a brainstorming session. This also allows the instructor to see what concepts they still may struggle with and the instructor is only to facilitate the brainstorming session, not lead it. The students will most likely struggle in the beginning, but that is part of the process of learning to apply concepts. List of Goals given to the students to complete:
1. Choose your game
2. Come up with a research question
3. Create a mixed 2x2 factorial design
4. Identify your independent variables and levels. Identify your dependent variable and operationally define it.
5. Come up with research hypotheses for main effects and interactions
6. Discuss how you will control for potential confounds and randomly assign students to conditions
7. Identify two researchers among you who will guide the actual experiment
8. Identify a person to record data

This brainstorm session usually can take at least 45 minutes. This brainstorming process applies all the research content they have been learning into one exercise, which can be overwhelming as they begin to sort through all the steps in a real task.

Class 2: This class period the class carries out the experiment they designed. The students become participants, which includes the researchers and data collectors taking a turn as well. The researchers guide the other students (but you will end up finding all pitch in), and the data recorder(s) record and keep track of participants scores and ID#s. Most likely they will struggle with the within and between aspect of recording data into SPSS. In addition, to understanding counterbalancing as they run participants. The students play the game until all data are collected. Once data have been collected, depending how the course is designed, you can guide them through analysis and data interpretation, or they can analyze and interpret the data first. In both instances, the students can write up the analysis. To add a writing component to the activity, we have students write an abstract for the research activity. This is usually a fun, engaging and playful class.

Helpful Hints:

- Play with your students. When you play video games (or any game) with your students it shows you are also human and not just a lifeless instructor. Fun is good! It enhances engagement, which has been shown to enhance learning.
- You do not have to be a video game expert to use this activity. Your students (most) know how to play video games and can teach you should you have a technical problem.
- If you do not have access to a Wii console, you can use any game (digital or non-digital) as long as it involve active movement in the class.
- Let them choose the game. Provide choices that are multiplayer so data collection goes quicker. Good multiplayer games are *Dance, Dance, Revolution, Whack-a-Mole, Mario Kart, Just Dance* to name a few.
- We usually make an announcement that if someone is extremely uncomfortable playing, then they can approach us before the activity and we can work out a different role for them (data recorder, researcher). We have found though, if you are involved, they will be more involved.