Bringing Economic Experiments to the Classroom, Computerized Experiments

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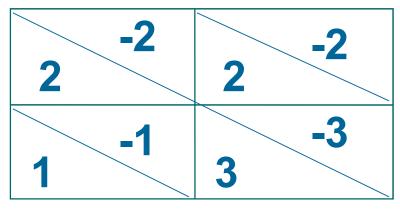

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Overview

- Why experiments? Types of experiments. Challenges
- Klickers
- Homework Experiments
- Lab sessions
- Software: FEELE (KIOSK), veconlab, Econport, aplia

Battle of Bismarck Sea

	Imamura	
	sail North	sail South
Kenney search North	2 \ -2	2 \ -2
search South	1 \ -1	3 \ -3

Imamura wants to run convoy from Rabaul to Lae

Battle of Bismarck Sea

Imamura

	sail North	**sail South**
search North	2 / -2	2 / -2
search South	1 / -1	3 / -3

Kenney

Types of Experiments

- HandRun.
    - Quick raise hands (symmetric prisoners' dilemma).
    - Sampling paper collection (2*2 games, currency attack).
    - More sophisticated (Pit market, Sloman's Trade Game).
- Computerized.
    - Web based: PhP or Java (Bertrand, Double Auction).
    - Locally based/installed (z-tree).
- Homework.
    - Simple Q&A with feedback in class: (Rubinstein's site).
    - More advanced Individual Choice experiments with some immediate feedback (Monty Hall).
    - Play against a fictitious/robot/prior human player (Holt: Traveler's dilemma).
    - Students play each other at designated time.
- Research.
    - Single lecture (Chamberlain)
    - Complete semester (Selten/Mitzkewitz/Uhlich, Iowa Pol. Stock Market)
    - Requirement to be a subject. (Psychology)

Hand run

- Advantages:

  Suitable for large lectures.

  Some take just minutes.

  Engaging for students .

- Disadvantages:

  May require careful preparation, including room structure.

  May require assistants/volunteers.

  May require practice: Student experience may vary.

  Giving feedback may take time and only available the next day.

  One can only run for few rounds.

Computerized

- Advantages:

  A public good provided!

  Readily available, great for beginners, uniform experience.

  Immediate results, data ready for evaluation

- Disadvantages:

  Experiments standardized, limited flexibility

  Room requirements, split large lectures, use tutorials

  May need trained teaching assistant

  Equipment (PhP vs Java, palm tops)

  Needs one hour of teaching time

Homework

- Advantages:
    - Saves lecture time
    - Many periods possible (no time limit)
    - Easy access to homework data
- Disadvantages:
    - Typically not interactive
    - Participation rate can be low unless incentives are in place.

Research

- **Advantages:**

  RESEARCH

  Low cost (saves recruitment costs).

- **Disadvantages:**

  Organization needs to be more careful than standard teaching experiments.

  Limited communication between and to students.

Challenges for Classroom Experiments

- Students

- Lecturers

- Module (Course) Structure

Challenges

Students:

- They have limited time too (both inside and outside the classroom).

- Maintain attention (negative externality of both data and speed).

- Assess performance/motivation (earnings is noisy, attendance has problems).

- How can we write test (or homework) questions that require student to attend experiment?

- Some may (correctly/incorrectly) resent being used for research experiments at a sacrifice of their studies.

Challenges

Lecturers:

- Need to use others' ideas and experiments.

- Need to want to try something new.

- Need to sacrifice course time.

- Need to value experiments.

Challenges

Classes:

- Many courses don't have experiments that fit directly into them (macro / finance).

- Same experiments for different modules (avoid repeat).

- Some experiments may require students to be in two courses. (Run an experiment in micro economics and analyze it for the statistics course.)

Rewards

Students

- Enjoyable, Interactive
- Better grades (Emerson & Taylor, 2004)
- Concrete learning experience (rather than abstract/mathematical formulas).
- Some students do well in experiments but poor on tests (such as those with poor math skills).

Lecturers

- Richer teaching style -> evaluations
- Promote experimental economics (preach what we practice).

How to use experiments

Size can determine how:

- Big lectures (>100): use short hand-run, homeworks
- Make use of computerized experiments in tutorials Run several sessions parallel.
- Small Lectures (<40). Possible to use computerized experiments in place of lectures

Experiments seem to work well for all levels of students (even high school)

Hints:

- (from Holt) Two students per computer
- Give instructions beforehand (foreign or dyslexic students)
- Let students participate in preparation, execution and evaluation. (Especially in an experimental class.)
- Relate some exam questions to experiments

Using ExeterGames (FEELE)

- On purpose same style as Veconlab.

- Goal is to complement selection.

- 11 (soon to be expanded) computerized experiments

- Some are beta-versions

- Types are a mix of individual choice (homework) and interactive games.

- Link from www.ex.ac.uk/feele

Links

- Most links are found immediately by google
- FEELE: link to Wikiversity sites on classroom experiments, access to KIOSK (prevents browsing for other sites etc. during experiment), our own experiments (I recommend Bertrand and Bank Runs, you can play them against computer first).
- Veconlab: (Charlie Holt, best selection, I recommend in "Macro / Finance" the Limit Order (bubble) Experiment, under "Markets" there is one on supply chains.
- http://gametheory.tau.ac.il/ Rubinstein's site with game theory questions
- Econport: best market experiments, java must be installed on all machines and communicate well with firewalls