Painless Clicker Adoption

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Objective

- Incorporate clickers into existing course CIS*2750 on trial basis
- Using eInstruction’s CPS RF clickers following experience of colleagues in two 1st-year courses

- Sounds easy, but raises many issues…
Problems to solve…

- Felt to be few participants without marks
  - But, with marks, need to deter fraud
  - Prefer to emphasize participation vs. right answers
  - But, stay within UG’s rules on participation
- Wanted to make optional
  - Some against clickers from prior experience
  - Some won’t commit to regular attendance
  - How to make beneficial for adopters, but not appear harmful to opters-out?
- Avoid administrative burden for Instructor
Terms and Conditions

- Course outline conditions
  - How clicker marks factor into final grade
  - Additional web page with details
- Policy on “clicker fraud”
  - Observed in another class, one student with fists full of clickers! (clicking was mandatory and for marks)
- Blue handout (2 sides)
Course Outline

- Start with normal components of grade: assignments + 2 midterms + final exam
  - If you opt out of clicking, that’s your mark
  - If you opt in, participation @ 5% + other components all scaled to 95%

- To avoid making opters-out feel disadvantaged, and give safety net to those who start strongly but cease clicking...
  - Calculate grade both ways and take max
  - Now, nothing to complain about from either side!
Constraints on Marking

- UG rules make it challenging to use clickers for *marked* participation

- Grading Procedures, Resolution 2 (Undergrad Calendar Section VIII):
  “Instructors must use evaluation criteria which measure quality of performance and not merely activity.”

- Arguably, giving marks without regard to correct answers violates Res. 2

- Compromise solution:
  - Give marks for all responses, but *weight correct answers more*
Calculating the Clicker Marks

- Each question was worth 2 marks:
  - 2 marks for correct; 1 mark if incorrect
  - Some "open questions" (opinion, polling, preparatory, not expected to know) were worth 2 marks for any response
- A buffer was added to absorb "issues"
  - Clicker mark multiplied by 115%
  - Accounted for absences, technical problems, lousy questions, etc.
Advantage of 15% “Buffer”

- Observed in other classes...
  - Instructor kept clipboard at front of class for students to *claim* they had technical problems (battery dead, couldn’t join session, arrived a little late, etc.)
  - Instructor created alternate means of obtaining participation marks: online quizzes, forum, etc.
  - Both add considerable burden

- Buffer method
  - Agreed by students, and got zero complaints!
Mechanics

- Made up clicker questions using vendor’s tool
  - Mostly multiple choice, some numerical answers
  - Prefixed “open question” with “#” symbol, signals any response worth full marks
- Alerted students to upcoming questions by placing image on Powerpoint slide
- Marked responses using vendor’s tool to accept any answer to open questions
  - Used option to give 1/2 credit for wrong answers
- Periodically exported to Excel and web posting so students keep track (by clicker no.)
Results

- Participation rate was 36%, 48% by end
  - Survey revealed that cost was main factor for non-clicking (contrast UG “official” clicker without per-course fee)

- Faithful clicking netted 1-2% increment in course grade
  - Could join a little late and catch up to full marks due to 15% buffer

- Total of zero complaints about marks or technical problems

- No incidents of fraud observed
Summary

- Clickers definitely improved course, am now “clicker convert”
  - Benefited everyone, not just participants
  - Student reaction overwhelmingly positive
  - Survey showed 1/3 of non-participants would participate in future
  - Additional hassle for Inst. was quite tractable

- Next time:
  - Would increase grade component to 7-10% to lure in more participants

*Handout: course outline language*