

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