



Gradescope: Improving Marking and Feedback in Economics Courses

Dimitra Petropoulou and Antonio Mele
London School of Economics

gradescope

- <https://www.gradescope.com/>
- Gradescope is an online platform for grading and giving feedback in higher education.
- Offers tools for grading handwritten assignments and submitted code, including AI assisted grading.
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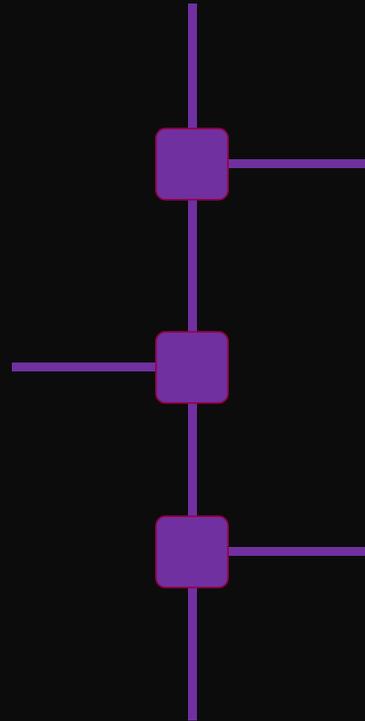
The LSE context

- Large courses with several hundred students
- Multiple markers per course
- University agenda to digitizing assessment/marking
- In quantitative disciplines student work often handwritten
- Gradescope roll-out for formative assessment in Economics courses in 2022-23, with a view to adoption for summative assessment
- Evaluation through focus groups/interviews.

Before Gradescope...

Marking (in)consistency

Differences across markers in large courses despite mark schemes



High admin burden

Marking very labour intensive

Moodle inefficient

Limited functionality, especially for marking teams

Roll-out in LSE Economics



Large vs. Small Courses

Adopted across the board



Digital Grading

Streamlined process,
enabling remote marking



Reduced Administrative Burden

Scale economies, efficient
marking by question

What do students need to do?

- Scan and upload their answers to each question/sub-question into Gradescope
- Can scan and upload and then tag pages
- Fairly intuitive
- If a page is incorrectly tagged, instructions can correct it.

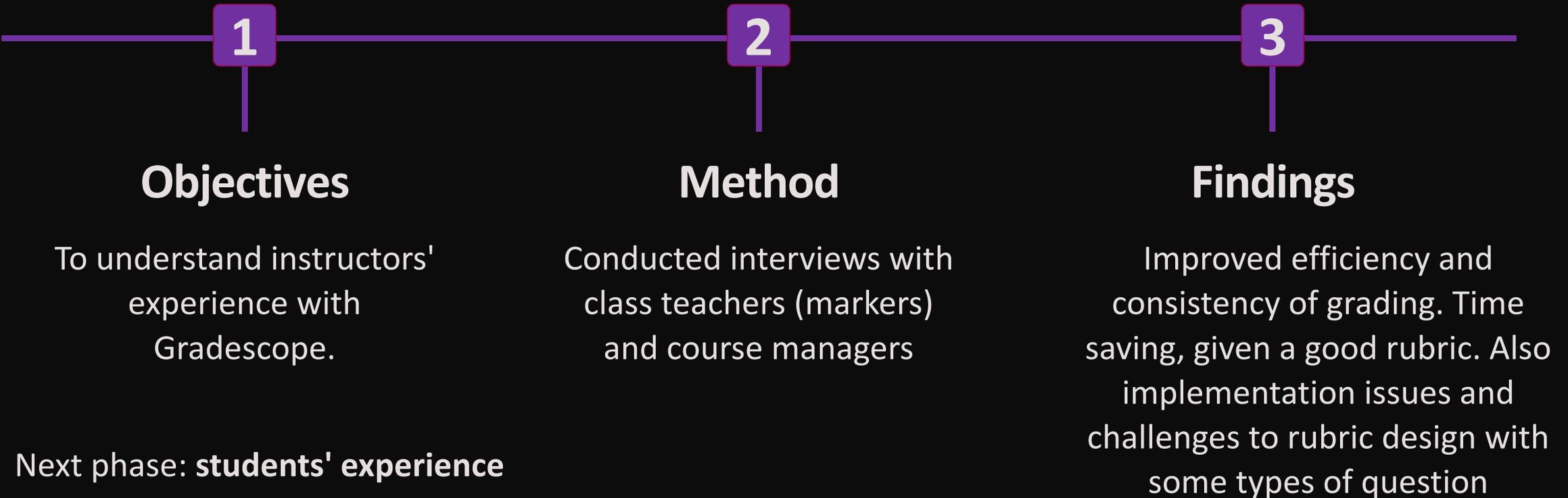
What does the instructor need to do?

- Create a submission portal through Gradescope
- Set up a rubric in Gradescope (can be after submissions come in)
 - Positive or negative marking
 - Points for different elements
 - Feedback attached to different scores
 - Optional free comments per subquestion
- The efficiency of marking hinges on the rubric design...

How does it work?

- Let's see an example

Interviews with Class Teachers and Course Managers



Key advantages – once rubric in place...

- Time saving and improved consistency
- Remote marking with multiple markers
- question by question marking
- Can re-weight elements ex-post
- Can choose what to publish to students
- Positive or negative marking
- Integrates with Moodle
- can export marks in Excel
- Can import rubric from another assessment
- Keyboard shortcuts even more time efficient but requires training
- Works well with coding (have not used yet)
- AI function (we did not use)– clusters handwritten answers and marks automatically. Good for maths, but not for diagrams or explanation.



Finding the best workflow

1 Positive marking better

Adding points for correct elements instead of deducting.

2 Optimised rubric

Tradeoff between accuracy and time efficiency

3 Training

Provide guidance and training to improve rubric design and grading consistency.

4 Personalized Comments

Review of overall marks and provide personalized feedback.

Key challenge – rubric design...

- High up front fixed cost – training/guidance needed
- Excellent for problems
- Less time saving for open-ended questions
- Key issue: anticipating possible errors or omissions

- Two models emerge:
 - “Gradescope full” - rubric as comprehensive as possible, with the expectation that almost all feedback will be from the rubric options selected, and only occasional free comments in unusual cases.

 - “Gradescope lite” – different mark options, but without linked feedback comments. Free comments added after score selected. More flexible and still allows for collecting common comments that can be assigned.

Gradescope full question

Question 3

Yihan has income m and faces prices p_1 and p_2 for consumer goods 1 and 2, respectively. Her preferences are described by a utility function $u(x_1, x_2)$.

- (a) Is it possible that Yihan's preferences violate transitivity? **[5 marks]**
- (b) If a tangency exists between Yihan's budget line and an indifference curve, can we always conclude that Yihan's utility is maximised at that bundle? **[10 marks]**
- (c) If Yihan's utility is maximised at a particular consumption bundle, must this bundle be a tangency between her budget line and an indifference curve? **[10 marks]**
- (d) Let $u(x_1, x_2) = x_1^2 + 2x_2^2$. Find Yihan's uncompensated demands $x_1(p_1, p_2, m)$ and $x_2(p_1, p_2, m)$ and explain how they depend on p_1 and p_2 . **[20 marks]**
- (e) Use your answer to (d) to sketch Yihan's uncompensated demand curve for good 1. **[10 marks]**

Gradescope lite question

(b) Jackson is a theatregoer who can choose to see a musical for £80 or a drama for £60 in his local theatre. He buys a ticket for the musical. He is later contacted to complete a survey which asks at what price he would have been indifferent between the musical at £80 and the drama. Jackson indicates he would have been indifferent at £70.

- (i) Explain why Jackson's decisions are not consistent with consumer theory. **[10 marks]**
- (ii) What could explain Jackson's behaviour? [Refer to course reading when answering this question]. **[10 marks]**

...and other technical issues/missing features

- The rubric does not lock! Markers can add and delete (which then applies to all!)
- Must add 'no answer' as a rubric option, otherwise submission 'incomplete'.
- Cannot handle question choice
- Overall comments not available
- Manual syncing of class groups
- Markers assigned to candidates not to specific questions
- No second marker – must reinput submissions and change the marking roster
- No internal messaging amongst the marking team or scope to leave notes for a second marker
- No flagging mechanism e.g. for moderation or for external examiner review
- Statistics are overall, not by question/section or by marker
- All marking must finish before releasing marks – cannot release by marker

What about assessment design itself?

- Anticipating Gradescope use might change how we design assessments
- Works better for smaller, clearly designed tasks.
- Discursive elements are best separated out

- For example: “Analyse X, illustrate in a diagram and comment” would work best as a ‘full rubric’ sub-questions and a separate ‘lite rubric’ sub-question.
- Works poorly for essays, projects, reports etc, except any marking of code



In Conclusion

Gradescope Advantages

Consistency, speed, economies of scale, and scope for *ex post* adjustment.

Implementation Key

Rubric and assessment planning, training for markers and students, optimise workflow.

Future Improvements?

Locking rubrics, clearer guidance, improved communication; better analytics; personalized comments.