Using a Collaborative Online Grading Platform to Assess Written Journal Article Critique Assignments

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BACKGROUND

- Literature evaluation is a required element of the didactic Doctor of Pharmacy curriculum per the Accreditation Council for Pharmacy Education standards and a Core Entrustable Professional Activity per the American Association of Colleges of Pharmacy.[1,2]
- Written assignments are useful for assessing students' learning and understanding, but grading essays is a time-consuming process, and providing consistent feedback can be challenging for instructors.[3]
- Gradescope®, a web-based platform, allows graders to provide timely and consistent feedback to students with the use of online rubrics and other tools.[4]

OBJECTIVE

To assess the impact of using Gradescope® on score variability of journal article critique assignments in a drug information course

METHODS

- Approximately 150 second-year pharmacy students are enrolled in a drug information and literature evaluation course at the Purdue University College of Pharmacy each fall.
- Students submit 3 journal article critique assignments throughout the semester, which include written assessment of the journal, authors, study subjects, study design, endpoints, statistical analysis, results, and impact on practice.
- Assignments are graded by teaching assistants (fourth-year pharmacy students), post-doctoral fellows, and the course coordinator. Feedback for assignments must be provided within 7 to 10 days so that students can incorporate feedback into subsequent assignments.
- Gradescope® was first implemented in the fall 2020 semester.

Before Fall 2020 → **Fall 2020** → **Fall 2021 and After**
Method: Manual Grading | Method: Gradescope | Method: Gradescope (Dividing Assignment Sections)

- This study is a retrospective review of journal article critique assignment scores.
- Deidentified raw scores from the fall semesters of 2017 and 2018 (pre-Gradescope®) and 2020 and 2021 (post-Gradescope®) were included. Assignment scores of 0 were excluded.
- Data analysis included calculation of descriptive statistics and the Coefficient of Variation (COV).
- The study was reviewed and granted exempt research status by the Purdue University Investigational Review Board

RESULTS

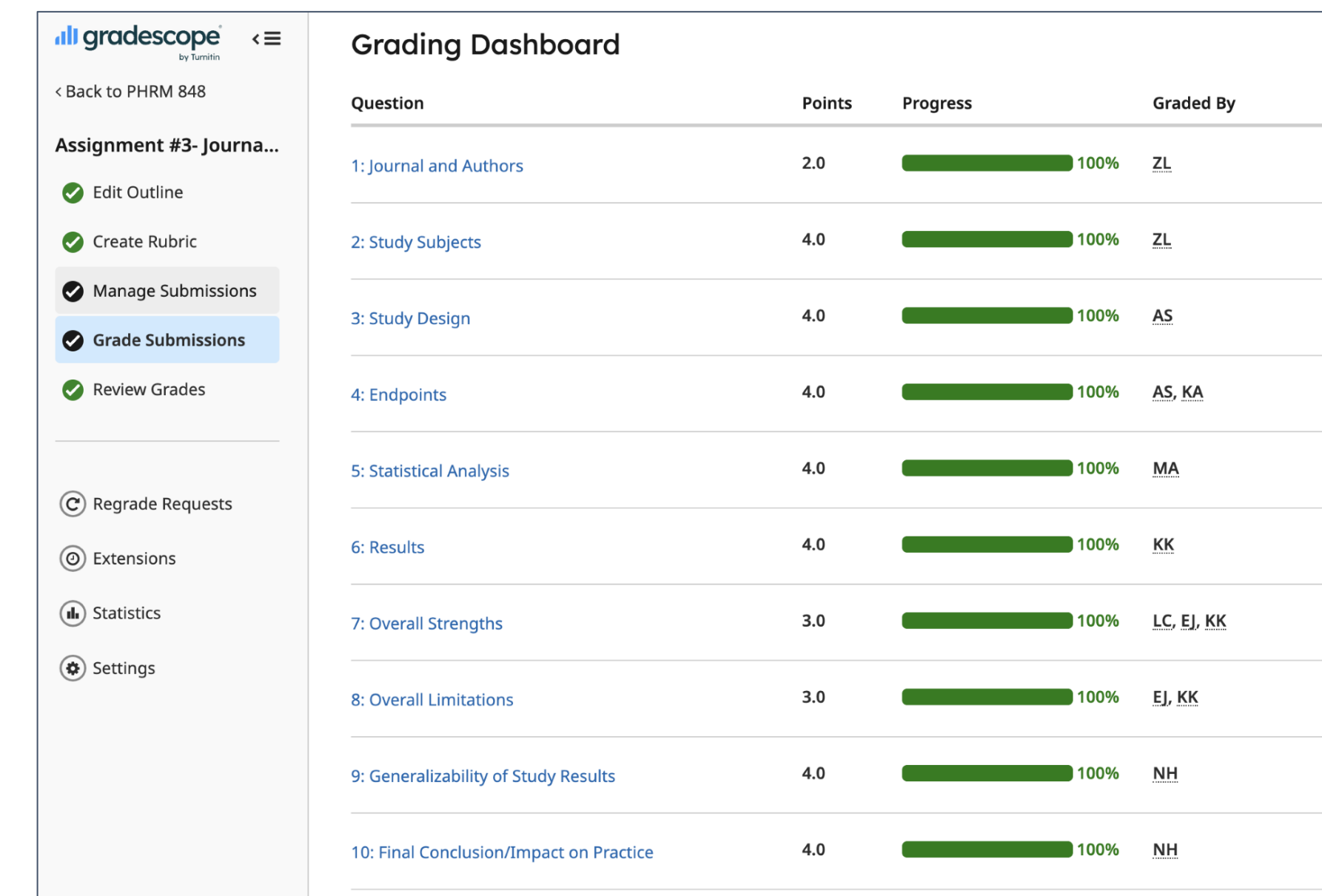**Figure 1. Gradescope® Grading Dashboard**
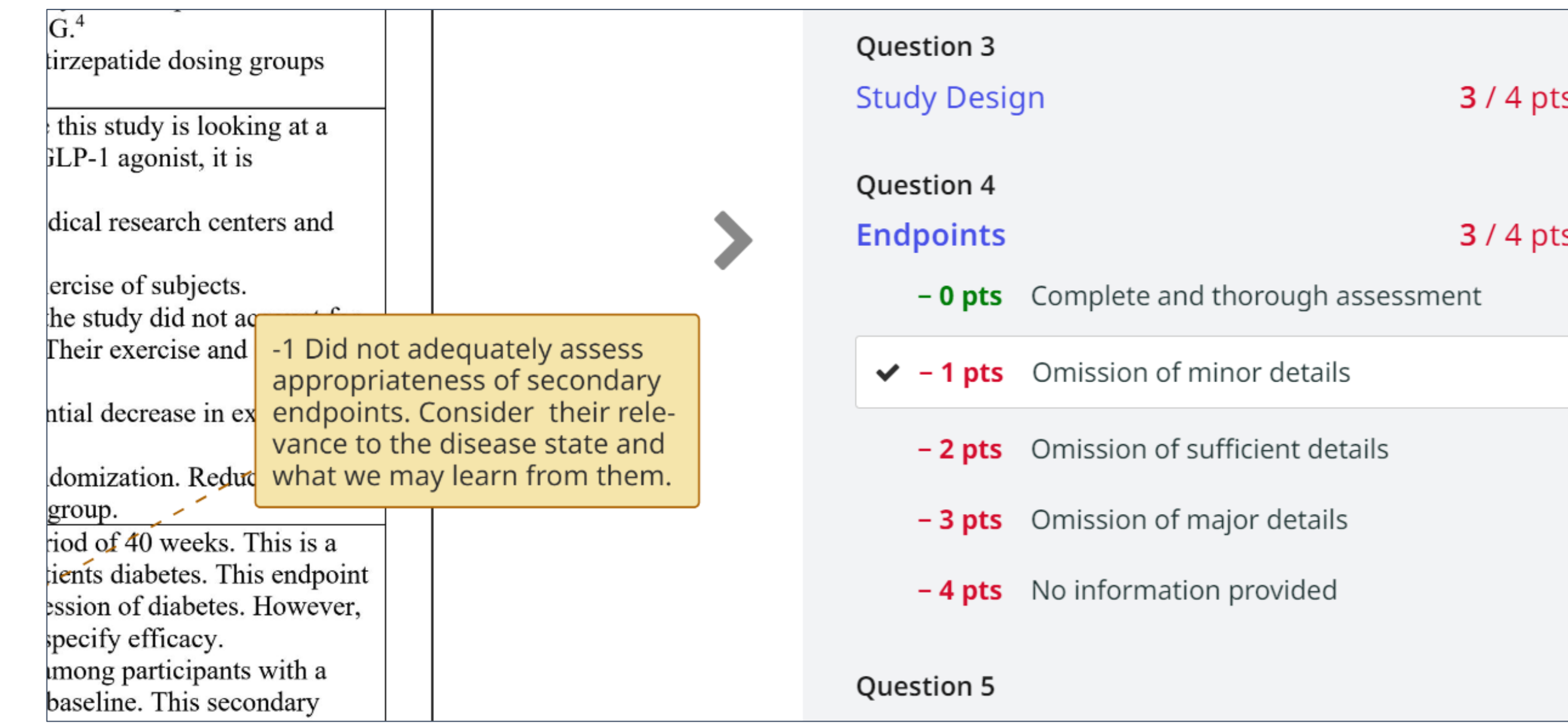

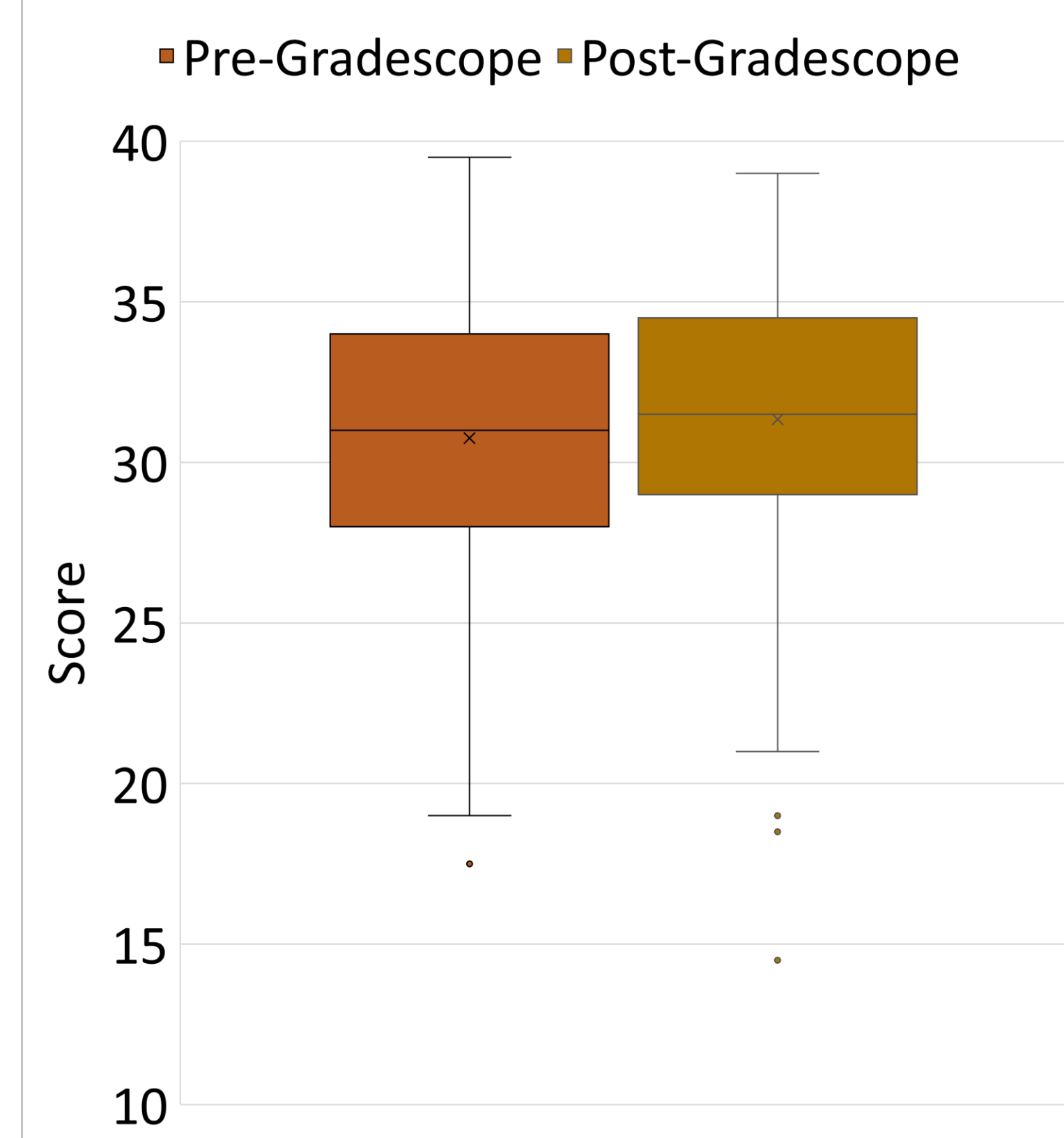**Figure 2. Gradescope® Grading and Feedback**

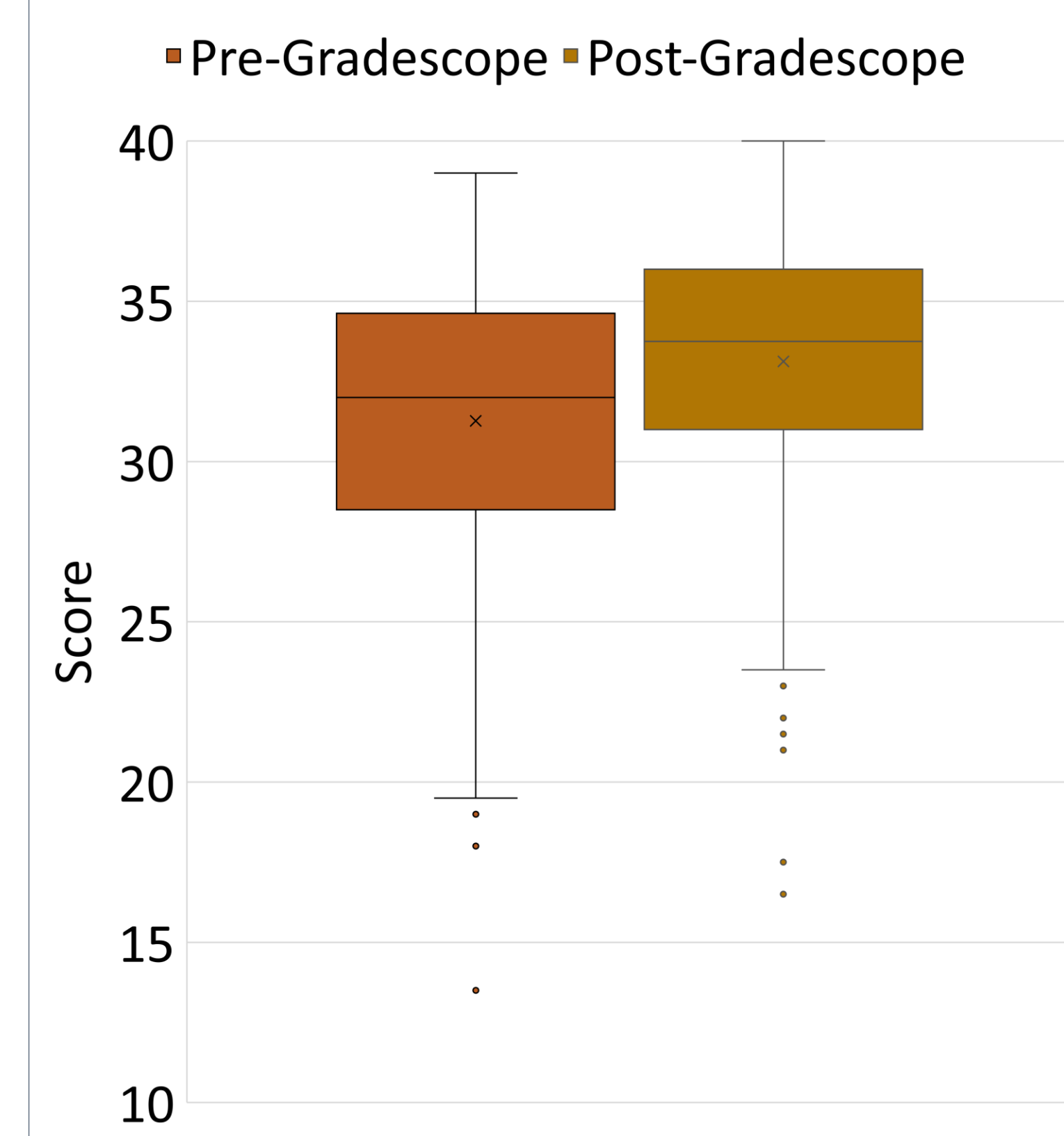**Figure 3. Assignment #1 Scores**

Figure 4. Assignment #2 Scores
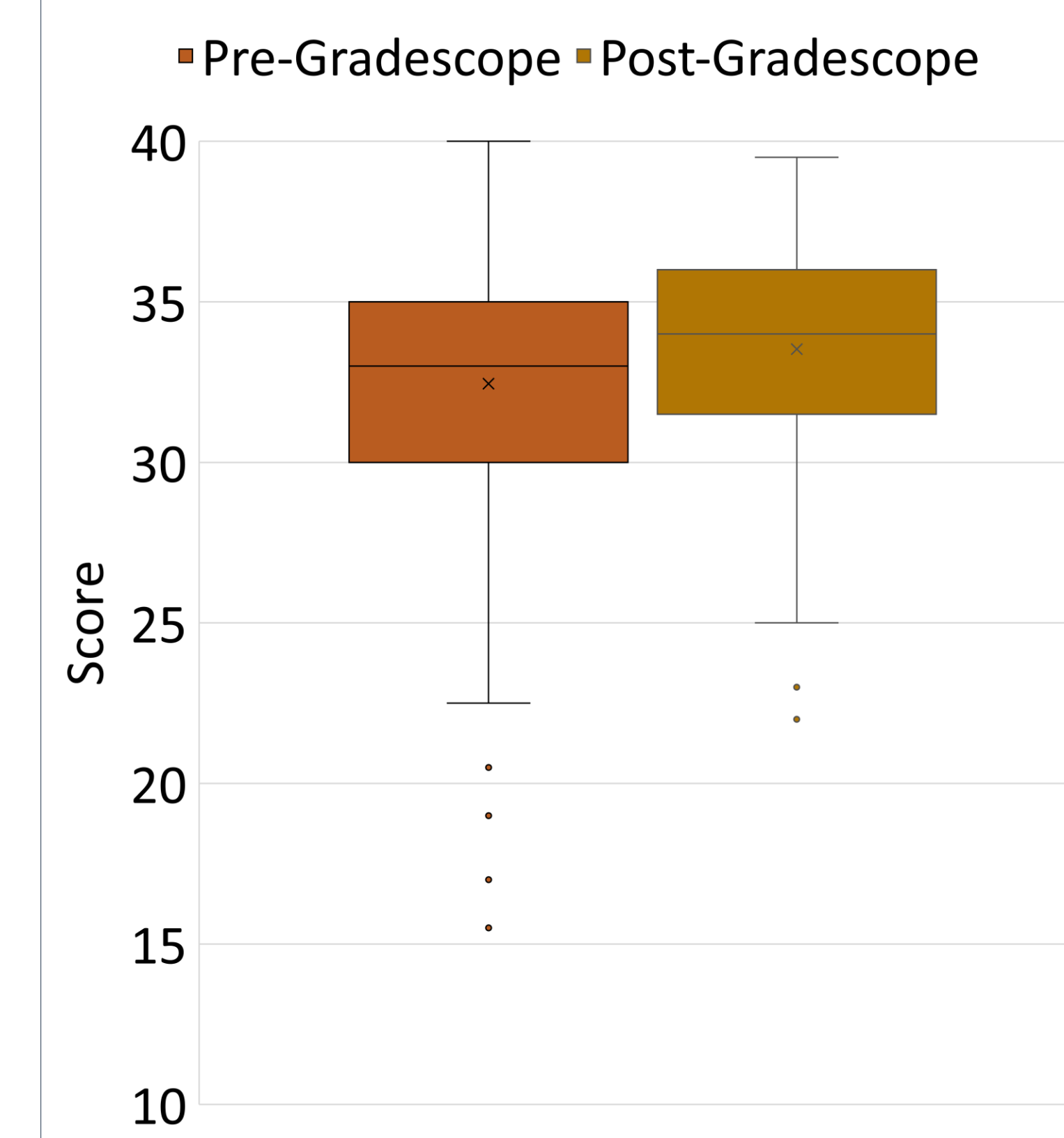

Figure 5. Assignment #3 Scores

Figure 6. Summary of Assignment Scores on Gradescope®

Table 1. Comparison of Scores

	Pre-Gradescope®	Post-Gradescope®
Assignment #1		
N (scores)	299	292
Mean±SD	30.8±4.4	31.3±3.8
COV	14.2%	12.2%
p value		0.01072
Assignment #2		
N (scores)	298	292
Mean±SD	31.3±4.4	33.1±3.8
COV	14.2%	11.5%
p value		0.00040
Assignment #3		
N (scores)	296	292
Mean±SD	32.4±4.1	33.5±3.2
COV	12.6%	9.5%
p value		<0.00001
All Assignments		
N (scores)	893	876

CONCLUSIONS

- Implementation of Gradescope® reduced the variability of journal article critique scores and may be a useful tool to improve consistency in scoring of written assignments.
- Limitations of the study include several potential confounding variables (e.g., the different journal articles, graders, and students each semester) and the inherently subjective nature of grading written assignments.
- Future directions include comparisons of the fall 2020 and fall 2021 assignment section scores and regrade requests.
- A survey of student perceptions may also provide useful information regarding the fairness, transparency, and quality of feedback provided via Gradescope®.

DISCLOSURES & ACKNOWLEDGEMENTS

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REFERENCES

1. PharmD Program Accreditation. Accreditation Council for Pharmacy Education. Accessed May 31, 2023. https://www.acpe-accredit.org/pharmd-program-accreditation/
2. Entrustable Professional Acitivites (EPAs). American Association of Colleges of Pharmacy. Accessed May 31, 2023. https://www.aacp.org/resource/entrustable-professional-activities-epas
3. Valenti S, Neri F, Cucchiarelli A. An overview of current research on automated essay grading. *Journal of Information Technology Education: Research*. 2003;2:319-330. doi:10.28945/331
4. Gradescope® by Turnitin. Gradescope. Accessed May 12, 2023. https://www.gradescope.com/