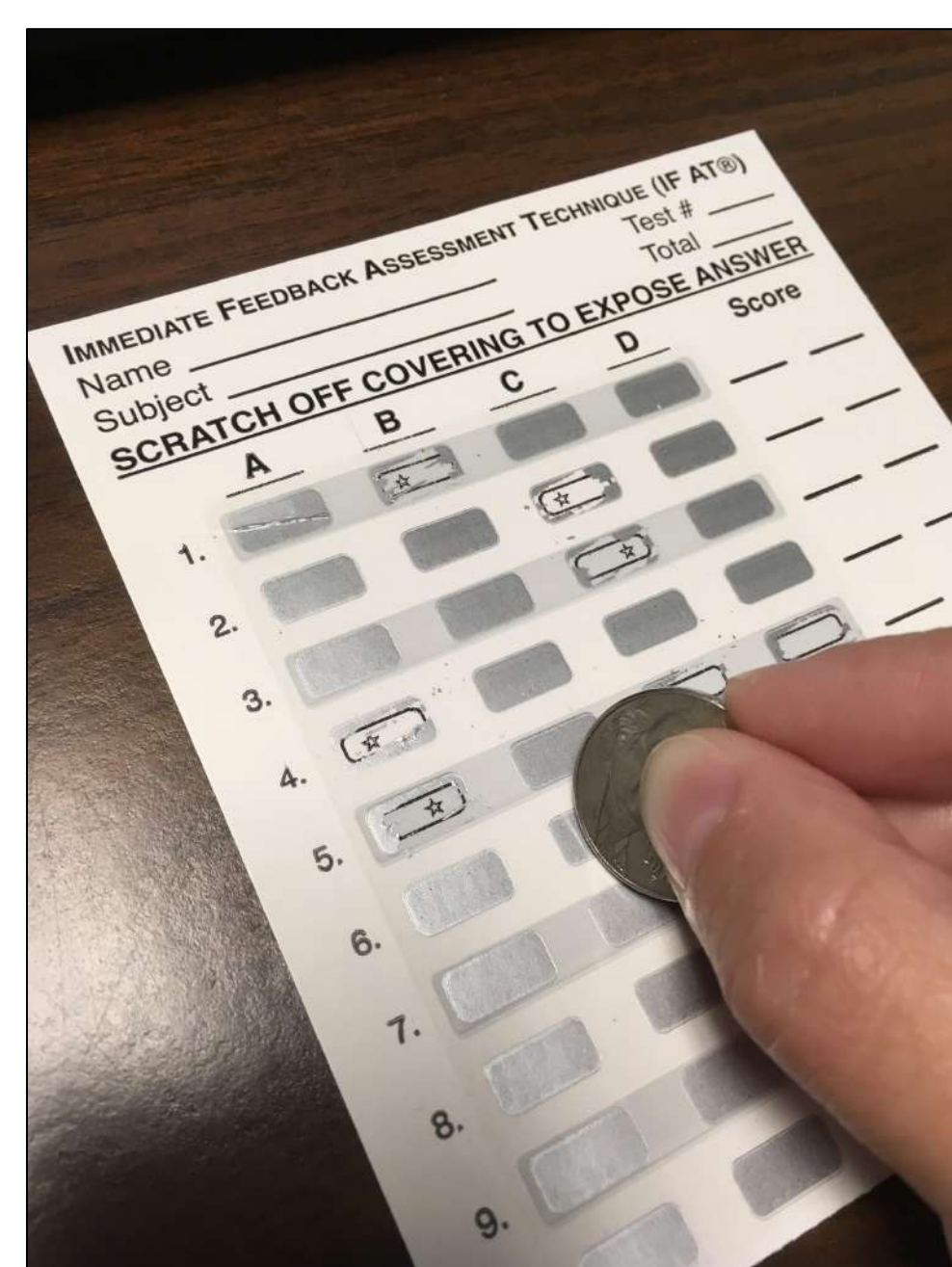




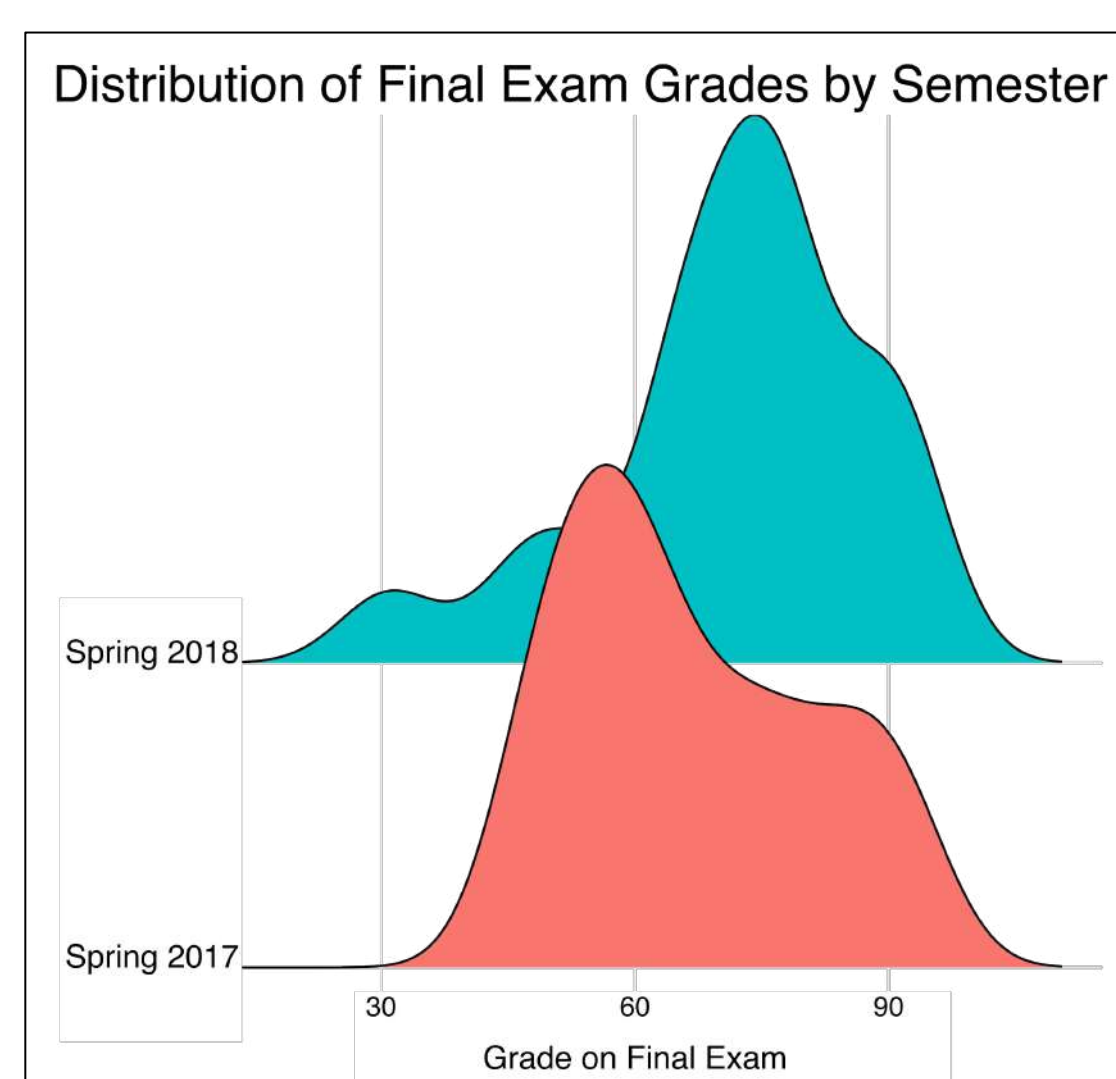
## What is the Immediate Feedback Assessment Technique?

- The Immediate Feedback Assessment Technique (IF-AT) uses scratch-off cards to answer multiple choice questions.
- Students get instant feedback.
- How does IF-AT work?
  - Students answer multiple choice questions by scratching; the correct answer is marked by a star.
  - If the student selects incorrectly, the square will be empty.
  - Then they can try again and scratch another rectangle.
  - Students never leave a question without knowing the correct answer.



## Does IF-AT Work?

- Previous studies:
  - Cotner *et al.* show that students found this method helpful to reveal misconceptions, perform better on exams, and increase interest in a large biology lecture.
  - Schneider *et al.* found IF-AT assessment increased student morale and reflection in a chemistry class.
- Our experience:
  - We implemented IF-AT assessments into General Biology II (BIO 112) in Spring 2018.
    - Scratch-off cards were used on all lab quizzes and all unit lecture exams.
  - Students were given the same cumulative final exam as Spring 2017 students, which did not use IF-AT.
  - Though not statistically different, we did find that the average final exam grade in 2018 (71.39%) was higher than in 2017 (66.58%).

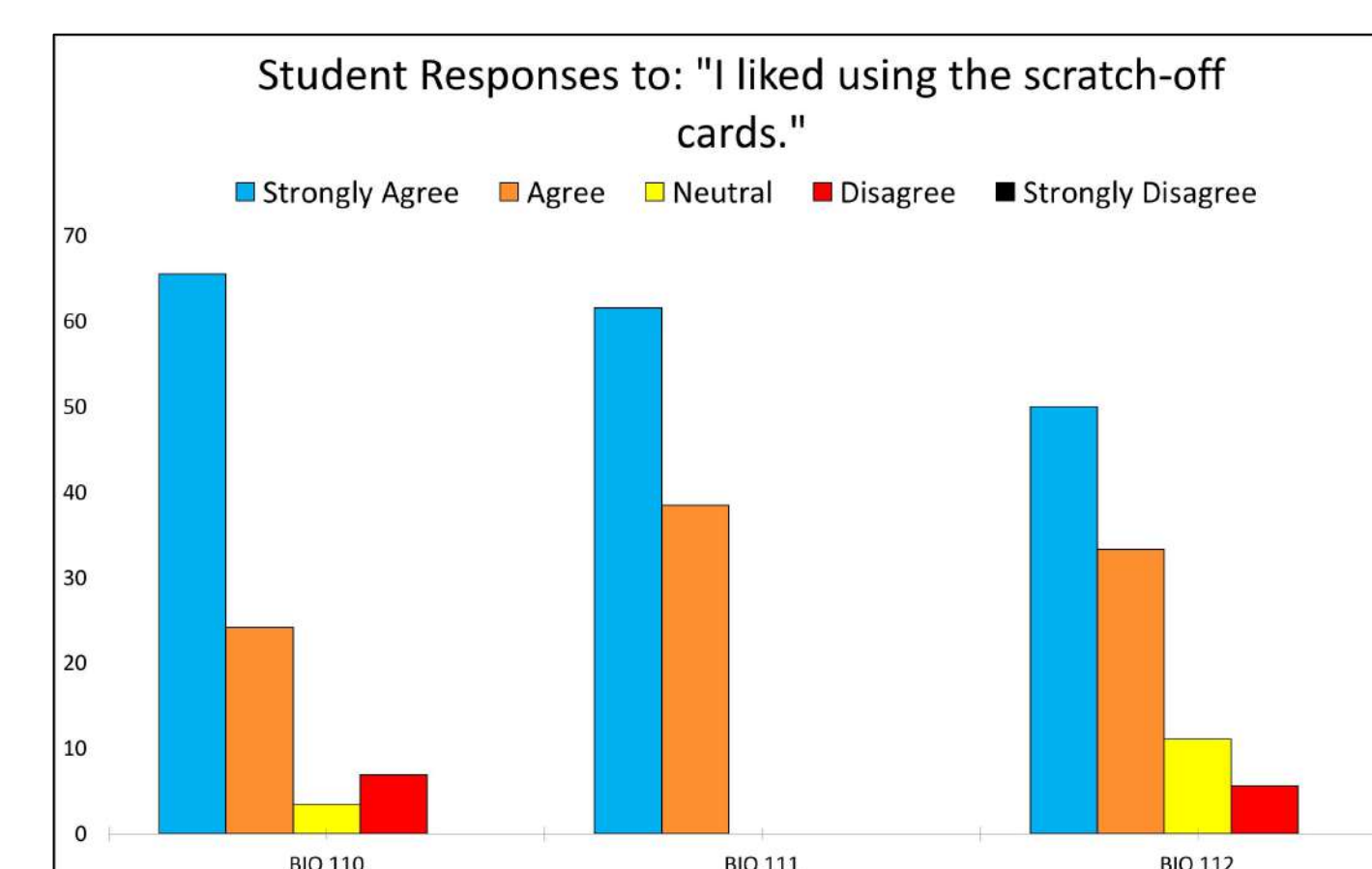


## What do students think?

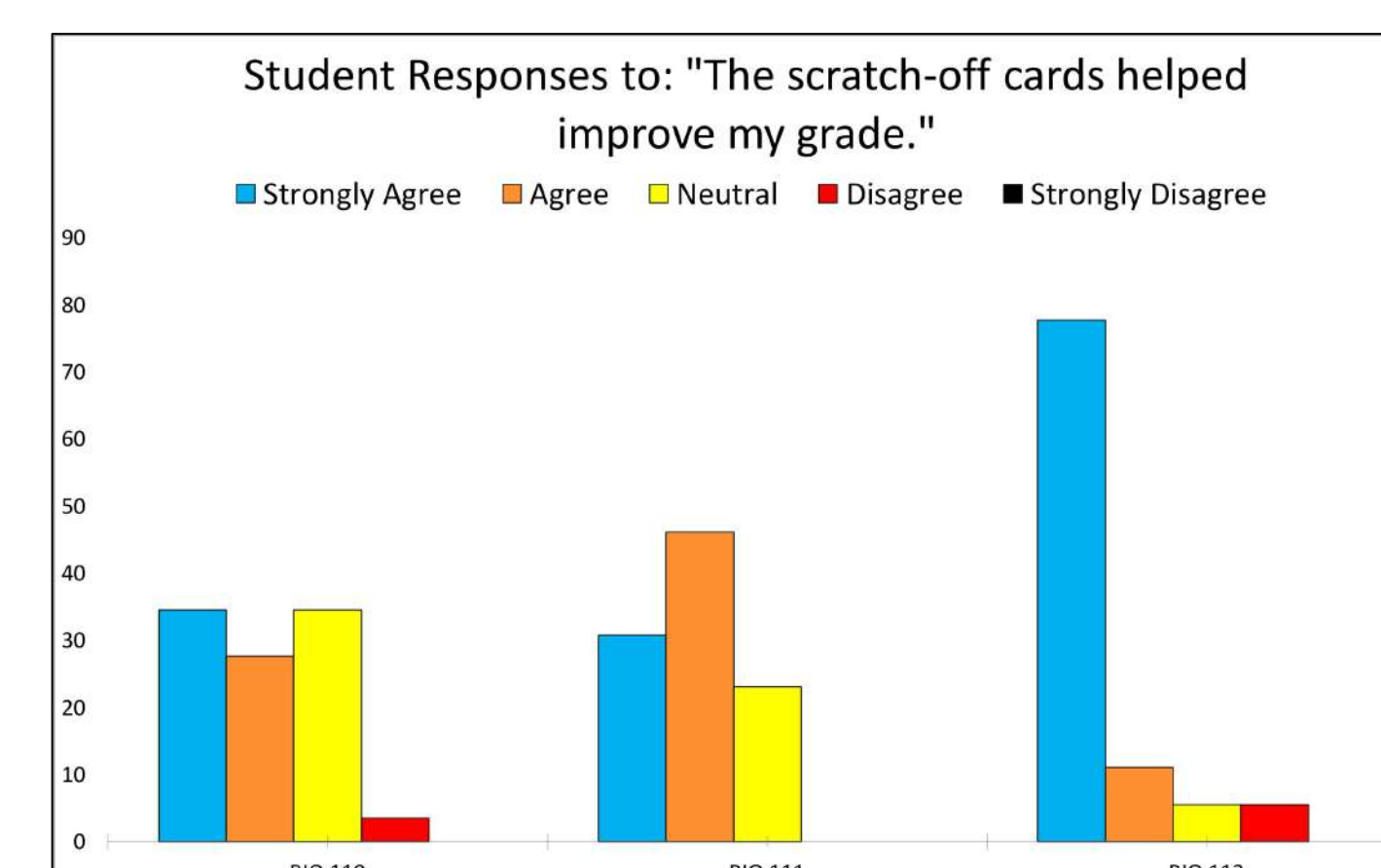
- WCC students in Principles of Biology for Nonmajors (BIO 110), General Biology I (BIO 111), and General Biology II (BIO 112) were given the following anonymous survey.

- I liked using the scratch off cards.  
Strongly agree   Agree   Neutral   Disagree   Strongly disagree
- The scratch off cards helped improve my grade.  
Strongly agree   Agree   Neutral   Disagree   Strongly disagree
- The scratch off cards helped improve my understanding of the material.  
Strongly agree   Agree   Neutral   Disagree   Strongly disagree
- What overall grade you expect to receive in this class? A   B   C   D   F
- Describe anything you liked about using the scratch off cards.
- Describe anything you did not like about using the scratch off cards.
- Describe any suggestions you have on how to improve the use of scratch off cards in the class.
- Write any additional comments below.

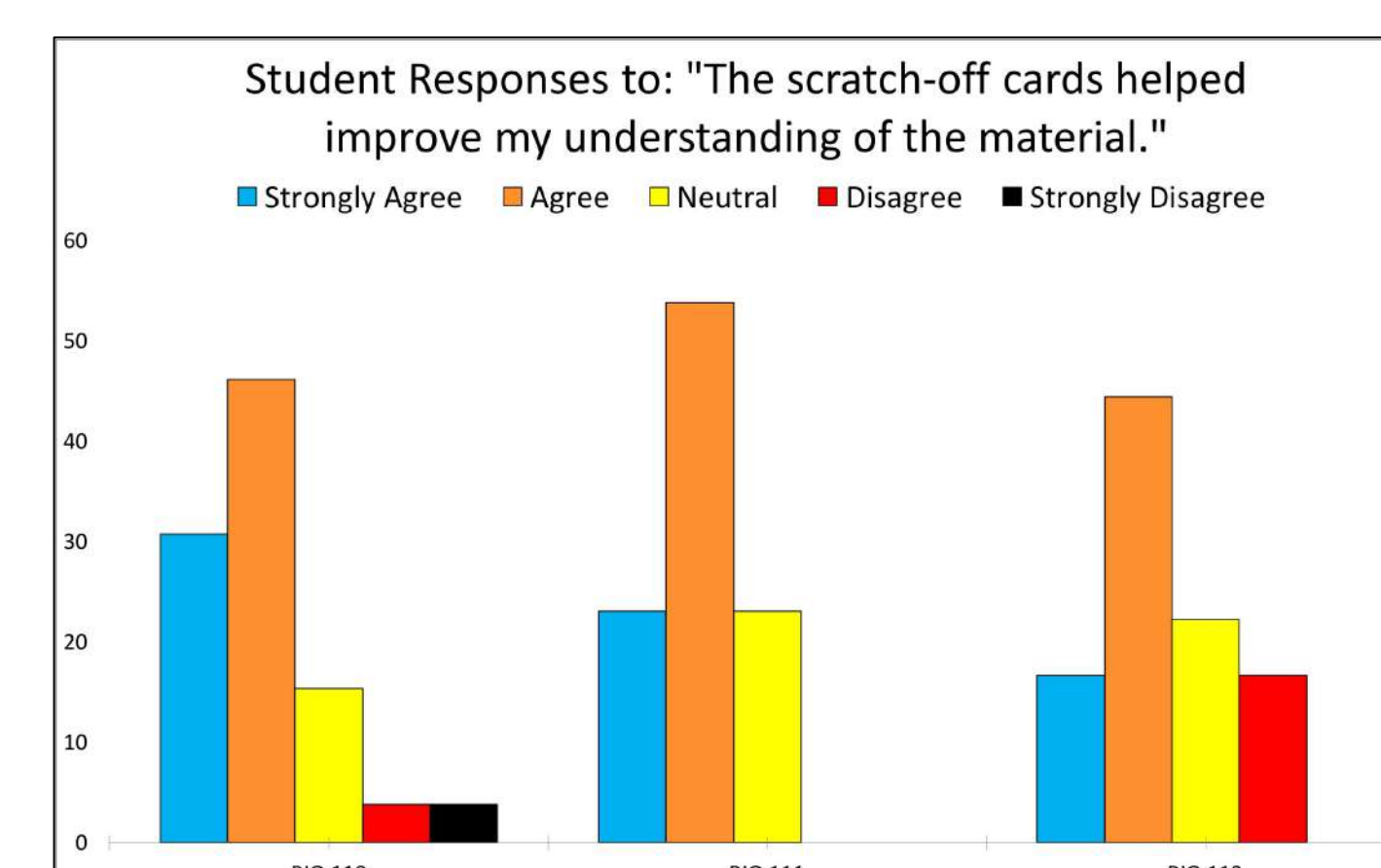
- Over 80% of students in all three biology courses enjoyed using the IF-AT cards on in-class quizzes or exams.



- More than 60% of the students in each course agreed that the cards helped to improve their grades.



- At least 60% of students from each course believed that using the IF-AT helped increase their understanding of biology concepts.



- Student comments:
  - "It was fun! I liked being able to know my grade immediately. It helped with material I was unsure of and to clarify my understanding of the material."
  - "Give more of these. It built my confidence in the material covered."
  - "The scratch off cards were extremely helpful. They should be used for centuries to come."

## Advantages of IF-AT

- Reduces grading time for instructors
- Allows students to earn partial credit
- Allows students to immediately know which questions they got correct, so the assessment becomes a learning experience
- Allows students to learn from their mistakes in real time
- Eliminates the need for large curve because it inflates grades
- Eases student test anxiety
- Increases student motivation
- Is fun



## Disadvantages of IF-AT

- May require additional prep time to ensure question and cards answers match
- Does not allow students to change their answers
- Has the potential to allow students to discuss answers with other classes
- May make it easier to cheat during an assessment because the answers may be visible to nearby students
- Can be messy

## Conclusions

- We have seen an increase in student engagement and understanding since starting IF-AT scratch off cards.
- We will continue to use them and monitor student learning.



## References

- Cotner, Sehoya & Baepler, Paul & Kellerman, Anne. (2008). Scratch This! The IF-AT as a Technique for Stimulating Group Discussion and Exposing Misconceptions. *Journal of College Science Teaching*.
- Schneider, Jamie & M Ruder, Suzanne & F. Bauer, Christopher. (2018). Student Perceptions of Immediate Feedback Testing in Student Centered Chemistry Classes. *Chemistry Education Research and Practice*. 19. 10.1039/C7RP00183E.