

INTRODUCTION AND BACKGROUND

In the classroom, much of what is shared with students is only numeric grades. With such emphasis on grades as the only information communicated to students, it has become a crisis that students are not actually growing the skills needed to be a part of a rigorous academic program. Students often lack the ability to take criticism and make changes unless it will improve their grade. Although grades should be noted as an important factor, it is far from being the only piece of information students should be receiving if the goal is to improve the student as a whole (Tanner, 2014). What a student needs to be successful is good feedback. For feedback to be successful in a classroom, it should be done to bridge the gap in understanding. It should not be used as simple pats on the back. When a teacher models giving direct feedback to a student with the feedback being something that can help the student get better, the feedback and learning become cohesive. Students stop looking for praise as validation and actually work harder on a daily basis (Hatti & Timperley, 2007). This background was key in deciding the direction for my study.

This study was conducted at Wando High School in Mount Pleasant, SC. Wando was the largest high school in South Carolina for the 2017-2018 school year and my principles of biomedical science course was made up of high-achieving freshman and sophomore students. Students were able to receive college credit for this course if their final average met college standards. Class size was no larger than 24 students per class.

Even with such high-achieving students, I noticed my students only performed to the minimum requirements asked of them and thought of any feedback that was not positive to be criticism. Besides being a teacher, I also worked as a performing arts director for the past 14 years. Based on how feedback was taken outside of the classroom compared to inside of the classroom, I developed a study to see if I could change student thinking toward feedback in the science classroom and increase their mastery in the subject matter at the same time.

RESEARCH QUESTIONS

Data Source	Questions		
	Focus Question: What were the effects of feedback on student achievement and comprehension?	Secondary Question: Did teacher or peer feedback help students the most?	Secondary Question: Did students' perception of feedback change during the course of this study?
Pre and Post Course Test	X		
Pre and Post Survey on Feedback	X	X	X
Interview Questions		X	X

TREATMENT

- During the principles of biomedical science course, two units were considered treatment units and two units were considered non treatment units. During the treatment units, students received teacher feedback on daily bell work and exit tickets in written and oral form. Students were pulled into small groups to clear up misconceptions that arose. Students also received peer feedback on papers, projects and long term assignments. This feedback was given along with numerical grades on those same assignments. During treatment units, students had the opportunity to redo assignments if it reflected the feedback given. During non treatment units, students only received numerical grades. They could seek out peer or teacher feedback, but it was not a mandated part of class.
- Units of Study:
 - Crime Scene (treatment)
 - Diabetes (non treatment)
 - Sickle Cell (treatment)
 - The Heart (non treatment)

DATA & ANALYSIS

The results of the Biomed Pre and Post Test had a normalized gain of .95 for Unit 1 and .84 for Unit 3. Unit 1 and Unit 3 were both treatment units (Figure 1). For non-treatment units, there was a normalized gain of .54 for Unit 2 and .65 for Unit 4. Normalized gains were much greater on treatment units compared to non-treatment units.

Students obtained an overall higher scores in treatment units compared to non-treatment units with treatment units scoring a 96% and an 86% while non-treatment units scored a 61% and a 67%.

When asked what type of feedback students preferred, 72% of students preferred teacher feedback over student feedback. That was then broken down into 58% of students preferred written teacher feedback where 14% of students preferred teacher oral feedback (Figure 2).

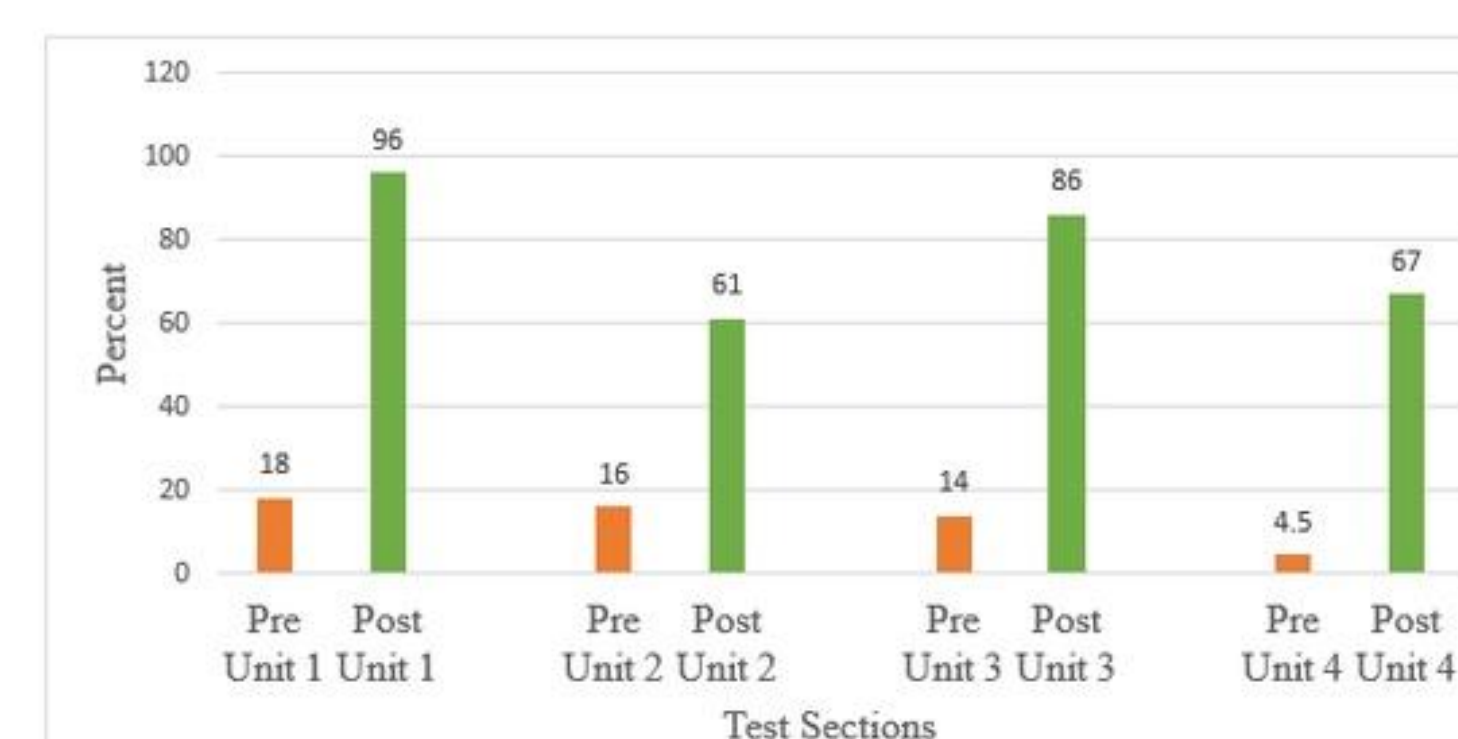


Figure 1. Biomed Pre and Post Test Results showing student academic growth by units, (N=52).

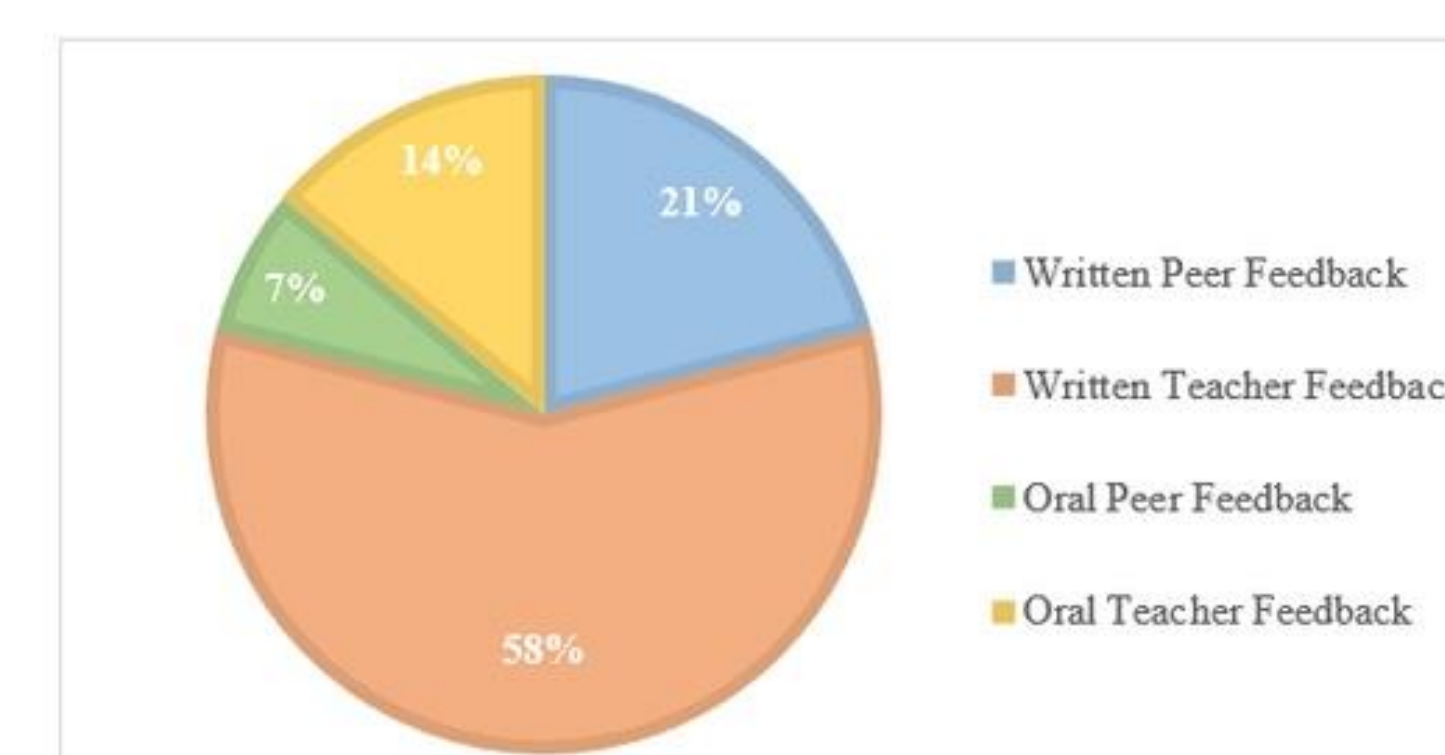


Figure 2. The type of feedback students preferred by percent, (N=14).

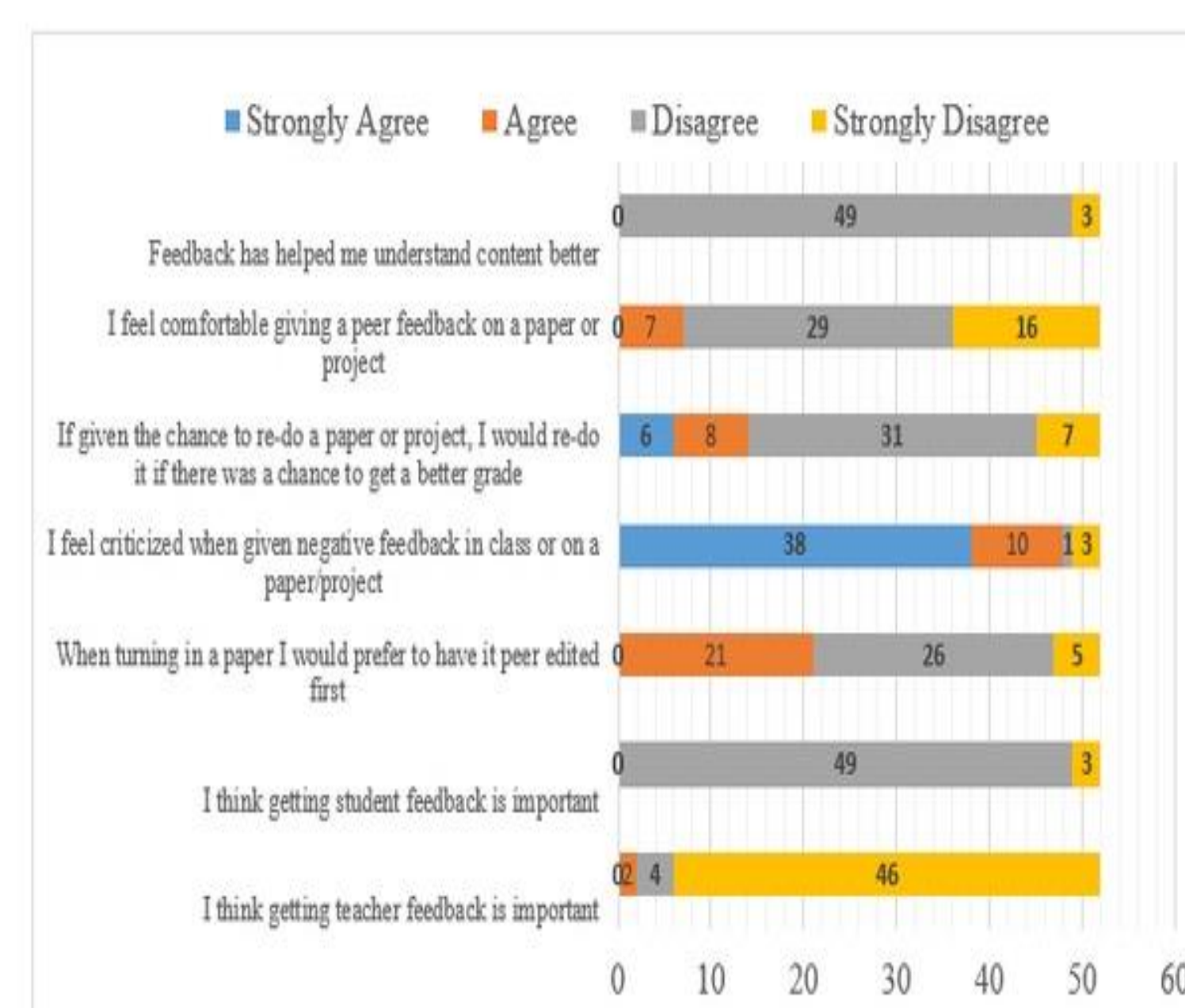


Figure 3. Pre-Treatment Survey on the importance of feedback distributed by number of students that selected each answer, (N=52).

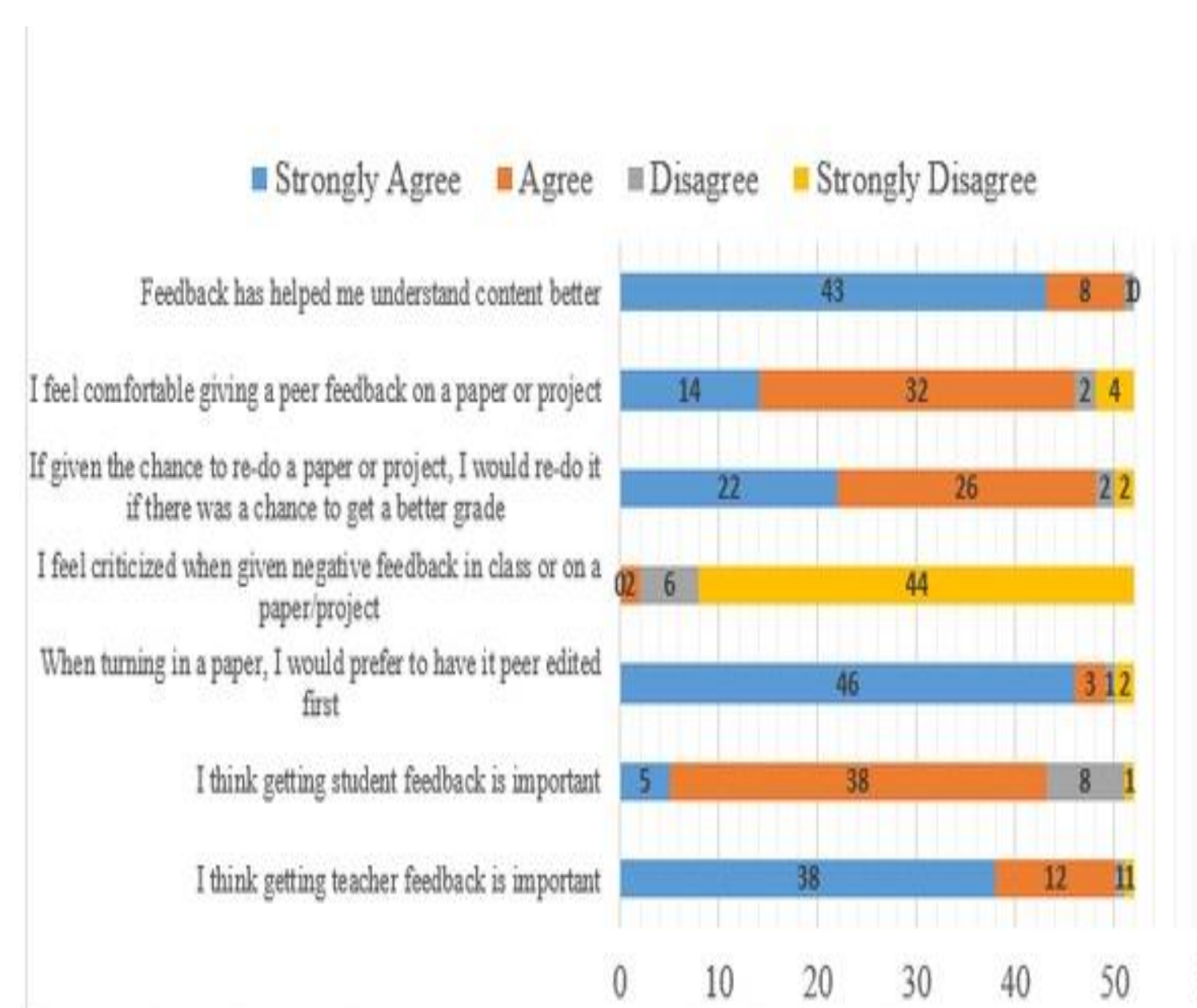


Figure 4. Post-Treatment Survey on the importance of feedback distributed by number of students that selected each answer, (N=52).

CONCLUSION AND VALUE

- This study was very eye opening for me as a teacher. I was able to get a clear idea of how my students felt about feedback and how it changed over the course of treatment. I always thought students understood that feedback was meant to help them, but as I began my study with a class survey, I was quickly shown how mistaken I was. I could not believe how many students thought feedback was either not important or was criticism. Most students preferred someone telling them "good job" or nothing at all before treatment and after treatment more students craved constructive and precise feedback.
- This study has definitely changed how I plan to use feedback in my classroom in the future. Although it took some adjusting, students did a great job with peer editing and found the process of being the editor and get someone's feedback to help shape their own papers and projects useful. That is a tool I plan to keep in place in the future. Students also expressed how much teacher feedback, instead of just numeric grades, have helped them. I plan to incorporate direct and personal feedback on all projects student turn in as well as pulling them aside for personal or small group help to advance their skills and content knowledge.

STUDENT QUOTES

- "I used to feel criticized when getting corrections from the teacher, but the way we do them in this class I feel like the teacher is trying to help us get an A. I don't always take all the suggestions and sometimes get a B or C if I'm being too lazy to make the corrections."
- "I never thought peer editing was important, but during peer edits I often realized my own paper was missing something I saw in a classmate's paper and their feedback usually helped me make my paper even better."

REFERENCES

- Lipnevich, A, & Smith, J. (2009). Effects of Differential Feedback on Students' Examination Performance *Journal of Experimental Psychology: Applied*, 15 (4), 319-33.
- Schinske, J & Tanner, K. (2014). Teach More By Grading Less. *CBE-Life Sciences Education*, 13 (2), 159-16. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4041495/>

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