



Using Student Reflection to Enhance Boys' Collaborative Learning in High School Chemistry Lab Groups

Katie Walp
Saint Augustine High School

Further Information

This poster and further information is available at <http://www.theibsc.org/>

Researcher's Email: kwalp@sahs.org

Introduction

Collaboration is vital to the functioning and productivity of a chemistry classroom. Lab groups have always been a source of stress for both me and the boys. Although the lab content is usually enjoyable, the collaboration is often a hindrance to the activity. Ineffective group dynamics results in the boy's inability to make the crucial connections between abstract concepts and real world applications. Furthermore, the professional setting for which I am preparing these young men demands that they are able to effectively collaborate with other professionals. If my students struggle with working in groups with their peers, they will continue to do so with coworkers.



The Research Question

How might intentional reflection on collaboration strategies affect boys' productivity in a high school chemistry classroom?

Research Context and Participants

Located in San Diego, California, St. Augustine High is a boys' college preparatory Catholic school. "Saints," as it is affectionately known, is a school that thrives on competition whether it is in the classroom, football field, or in the gym. At Saints our mission is to cultivate healthy and resourceful young men who are empowered to use their God-given talents to make a difference in an ever-changing world. The participants were 22 Eleventh Grade boys enrolled in my Chemistry class, with ages ranging between 16 and 17 years old.

The Research Action

My action research was conducted during a six-week period where students completed different labs on our "block" days. The students then engaged in different types of self and peer reflections after the weekly lab. The following day, the whole class briefly discussed the different attributes that the boys felt made them helpful or less than helpful and the strengths and weaknesses they felt they brought to the group. The intention of the "debrief" was to further help the boys reflect on their contributions and provide an opportunity to explore different aspects of group dynamics.

Data Collection

- Field Notes: The majority of my personal observations focused on the boys' behaviors during the labs. I noted engagement, participation, and productivity levels of the group members
- Photos and videos
- Boys' weekly reflections

Data Analysis

Data were analyzed to look at the differences in the group dynamics, engagement, and group effectiveness before and after the introduction of the lab reflections. I coded observations from my field notes, measuring productivity by engagement levels, student interaction, and communication of needs and discoveries.

Key Findings and Discussion

Increased Engagement

- The number of boys disengaged during the labs decreased after the use of self and peer intentional reflection.

Increased Communication

- Boys were more comfortable talking with each other and making a plan before starting the lab.

Improved Group Dynamics

- The reflection processes allowed the boys to hold each other more accountable

Disconnect Between Student Perception and Teacher Observation

- The boys consistently rated their own performance in a lab very high and my observations of their performance did not reflect these same high performing behaviors.

Conclusions

Reflections helped make the boys aware of how they affected the group and provided a means to further discuss the nuance of group dynamics. These reflections forced the boys to stop mindlessly participating in the group with no meaningful thought as to how the group could work together productively. Simple observations such as assigning tasks to each other resulted in better functioning groups; these modifications arose internally from the group and not from teacher direction. In a further research cycle I will focus on the boys' ability to self-assess and find some strategies that would help them to be more honest and accurate in their assessment of themselves.

Key Readings

Hoff Summers, C. (2013). What Schools Can Do to Help Boys Succeed. *Time*, October 28.

Quinn, T. (n.d.). *G-R-O-U-P W-O-R-K Doesn't Spell Collaboration*.
http://www.edweek.org/ew/articles/2012/12/01/kappan_quinn.html

Tessier, J. T. (2015). Effect of Peer Evaluation Format on Student Engagement in a Group Project. *The Journal of Effective Teaching*, 12(2), 15-22.



"Hey guys, let's stop real quick and decide what we're going to do."

"Dude, wait for us so I can see what's happening."



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