Goal Setting in High School Chemistry

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Research Focus Statement

- The purpose of this study is to determine the academic and self-confidence benefits of teaching goal setting and reflection skills to high school chemistry students.

Introduction and Background

- 2,200 students
  - 10% of student population comes from low income families
  - Standard chemistry is not a graduation requirement but honors chemistry is an option
    - Do not usually teach the lowest-level or highest-level students in the school
- Because of the extra effort required to improve academic achievement, students won't try to better themselves without some sort of motivation (Willis, 2007).
- Reflection is the main avenue in which we process experience into learning (Ogden & Claus, 1997).

Description of research class

- High school standard chemistry classes
- 87 students
  - 5 students with an IEP
  - 12 students with a 504 plan
  - 2 ELL students

Treatment

- Two units
- Taught how to set SMART goals
  - Specific, measureable, achievable, relevant, and time-bound
- Set SMART goal for each unit
  - Reflected on goal progress after each formative quiz.
    - Used Five-minute Check-in to reflect

Data Analysis

- Highest quality of goals were successfully completed the most
- Most students could identify a quality goal given a few sample choices
- Students often knew what adjustments needed to be made in order to accomplish their goals
- Interviews helped confirm findings in data analysis

Data

- 49% of students' test scores improved during treatment
  - 37% with a medium or high normalized gain
- Increase of 10 students testing in the 92-100% range
- Average SMART goal quality increased by 66%
- 81% of students said they see themselves setting goals in chemistry class moving forward

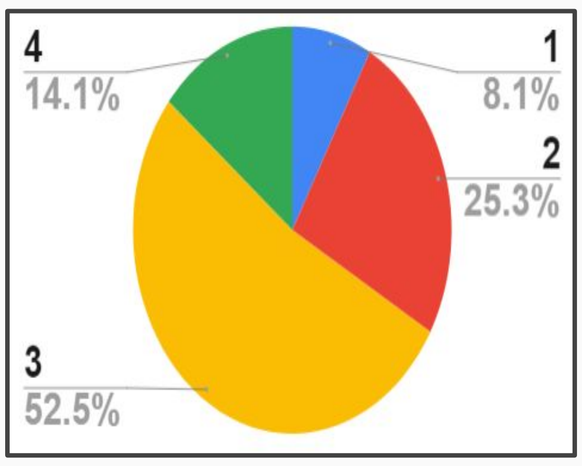

Figure 1. Student responses on if learning about SMART goals helped them find a purpose in class every day on the Goal Setting and Reflection Survey (*N*=87). 1=Strongly disagree, 2=disagree, 3=Agree, 4=Strongly agree

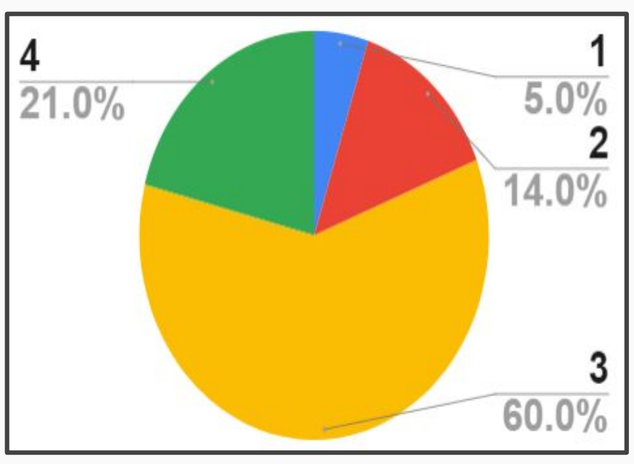

Figure 2. Student responses on if they see themselves setting goals and reflecting on them in chemistry moving forward on the Goal Setting and Reflection Survey (*N*=87). 1=Strongly disagree, 2=disagree, 3=Agree, 4=Strongly agree

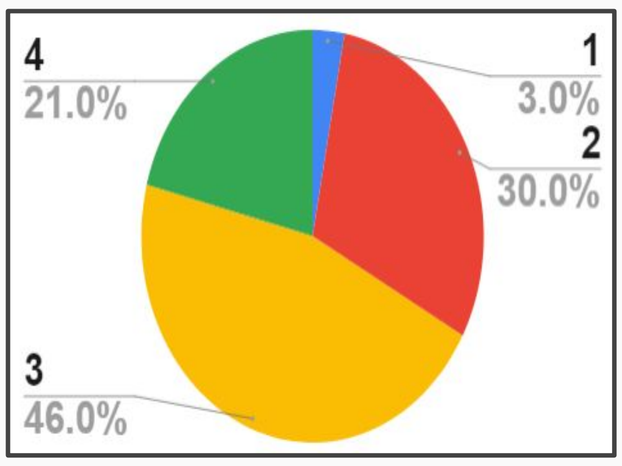

Figure 3. Student responses on if they enjoyed learning about SMART goals and how to reflect on them on the Goal Setting and Reflection Survey (*N*=87). 1=Strongly disagree, 2=disagree, 3=Agree, 4=Strongly agree

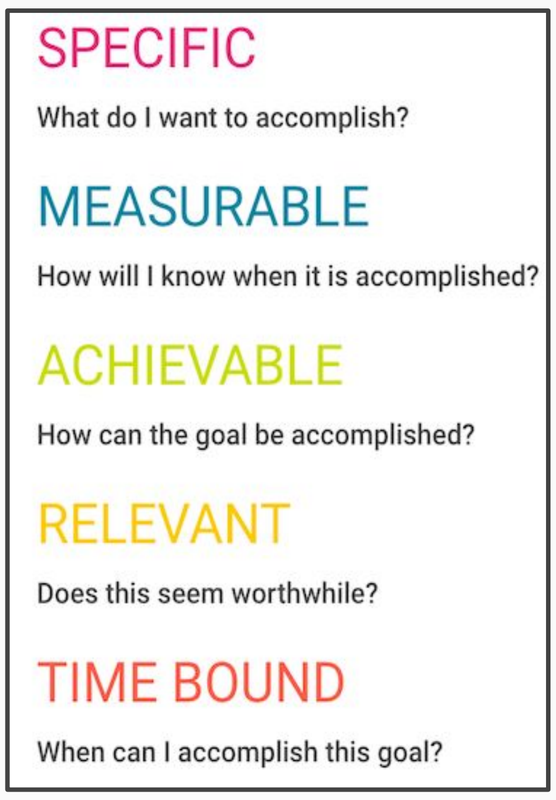

Figure 4. Breakdown of SMART goals. Retrieved from: https://sonysimon.com/productivity/smart-goals/

Conclusion

- Majority of students benefited through improved self-confidence, academic achievement, or opinion on setting goals
- Students often know how to identify quality goals, but need to be taught how to set and reflect on them themselves
- While goal setting was enough motivation for many students, it did not benefit all students enough so more research on motivation needs to be conducted
  - Would look into putting more emphasis on students explaining why they want to accomplish their goals