

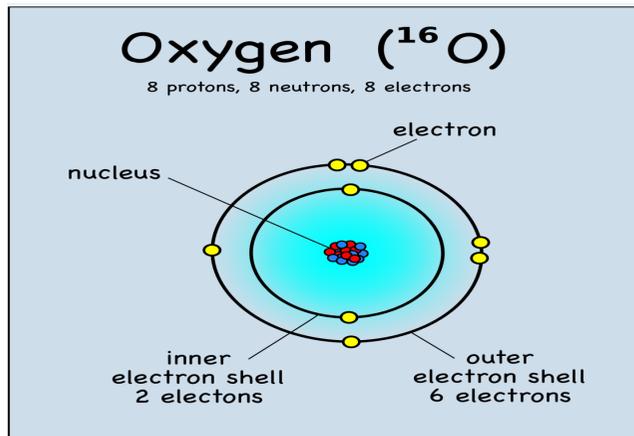
Stewart Brody, Branson High School, Branson, Missouri

BACKGROUND

My capstone project was conducted at Branson high school in Branson, Missouri. The project involved freshmen honors students in a physical science class. These students typically take matters of learning into their own hands. These highly successful students generally were shy in not wanting to embarrass themselves with aid from the instructor. They felt they should be able to succeed without an instructor's input.

LITERATURE REVIEW

The focus of my study was to open lines of communication with these students using formative assessments. The feedback from these assessments would increase the quality of interactive feedback which is a critical feature in determining the quality of learning activity, and is therefore a central feature of pedagogy (Black, 2009). The effort to get the student talking more and writing more about the learning process raises self-awareness of themselves and in general make learning a more positive experience.



STUDENT INTERVIEW QUOTES

- I only talk to my teacher when there's a problem.
- Teacher's are nice but hey think they know everything.
- I make a point of talking to my teacher. It's good to have them in your corner when you need them.
- I can do all my work without their help.
- I'm so glad we can talk about science. It make it easier.

TREATMENT

Formative assessments were implemented as introductions each week for six weeks of instruction. These assessments were used as starting points for open discussions, small group discussions, and individual student/instructor discussions. Additionally, notes were written to students from the instructor on formative assessments, worksheets, one-minute papers, and quizzes. Students were encouraged to reply and to continue a working dialogue. The purpose was to ensure feedback from both sides and to communicate at a higher level.

SAMPLE

This study was conducted within a ninth grade, honors, physical science course. I taught one section of this course (N=27) in which all students participated. At the time of the study the curriculum was about atom structure, subatomic particles, atomic mass, atomic number, mass number, allotropes, ions, and isotopes. Branson High School student population has roughly 1350 students, 80% of whom are Caucasian, 11% are Hispanic, and 50%+ are free or reduced priced-lunch eligible.

Small group discussion.



RESEARCH QUESTIONS	Source #1	Source #2	Source #3	Source #4
Focus Question: Did the implementation of formative assessments improve student communication, teacher communication, and student/teacher communication? ?	Pre and Post Treatment Content Exam	Student Interview Questions	Pre and Post Treatment Attitude Survey	Instructor Observation
Secondary Question: Did the use of formative assessments improve student positivity towards science and school?	Pre and Post Treatment Content Exam	Student Interview Questions	Pre and Post Treatment Attitude Survey	Instructor Observation
Secondary Question: Did the use of formative assessments improve student the collaborative nature of the students with each other and with the teacher? ?	Pre and Post Treatment Content Exam	Student Interview Questions	Pre and Post Treatment Attitude Survey	Instructor Observation

DATA ANALYSIS

- Students demonstrated an average growth of 133% when comparing pre- and post-treatment content exam median score, (Figure 2).
- Growth of student/instructor communications and feedback rose from one or two students communicating a few times in week one to nearly all of students communicating everyday with the instructor in week six.
- Post-treatment, 98.7% of students survey responses indicated they agree or strongly agree that feedback from the teacher helped them to better understand science concepts (Figure 3).

BOX AND WHISKER

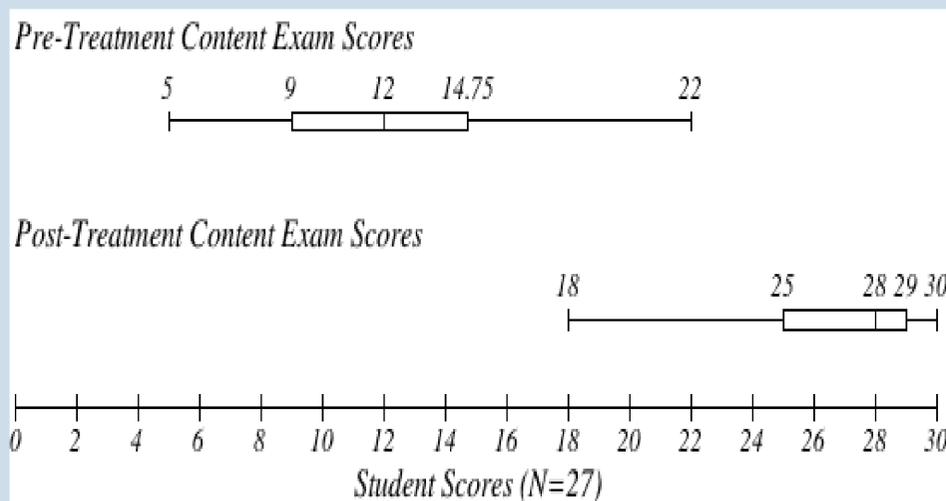


Figure 2. Post-treatment attitude survey of formative assessment, (N=27).

POST-TREATMENT SURVEY

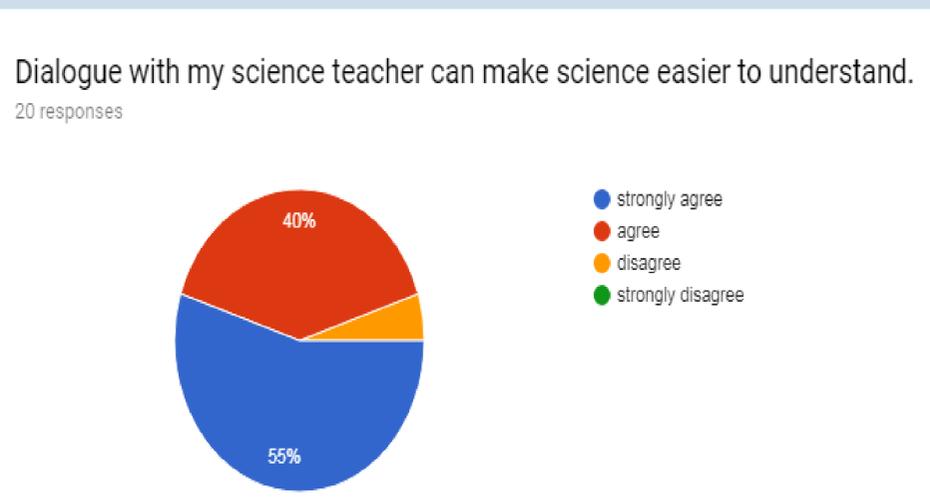


Figure 3. Post-treatment attitude survey. Dialogue making science easier, (N=27).

RESULTS AND FUTURE CONSIDERATIONS

Students communicated at a higher level, initiating more dialogue with the instructor. This was accomplished via discussions and feedback from formative assessments. This consequently raised student success for learning objectives set by the instructor and raised student attitudes toward a more positive outlook on science and on school in general.

I found the study to be very enriching for me. The upswing in student attitude and student/teacher communications made teaching easier. I will continue this teaching style in the future.

REFERENCES

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. Educational Assessment, Evaluation and Accountability (formerly: Journal of Personnel Evaluation in Education), 21(1), 5.