

The Effect Of Formative Feedback Through Science Interactive Notebooks On Student Learning In High School Biology

Background

I conducted my capstone project with my ninth grade biology students. I chose my topic after noticing that they were making the same mistakes in their assignments over and over in areas such as graphing and writing conclusions. I believe that this lack of improvement in these skills is due to the fact that they don't value and use feedback given on these assignments. Most of the students view the assignments as a way to get a good grade in the class and don't value the skills they are being taught in the class they just want to do get a good grade. Providing students with a view on why feedback is important and how using self-reflection on feedback can help them in the future should not only improve their grades and skills in this class but teach them the importance of using self-reflection on feedback given to them in their other classes as well.

Focus Question

Does self-reflection through interactive science notebooks increase student understanding?

Subquestion 1

What form of formative feedback is most effective?

Subquestion 2

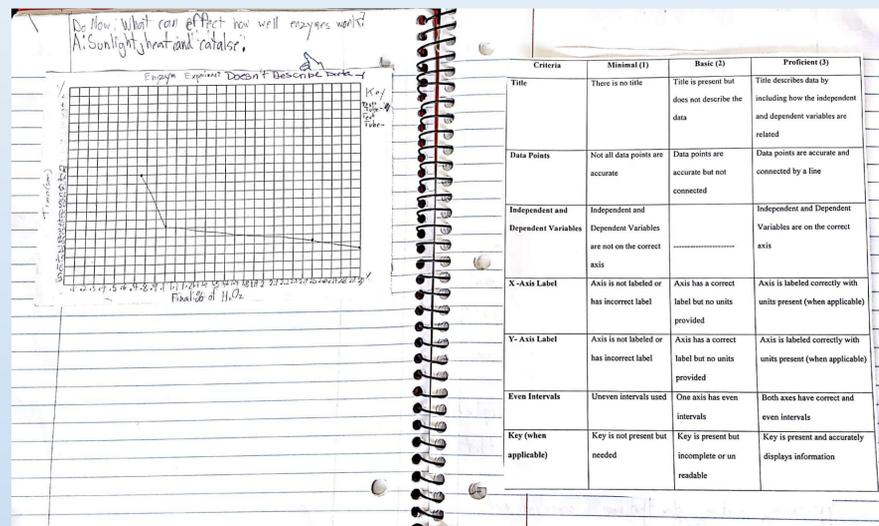
Does the interactive science notebook provide students with a forum to effectively show growth in learning?

Subquestion 3

Does peer assessment help students become more reflective of their own work, resulting in better understanding?

Treatment

Students participated in performing peer assessments on graphing, conclusions and interactive science notebooks where they used rubrics to grade and critique the work. Students also graded their selves with this same rubric and then compared their self assessment and peer assessment grades reflecting in their interactive science notebook what needed improvement and how appropriately they scored their selves using the rubric.



Student's Interactive Science Notebook

Data Collection/ Analysis Methods

Research Questions	Data Source 1	Data Source 2	Data Source 3
Subquestion 1	Pre-Survey	Student Interview	Post-Survey
Subquestion 2	Notebook self-reflection	Teacher Interactive Science Notebook Grades	Peer Assessment of Notebooks
Subquestion 3	Pre-treatment scores on selected assignments	Student Interview	Post-treatment scores on selected assignments

Conclusion Writing Peer Assessment			
Category	Your Name:	Peer 1 Name:	Peer 2 Name:
Title	1- NO title	1 there is no title	1- NO title
Purpose	1- Unclear Purpose	2 the purpose is present but not detailed	2- Some details are missing
Background	1- needs background information	1 no background information	2- some info.
Hypothesis	3- need better and more info and sign as	3 stated if accept or rejected, connects to purpose	3- related to problem
Independent and Dependent variables	1- the variable are not identified	1 present but not identified	1- not identified
Procedure	1- out of order and messy	1 not logical needs sequence	1- Needs logical sequence
Data/Observations	4	4 present with numerical evidence	4- includes specific details
Analysis	2- needs more in depth detail	3 stated the observations and comparisons	3- observations were given
Mechanics/Grammar	3	3 no grammatical errors	3- good similar

Conclusion Writing Rubric Student Sample

Results

The form of feedback the proved to be most valued by the students according to pre and post surveys was peer evaluation, with 80.6% agreeing or strongly agreeing to the statement, "When performing a peer assessment or review, I always value the feedback given by my peers", although less than half (44.4%) of the students on the post survey responded that they agreed or strongly agreed to enjoyed performing peer assessments.

Although the students weren't thrilled about the notebooks as a assignment score for the marking period, most students appreciated it as a place to show growth and look back on what & how they did previously. However, the notebook grades from pre to post treatment was proven to be not statistically significant in change, in fact the grades went down on average.

On writing conclusions there also was not a statistically significant change from before to after the treatment, however the was an overall increase in the average score. Finally, There was however a statistically significant difference from the pre assessment to post assessment scores when looking at the grades for graphing.

