



Supporting The Next Generation of Scientific Thinkers: Revoicing as a Tool to Support Science Talk in the Classroom



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RQ: How does one science teacher engage in re-voicing to support students' thinking and doing of science?

Introduction

- This study aims to understand how talk strategies that secondary science educators use in classrooms help students explore science and how these students engage in scientific thinking.
- One way in which students are engaged by their teacher in the science classroom is through talk moves (Wray et al., 2022). Talk moves are one way to supporting sensemaking (Brown & Bybee, 2023).
- To support environments in which students are regarded as scientific thinkers, there must be a change in teacher beliefs about student capabilities to actively allow them to engage in the process of “doing science” (Renfrew, 2023).

Methods

- Danny (a high school chemistry teacher and focus of this study) engaged in a one-week summer professional development (PD) workshop and four follow-up cycles of lesson design-teach-analyze during the 2018-19 school year.
- The data here is from the lessons designed and taught during his first year of PD. Recordings of his lesson were studied for instances of revoicing questions to his students.

Revoicing involves paraphrasing what someone else has said in order to clarify or deepen understanding. It promotes sensemaking and reflective practice

Danny uses revoicing to clarify the thoughts of a student and allows another to elaborate.



Daniel: Okay, so, we are looking at different metals gaining energy and then losing that energy and we see a color as a result, is that what you are saying John? Okay. Rose what do you say to this?

Rose: So, like isn't there certain element you excite to, we excite different elements to the, uh, atoms. They are at the excite state and then they go back to ground state, and the energy that they do release on the spectrum. Like certain colors they release is based off of the color- I mean based off of the amount of energy lost.



Danny uses revoicing to promote sensemaking and critical thinking, and reiterates the question to the class, broadly.



Danny: Okay. So, what we are saying is that these electrons are closer to the nucleus, and what she is saying is that they will push these electrons further away and decrease the whole. Is that what you are saying?

Carol: I'm asking, is that right? Is it easier for them to gain energy when it's more shielded?



Danny: So, what is the relationship between? I just want you to think about this because you know these things, you know the positive charged nucleus is going to attract the electrons, and you know the other electrons are going to repel other elections. So, I want you to think about the relationship between the strengths of those pulls. What were the two factors that effected the strength of those pulls, Lola what do you think on this?



Findings

- In the example quotes, we see Danny will re-voice a question within small and whole group discussions.
- Danny repeats what the student is saying, asks them if he is re-voicing their ideas correctly, and then "tosses" the idea back out for other students to respond.
- Danny provides multiple students during the whole class discussion with a chance to support each other's thinking.

Conclusion

This study supports the idea that in order to create spaces in which students are regarded as scientific thinkers, teachers must allow the students to think critically on their own and engage in sensemaking (Brown & Bybee, 2023). They must also include strategies such as revoicing or rephrasing to the class so that students can feed off of each other's thoughts in cases in which a student is struggling to articulate a concept (Wray et al., 2022).

Select References

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