Sierra Confer
TE 861A

Science Vision

Background - The Red Headed Step Child

Science currently could be considered the “red headed step child”, the subject area that is given the least attention and doesn’t fit in as well with other content areas. As a first year teacher I follow other third grade teachers in their science teachings. This results in science being a focus for a week or so every few months. Now that I have a year of teaching under my belt, I feel I can dedicate more of what I want science to look like in my room. My ideal science vision would be a seamless incorporation into other content areas that is consistent and purposeful.

As an International Baccerlet school (called I.B. for short) we have additional units that are incorporated into our daily content areas. Our I.B. unit is the overarching theme for all subjects and then is incorporated into lessons. Example of this would be:

- I.B. focus: How water affects humans and the planet
- Science: Weather and climate unit

With I.B. we connect and integrate all subject areas and allow students to help guide the learning. It is a challenge to incorporate I.B. into my science units.

In addition to being an I.B. school we are also a magnet school. This means majority of my students are considered academically gifted. Within gifted education students are required to receive enrichment weekly. This enrichment time is taught by another teacher and is science centered.

My vision for Science - Moving Forward

On paper this sounds like it works well but in reality literacy and math take precedence and other subjects get the short stick. My vision would be figuring out how to insert science into math, social studies, and literacy weekly instead of monthly. The themes that would guide the increase of science would be the I.B. units. My favorite part of the I.B. program is allowing students to be risk-takers by letting them guide their learning based on their passions.

To achieve this science vision, changes will be centered on:

-Transdisciplinary

-Meaningful instruction (Student Engagement)

-Student Guided

Transdisciplinary

Transdisciplinary curriculum is a key component of the International Baccalaureate primary years program. Transdisciplinary means the lines between content areas are blurred and an overarching I.B. unit drives instruction. To achieve my science vision, I need to improve on integration of science into other subject areas. By integrating science into literacy or math I am able to teach students science more often and teach it justifiably. In order to enact this portion of my vision I will need to place a higher emphasize on planning. In depth planning will need to occur to find connections across subjects and how I will incorporate content in a transdisciplinary fashion. Literacy and math are the primary subjects that are taught the most in my classroom. Science will

then be integrated into those two subject areas. For literacy this would mean teaching literacy standards through the use of science texts or scenarios. To achieve this, precision to planning would need to occur. Nonfiction texts and models would be used. For example, to teach cause and effect I will use a science phenomena such as the effects of rain water on an environment. For math this would look like teaching about data and graphs through our science units. Students can learn to read data from a science experiment.

To engage students in transdisciplinary learning, lessons will need to be purposeful. Science integrated with literacy will look like students collaborating in groups, close reading nonfiction texts, explicit teaching of text structures through science models, and ambitious science teaching primers. Face-to-face tools will allow students to demonstrate their thinking and modify their ideas as a unit progresses (AST, 2015a). Just-in-time instruction gives students the opportunity to make connections for themselves with the teacher giving information at key points of a lesson. (AST, 2015b). These primers will be used to achieve transdisciplinary learning. It is important to teach students in a transdisciplinary fashion because it allows students to see how the world is connected. In life, students will need to solve problems that could incorporate skills learned in numerous subjects.

Meaningful Instruction

Meaningful instruction entails teaching with a purpose that is explicit and thought provoking. To achieve meaningful instruction, extensive planning will need to occur. Too often instruction comes straight from a textbook that is read verbatim. Worksheets and reading packets do not allow students to make the connects and experiences themselves. To make learning meaningful and stick, instruction needs to be engaging to students. Ambitious Science Teaching explains, “to maximize student engagement teachers can ‘hang’ all activities in a unit on an essential question that relates to students' lives and previous experiences” (AST, 2015c). Connecting content to student experience allows students to see that school can be authentic and relatable. Creating fun and interactive lessons gets students more involved in their learning and leads to higher levels of content acquisition. This would look like students doing hands-on activities, such as using manipulatives or other materials to explore concepts. For example, instead of reading about the effects on rain water on a slope, we’ll go outside to explore the phenomena ourselves. It is important for students to learn this way as they build a deeper understanding of content when they are making the connections themselves and experiencing content first hand.

Student Guided

When instruction is student guided, “students learn how to think for themselves and take responsibility for their own learning” (International Baccalaureate, 2019). As a part of my science vision, students will guide learning in a direction that is of interest to them.

Allowing students to guide where learning goes increases engagement and creative thinking. Students are responsible and take an active role in their own education resulting in higher levels of content acquisition. To achieve student guided science, a variety of ambitious science teaching primers will be used in combination with classroom norms of inquiry based learning. The primary primers I will use are just-in-time instruction, visible thinking, and evidence discussions. During investigations students will help form driving questions. Through experiences students will explore and by using just-in-time instruction, students will find the connections themselves. Evidence discussions allow students and teachers to discuss findings and ask further questions (AST, 2015d). By giving students the tools they need to find phenomena, they will find more avenues and questions that are intriguing to them. As an educator, I will allow them to expand upon these questions to further their discovery.

It is important to allow students the independence and freedom in their learning. Student guided instruction gives students the ability to ask questions and explore the answers themselves. By giving students control in their own education, you are tailoring them to be responsible for themselves, to ask questions, and investigate the world around them.

Conclusion

My vision for science instruction includes transdisciplinary instruction, making instruction meaningful, and student guided. To make this vision happen, precision to planning and ambitious science teaching primers will be in place. Extra planning will allow me to find

the connections across content and make lessons engaging. AST primers will be used during instruction to make sure content is meaningful and students are guiding the instruction. My science vision will ensure science is taught more often and with purpose.

References

Ambitious Science Teaching. (2015a). *Face-to-Face Tools.* Retrieved from http://ambitiousscienceteaching.org/wp-content/uploads/2014/09/Guide-Face-to-Face-Tools.pdf

Ambitious Science Teaching. (2015b). *How to use direct (or "just-in-time") instruction in your science classroom.* Retrieved from http://ambitiousscienceteaching.org/wp-content/uploads/2014/09/Just-in-Time-Instruction.pdf

Ambitious Science Teaching. (2015c). *Planning for engagement with important science ideas.* Retrieved from http://ambitiousscienceteaching.org/wp-content/uploads/2014/09/Primer-Plannning-for-Engagement.pdf

Ambitious Science Teaching. (2015d). *Helping students talk about evidence: A guide for science teachers.*Retrieved from http://ambitiousscienceteaching.org/wp-content/uploads/2014/09/Claims-and-Evidence.pdf

International Baccalaureate. (2019). *Primary Years Programme. Retrieved June 8, 2019,* from https://www.ibo.org/programmes/primary-years-programme/