

Short report on the focus groups

I designed a unit that integrated ideas of the TPACK model to increase student understanding of photosynthesis and weave in my DreamIT theme of “How do scientists ask and answer questions?”

The components included (in order):

- An exploration of leaf physiology
Look at both sides of student collected leaves (naked eye and microscope) and predict reasoning for the leaf design. Why do they look this way?
- A book exploration phase
Students try to connect vocab words in unread section to what is already known.
- A guided inquiry lesson on Photosynthesis (POGIL)
- An instructional video posted on YouTube
- A “cookie-cutter” lab in which students collect data and practice doing data processing
- Brainstorm possible experiments and variations
Students design an experiment
- Practice knowledge on sample IB questions
After students complete their answers individually, the questions are reviewed as a whole.
- Students study photosynthesis vocabulary quizlet and take a vocabulary quiz.
Retakes are available to receive all the XP.
- After review, students take a photosynthesis content quiz
Retakes are available to receive all the XP.
- Scattered opportunities to play interactive games like Kahoot
To promote engagement and assess understanding

At the beginning of the unit on photosynthesis, my students and I took a day to discuss what the unit involved. Here are some of the comments that students made in addition to the related context:

- “This plan gives various opportunities to understand the topic, because different activities will help me understand a certain topic better, rather than just one type of activity like a POGIL.”

- "Talk about examples in different scenarios where students will be able to understand what Dr. Alur is talking about."
- "It was a useful technique because we barely do things in a group and in this class we get to work as a class and it's a better learning environment and it helps us gain knowledge through sharing. It's easier to learn because different people understand things differently. Sharing ideas allow us to understand the content better and agree to what it actually says."
- In relation to the instructional videos: "Teacher's approach on the book is different from how the book actually says it. Putting it in easier words to understand the content." And, "some students are need to be told."
- In relation to enhancing the video experience, "Videos are a good idea because it helps in reviewing. We should just go through it and talk more about it in class for us to understand it better. Questions can be asked: What we got from it. What question we have. What we didn't understand or what we need more explanation of. Tying the video and the book and discussing the video and the book. Main points that we didn't understand. Instead of using the whole class period. Ask us what "part of the video or the book did you guys not understand" or " did you get the concept of the video" or "explain _____". We need to go through it in class and go through most of the process because not everyone understand it.
- Some students feel left behind because students are working on their own thing very often: "Doing the same thing in class is making the students stronger. We should all be in the same pace instead of people being left behind. Ex: some are still trying to understand cell respiration and some are in photosynthesis. We learn as a class and we go at the same time as a class.
-
- In relation to getting multiple assignments that students can plan to do on their schedule: "If it requires a few extra days to understand the topic better, it's good to give students time." Also, "There's limitation on doing work- it should be a step by step process not give everything at once."
- One student would like to include the following approach, "We should read a section as a class when we're not understanding it. A group scenario where everyone listens and one reads. Stops once in a while to asks questions. The book is sometimes hard to understand and having a group discussion as a class may help some students who are having a difficulty." As the teacher, I think this leads to students tuning out (becoming passive) and them not taking responsibility for their own learning.
- Some students are seeking more group togetherness activities to wrap up a unit: "Some people learn differently. Some do POGILs, some read the books and we should, in the end, put what we learned together."
- Some students want more opportunities to practice while others think that they already get enough work to do. I am very wary of giving them any more to do.
- Students like the opportunity to share knowledge, "sharing stuff helps one understand a piece of content better, for example a group might understand a pogil better, while another group might understand the book better."
- Some students feel like we're rushing through content. I feel bad, but it is IB!

- Students are liking the use of Quizlet and their scores are showing it.
- Kahoot is fun, but some people are just randomly guessing.
- One student commented that, "There's a lot of group work and have SOME individual assignment so we learn it alone and we get to review it at home and try to understand it alone. We should go to the group when we completely don't understand something."

The teacher focus group was not successful because most teachers who committed to coming did not attend. Those who did attend (3), remained quiet during the presentation and did not provide feedback. The band teacher suggested that I create a group project that requires every student to provide something essential to the team. This would be analogous to a group of musicians playing a piece together. No one would want to sound bad so all group members are supporting each other to create a good musical product. I think that this sounds like a great idea. Now, I have to consider how I can do this in the context of Biology. I am going to think deeply about how this can be done in future units.

At a later time, I presented to two colleagues in the science department. They both said that I provided a range of activities and multiple opportunities for students to learn and interact with the material. They also mentioned (as the band teacher did) that students are looking for times to relax and be more passive learners. They said that I should not succumb to those desires and continue to seek ways to actively engage students.

Addendum to short report to address issues from "Me Page":

The initial "leaf me alone" allows students to explore in a creative way and has students think about how our scientific forebearers asked questions to make sense of the world.

The data collection aspect from the "cookie cutter" lab enables students to practice writing internal assessments as required for the IB. Creating a unique photosynthesis experiment as a variation on this cookie cutter theme enables students to stretch their intellectual muscles and see for themselves that scientific inquiry is not necessarily a magical, unattainable objective. This is in preparation for doing their science fair projects (the unit that followed this one), which was an entire inquiry experience for every student. Essentially, the PS unit was preparing students for that experience.

I am aiming to integrate some of the student suggestions by trying to provide some whole group share out after each assignment. This will build cohesion between the members of the class and teacher as a whole. I am still going to primarily rely on students constructing knowledge and showing me as individuals/small groups what they have learned. In this format, I can ensure learning and provide richer feedback. In whole group instruction, students can become more passive and fade into the background of other people's learning.

As far as the group work project as mentioned by the band teacher is concerned, I think that I will aim to create cohesive projects where the individual pieces are jigsawed enough that each

person must contribute some essential piece. It can hard to do it as organically as one would for a musical piece, but I am eager to try.