

UTeach Professional Development

What do educators learn from our Foundations of Blended Learning Course?

Educators enrolled in the UTeach Foundations of Blended Learning professional development course take four modules. We selected a few of their assignments to give you a sense of what they are learning. All educators gave us permission to share their work products.

Module 3 Tools and Strategies for Managing a Blended Learning Environment

Assignment: 21st Century Classroom Management Plan

In this assignment, educators develop a 21st century classroom management plan based on information found in their research. The classroom management plan consists of three parts:

- Part 1: Organizing the 21st century classroom
- Part 2: Maintaining a 21st century classroom environment
- Part 3: Sharing collaboration/communication efforts.

The following 21st Century Classroom Management Plans were created by educators taking the Foundations of Blended Learning course:

- Michelle Barnet, High School Science Teacher, Bandera High School, Bandera ISD, Texas [page 1]
- Ruth Spencer, Middle School Math Teacher, Harmony Science Academy Lubbock, Harmony Science Academy, Texas [page 5]

Michelle Barnet, High School Science Teacher, Bandera High School, Bandera ISD, Texas

Michelle Barnet details how she supports student learning in a fully blended and well-managed setting. Michelle has created a flexible and responsive setting, optimizing the physical arrangement of her classroom to accommodate various learning activities. Michelle shares both traditional and technology-based methods to communicate with students and create accountability, while maintaining a student-centered learning environment. She details specific software programs and platforms to organize and present learning, as well as manage student behaviors. Michelle uses technology tools and social media to not only communicate with students and parents, but also collaborate with colleagues online. She is a leader on her campus and has taken full advantage of blended resources and professional development opportunities, like the UTeach Foundations of Blended Learning course, to the benefit of her students' outcomes and overall engagement.

Part One: Organizing the 21st Century Classroom

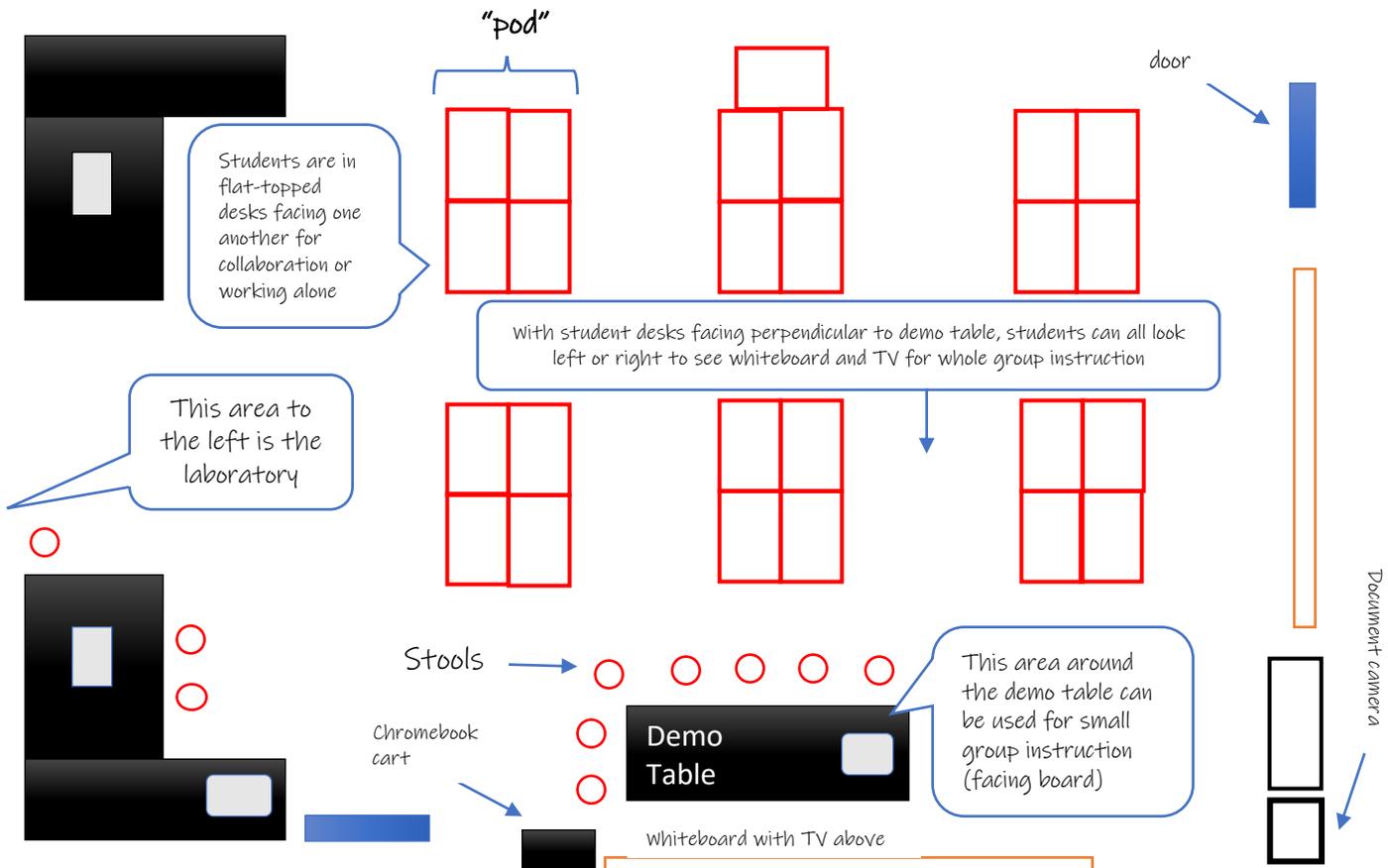
Teachers should maintain a well-organized classroom.

Traditional classrooms designed only for teacher-centered instruction, with desks arranged only in rows, limit the teacher's instructional options. The 21st-century classroom should include a variety of settings for learning. Teachers need to support a variety of instructional modes and vary the classroom arrangement accordingly.

Develop an organization plan to accommodate the following modes of learning:

- Individual work (with or without technology devices)
- Technology-based learning
- Teacher-led small groups
- Peer instruction
- Whole-class instruction
- Independent work stations

This may be done with a **sketch** or a **description** of your blended classroom.



I have flat topped desks in my room with separate chairs, so they can be moved around into groups of 3 or 4 (I call this a "pod"). My students like this arrangement the best. Eventually we will have some alternative seating (a few rocking stools, for example, or ottoman benches).

Part Two: Maintaining a 21st Century Classroom Environment

The modern classroom environment includes strategies to manage technology issues, to foster individual learning preferences, to establish classroom expectations/norms, and to hold every student accountable for learning each day.

Please complete the Classroom Environment Checklist by discussing how each indicator will look in your own classroom. Be sure to include your own ideas for 21st-Century Classroom Indicators.

Classroom Environment Checklist

Indicator	Describe what this looks like in my blended classroom.	Provide an example of how this indicator could be enhanced.
<p>Rules/expectations</p> <p>Rules and expectations, stated in positive language, are generated in collaboration with students and are clearly posted.</p>	<p><i>Students will stay on task and stay informed as to the schedule for the day. Each day, students will enter the room and look at the schedule on the side board. If they are working independently or in groups, they will gather their materials and begin with minimal coaxing by the teacher.</i></p> <p><i>Students are expected to maintain a relatively quiet atmosphere, especially if the teacher is working with small group instruction.</i></p>	<p><i>On the side board, the weekly and daily schedule is posted so students know what they will be working on. The teacher may also have a question of the day posted on the TV screen that students should be thinking about while attendance is checked.</i></p> <p><i>Light chatter is encouraged, if students are working in collaborative groups; I have started using ClassDojo with the noise meter and this helps keep the noise level at a manageable level.</i></p> <p><i>Cell phones are not acceptable devices unless the teacher specifically instructs students to use them for a particular project.</i></p>
<p>Technology norms</p> <p>General expectations involving the use of technology are discussed and norms are established and posted (e.g., ear bud use, screen up, screen down, 45 degrees, power off, none in sight, etc.) Include how classroom computers should be properly stored and retrieved.</p>	<p><i>Students will respect the classroom devices. Students retrieve their numbered chrome book with both hands, and must keep it on the desk, not on their lap. They may only work on classwork, (not games, unless it is a class assignment). At the end of the period, the device is returned and plugged back in for charging in the correctly numbered slot. Headphones are provided but must be wrapped back up and placed into the basket at the end of the period.</i></p>	<p><i>The chrome book cart has the slots numbered, as are the chromebooks. Students are assigned a chrome book and must use only that one. Any damage to the device must be reported immediately. The charging plugs have been put into “clips” that are attached to the underside of the top of the cart, so that cords do not get mixed up and tangled. Students must sign a chrome book classroom contract before using the devices.</i></p> <p><i>The last 5 minutes of the period, students must power off their device and return it to the cart so that the instructor can count chromebooks.</i></p>
<p>Attention-getting signals</p> <p>What attention-getting strategies will be used in your 21st-century classroom? How will you encourage student buy-in and participation with signals?</p>	<p><i>My younger students especially need help in this regard. Raising their hand for help is the fastest way for me to give them assistance, especially if the room is full of chatter. Outside of class, our students can email their teachers using the school email network.</i></p>	<p><i>I think that most of my students will have no problem buying into the idea of blended learning. They already like the placement of the desks so that they can work independently or collaboratively with their devices. I can move between the “pods” (groups of 4 desks). I think having one student in each group acting as the “alert system” would also help manage signaling.</i></p>
<p>Student accountability</p>	<p><i>Students will check their Google Classroom or Canvas classroom each</i></p>	<p><i>On Google Classroom, I post an announcement each day with the date, so</i></p>

Indicator	Describe what this looks like in my blended classroom.	Provide an example of how this indicator could be enhanced.
<p>What strategies will be consistently used to hold all students accountable for participation, collaboration, and production of learning products (e.g., stamps, checklists, turn-in trays, rubrics, online accountability measures, group contracts, participation meters, etc.)?</p>	<p><i>day. Assignments that are online will have hard deadlines, so they know that they know when all assignments are due.</i></p> <p><i>I want to create more short formative quizzes so that I can gauge where were need review. I would also like to be able to allow students to “test out” of a topic so that they could move on to other activities that they want to do and would enjoy.</i></p>	<p><i>everything posted is in chronological order. Each day has the current assignments, or items students need to access for a particular project, assignment, quiz, etc. In Canvas, I create a Module for each week, and place videos, quizzes, notes, and other materials needed for that week. Students who are absent can simply work from home if they can, or easily see what they missed when they return.</i></p>
<p>Student engagement</p> <p>List strategies/tools that will be used to enhance student engagement (e.g., random questioning strategies, peer interaction and collaboration, participation prompts, etc.)</p>	<p><i>I like using Plickers for a quick exit ticket or a warmup. I recently started using ClassDojo, that allows me to award points for classroom behaviors such as “stays on task”, “participation”, “helps others”, and such. My students really respond to this when they see others getting “points”. I think I will use the points for students to purchase candy items every three weeks.</i></p> <p><i>I have had a large number of student absences, and students miss whole group instruction, so I am going to start using small group instruction to get students caught back up.</i></p>	<p><i>I recently purchased a wireless keyboard, and I can carry it around the room with me. This way I can have the ClassDojo points posted on the TV screen where students can see their avatar, and when I award points for desirable behaviors, it pops up on the screen.</i></p> <p><i>My department is also trying out GoFormative, an app that allows a teacher to see on one screen what each student answers for a particular question.</i></p> <p><i>This can be done at the front of the room by the demo table. My younger students especially respond to small group instruction and like sitting on the stools around the demo table.</i></p>
<p>Individualized Learning</p> <p>How will instruction foster individual learning preferences? Include plans for differentiating instruction to meet the needs of individual learners. How will the use of technology enhance differentiation?</p>	<p><i>I have recently begun “flipping” some of my lectures, as whole group instruction occurs at a pace that some students find tiring. I went through my lectures on Screencastify, and now my students have the option of going through my notes with headphones or reading the chapter, and I give them time to do this in class. This frees up more time, too, for laboratory work. As mentioned above, having time for students to choose small group instruction (especially in chemistry) if they do not understand problem solving, or were absent is important. Some students do not need this, but some do.</i></p>	<p><i>I have “Flex Days” built into my class weekly schedule, and this allows students to catch up on missing assignments, watch my notes, or work on laboratory work. For my older students who miss school for extracurricular events, this really lowers their stress levels because they know they will have time to catch up. For my younger students who also miss school for a variety of reasons, this, too, allows them to catch up. I like to do whole group instruction on Monday (Meet Up Mondays), use Tues/Wed/Thurs for group work, small group instruction, or independent work, and then use Friday (Free-Form Fridays) for testing, review, whole class games or laboratories.</i></p>

Indicator	Describe what this looks like in my blended classroom.	Provide an example of how this indicator could be enhanced.
	<i>Technology allows me to have students working independently with interactive assignments on the chromebooks while I do small group instruction at the board.</i>	<i>I am trying to create assignments that can be submitted digitally, so that the “paper pile” doesn’t leave any doubt as to whether an assignment was turned in on time or not. Even group assignments can be photographed or created digitally and posted.</i>

Part Three: Collaborations

Please share how you presently support communication and/or collaboration in your blended classroom. Include how you communicate/collaborate with parents, students and colleagues in your one paragraph summary.

I frequently have students who are absent or in an Alternative Educational Placement setting email me with questions. I can redirect them to their Google Classroom announcements (which parents have access to, also) or their Canvas announcements. Parents frequently email me if their student is sick, and at home, so I can redirect them to the Google Classroom. Students can email work to me (even worksheets can be worked on digitally using Doc Hub and emailed back to me. Our district has recently adopted a new attitude toward social media, so I have started using my Twitter as a way of posting pictures of what we are doing in class, and students can follow. I think this generates interest in what is happening in class. Our district has hashtags that we can use for various reasons (#bluegrit, #bisdtweechers, #bhstweechers, #bulldogtenacity, etc.

I also use “Remind 101” to send out important reminders.

In terms of colleagues, I participate on Facebook with my school district colleagues in a page called “I Teach Blue Grit”, where we discuss interesting educational topics, books, articles, etc. which are primarily linked to blended learning. On my campus, I and three other teachers won a district “Digital Challenge” and we were awarded a new chrome book cart for our classrooms, and professional development, which I am doing now.

I also have personally created a Facebook page called “STAAR Biology EOC Teacher Collaboration” last year because I was teaching freshmen biology again after about 8 years and thought there might be new ideas that others and myself could share. We have 78 members now (one of my friends was an officer of STAT, and posted it on the STAT page, so we have teachers from all over Texas). I am also a member of the Associated Chemistry Teachers of Texas and keep in touch with teachers from all over Texas on their Facebook page.

Ruth Spencer, Middle School Math Teacher, Harmony Science Academy Lubbock, Harmony Science Academy, Texas

Ruth Spencer outlines a thoughtful physical classroom arrangement to support various seating configurations, collaborative interactions, and smooth integration of technology in her blended classroom. Ruth shares the strong classroom norms and procedures she has instituted to support student learning and considers multimodal options to appeal to students of varying readiness levels and learning profiles. She makes high use of campus-supported adaptive online questioning programs to personalize learning, and has detailed plans to offer more small group activities to increase peer collaboration and interactions in support of student-centered learning.

Part One: Organizing the 21st Century Classroom

Teachers should maintain a well-organized classroom.

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Classroom Organization Plan

- Individual work (with or without technology devices)

Students have desks where they can work individually or in groups depending on what is intended for the activity that day. Students get their assigned laptops from the laptop charging station on the wall when it is time for technology activities.

- Technology-based learning

Students have assigned laptops in class that they use to access math programs such as ALEKS (www.aleks.com) or IXL (www.ixl.com). Students may also use the internet using their assigned school portal for research projects or project-based learning activities.

- Teacher-led small groups

Teacher has a small table with five to six chairs for students to come and work with the teacher for short periods of time on specific topics and then the students switch to another activity and another group comes to the table.

- Peer instruction

Students are seated in groups where they can collaborate or provide peer instruction. Peer instruction can also be done for a whole class using the white board and projector.

- Whole-class instruction

Teacher provides whole-class instruction to introduce and model new concepts. This is done using the white board and projector and then walking around to assess student understanding.

- Independent work stations

Students have assigned laptops and they bring them to their desks when it is time for technology.

Part Two: Maintaining a 21st Century Classroom Environment

The modern classroom environment includes strategies to manage technology issues, to foster individual learning preferences, to establish classroom expectations/norms, and to hold every student accountable for learning each day.

Please complete the Classroom Environment Checklist by discussing how each indicator will look in your own classroom. Be sure to include your own ideas for 21st-Century Classroom Indicators.

Classroom Environment Checklist

Indicator	Describe what this looks like in my blended classroom.	Provide an example of how this indicator could be enhanced.
Rules/expectations	<i>Rules and expectations are stated in positive language using a laminated poster. Students sign a</i>	<i>Enhancements are to establish routines and procedures at the beginning of the year by having students learn by doing</i>

<p>Rules and expectations, stated in positive language, are generated in collaboration with students and are clearly posted.</p>	<p><i>piece of paper at the beginning of the year indicating collaboration, acceptance, and understanding of these rules and expectations. The signatures are attached to the poster that is generated by teacher and students and posted at the front of the room for the rest of the year.</i></p>	<p><i>and to rehearse transitions between activities.</i></p>
<p>Technology norms General expectations involving the use of technology are discussed and norms are established and posted (e.g., ear bud use, screen up, screen down, 45 degrees, power off, none in sight, etc.) Include how classroom computers should be properly stored and retrieved.</p>	<p><i>Handling technology norms is very similar to overall rules and expectations of the classroom. These are stated in clear language, reviewed in class, and posted by the laptops. Students also are shown how the laptops should be retrieved, carried, and returned.</i></p>	<p><i>The enhancement is to rehearse and practice proper withdrawal, carrying, use, and return of laptops from the very beginning of the year.</i></p>
<p>Attention-getting signals What attention-getting strategies will be used in your 21st-century classroom? How will you encourage student buy-in and participation with signals?</p>	<p><i>The two attention getting signals that I like to use are:</i></p> <ol style="list-style-type: none"> <i>1. Shark bait -- ooh hah hah! (from finding Nemo)</i> <p>Or</p> <ol style="list-style-type: none"> <i>2. Need your attention in</i> <p><i>5 – 4- 3- 2- 1.</i></p> <p><i>Another way to get students' attention is with a timer. I use this if I am timing activities and having students move from place to place.</i></p>	<p><i>This also needs to be practiced and incorporated all of the time in order for it to be useful and to have students respond properly.</i></p>
<p>Student accountability What strategies will be consistently used to hold all students accountable for participation, collaboration, and production of learning products (e.g., stamps, checklists, turn-in trays, rubrics, online accountability measures, group contracts, participation meters, etc.)?</p>	<p><i>I like the use of stamps to reward work done at the very beginning of class. Students like to get stamps on their papers and will work to get them. I provide rubrics for all project-based products so that students are aware of the expectations and how their product will be graded. I provide students a copy of their progress report every two to three weeks so they can see their grades and what assignments are missing or need to be corrected.</i></p>	<p><i>Enhancement for my class is to have students turn in all of their work to a specific place. This will reduce the clutter on my desk and students will understand the expectation to turn in their work.</i></p>

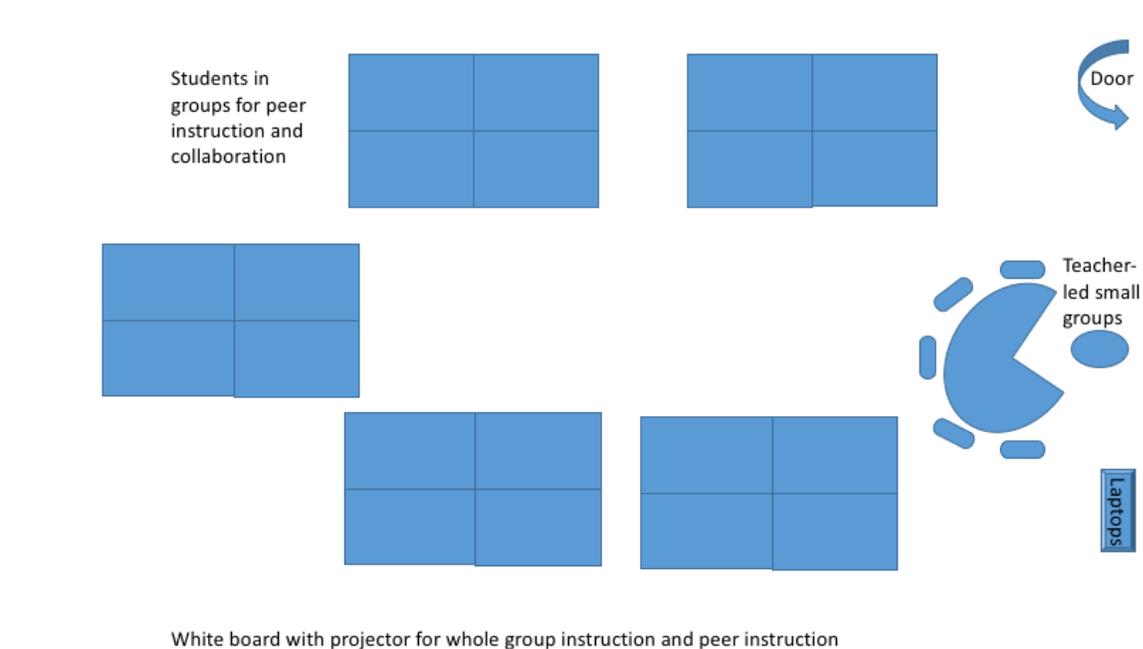
<p>Student engagement</p> <p>List strategies/tools that will be used to enhance student engagement (e.g., random questioning strategies, peer interaction and collaboration, participation prompts, etc.)</p>	<p><i>The best strategy that I've found for student engagement is what I use during whole group instruction. I will ask questions and reward every answer and student instigated question or peer instruction with a drawing slip. Students write their name on the slip and I put it in a bucket for a drawing for prizes every two weeks.</i></p>	<p><i>Enhancement for me would be to encourage better peer interaction and group work. Students in middle school get easily distracted by their peers and quickly switch to silly topics rather than classwork.</i></p>
<p>Individualized Learning</p> <p>How will instruction foster individual learning preferences? Include plans for differentiating instruction to meet the needs of individual learners. How will the use of technology enhance differentiation?</p>	<p><i>Every student has different learning preferences. I differentiate instruction by including audio, written and movement-based activities and demonstrations through-out the week. I make sure that students have choices as they do their activities or take quizzes. Technology incorporates choice, too. Both math programs that we use at our school allows students to have a choice in what topic they work on that day. Students can pick hard topics or easy ones based on the concepts available for the grade level of the student. In addition, if students are completing the topics quickly, I can move them up to a more difficult level for more of a challenge.</i></p>	<p><i>Enhancements include providing surveys to find out more about students or providing more hands-on problem-solving activities for group work.</i></p>

Part Three: Collaborations

Please share how you presently support communication and/or collaboration in your blended classroom. Include how you communicate/collaborate with parents, students and colleagues in your one paragraph summary.

Communication and collaboration is important to academic progress. Discussion and questioning help put some topics that are hard to grasp in a different light or context. When students help their peers or ask questions, students may understand the wording better than when I phrase it. This can be true particularly with English learners. Activities and the agenda for the day is written on the board for students so they know what they will be doing and what to get working on when they come in. I will reiterate it and provide any specific directions verbally. I provide grading feedback within 2-3 days of receiving the work and I provide a print out every two to three weeks of all assignments to every student. Students have daily access to their grades electronically. I allow them two minutes to look and then they have to work on their technology-based activity. I communicate with parents using Remind, emails, and printed handouts. Our school encourages collaboration with colleagues by having grade-level meetings, and subject level meetings. We collaborate once a week face-to-face and with emails or shared google drives.

Diagram of a 21st Century Classroom



Assignment: Develop a 5E 21st Century Blended Lesson Plan

In this assignment, educators create a lesson plan to use in their classroom that employs technology to enhance the learning environment. The lesson plan should incorporate students using technology and tools to explore content, connect with others, and engage in complex problem-solving tasks. The technology could be used to gather information, to enhance student collaboration, to provide unique learning opportunities, and so on. Participants may use the lesson plan template developed by their school and incorporate key elements from the 21st century classroom management plan template.

The following 5E 21st Century Blended Lesson Plan was created by an educator taking the Foundations of Blended Learning course.

Tara Bishop, High School Science Teacher, Lamar High School, Arlington ISD

This blended 5E lesson plan from Tara Bishop is a student-approved learning experience. Tara has already implemented this lesson with positive results and high levels of student engagement. She serves as a facilitator of this well-blended lesson, using Canvas as a strong foundation to guide small group activities. Students navigate learning using multimodal methods and technology to both explore learning and to share outcomes. Tara shares specific videos, social media programs, and learning labs she offers to encourage collaboration and discussion in this dynamic setting.

Length of lesson: Two 90-minute blocks

Grade levels: 10-12

Title of lesson: Origin of Life

Core disciplinary concept/s addressed: AP Biology Evolution and Phylogeny

Standards for lesson

- Essential knowledge 1.D.2 Scientific evidence from many different disciplines supports models of the origin of life.
- Essential knowledge 1.B.2 Phylogenetic trees and cladograms can represent traits that are either derived or lost due to evolution.

Objective/s: Write objective/s in SWBAT form.

The SWBAT

- Describe a scientific hypothesis about the origin of life on Earth.
- Create a phylogenetic tree that correctly represents evolutionary history and speciation from a data set.
- Use data from a population to predict what will happen in the future.

Accountability Measures: How will students be held accountable for completing the learning activities?

Teacher will do productivity checks within the class period and periodically assign a participation grade. Students will participate in a Canvas discussion. The teacher will also check phylogenetic trees for accuracy, grade mass extinction activity and natural selection activity.

Classroom Organization: Describe the layout of your 21st classroom that will facilitate use of technology and enhance management of the activity.

The classroom will be set up in pods of two lab tables each. This will provide enough workspace to create Instagram feeds, proximity for collaboration on phylogenetic trees, and the ability for the teacher to assist and directly question small groups.

ENGAGEMENT

Estimated Time: 20 minutes

Description of Activity: Origin of Life TedTalk and Canvas discussion.

What the teacher does:	What the student does:	Possible questions to ask students: Think like a student and consider possible student responses
<ul style="list-style-type: none">• Show whole class TedTalk on Origin of Life, How a single-celled organism almost wiped out life on Earth, https://youtu.be/dO2xx-aeZ4w• Give students 6 minutes to reflect in a Canvas discussion.• Lead a quick whole class discussion on the origin of life.	<ul style="list-style-type: none">• Watch TedTalk.• Reply to Canvas discussion thread over video reflection.• Interact in whole class discussion on the origin of life on Earth.	<ul style="list-style-type: none">• What is a theory?• What does endosymbiosis mean?• What are other symbiotic relationships you can think of?• How is this evidence for evolution?• Do you think that life could have formed from a primordial soup of molecules?

Technology Enhancements: How will technology be used to enhance the engagement?

Technology will be used to show TedTalk and for students to reply to Canvas discussion thread.

Resources Needed

Teacher laptop, projector, screen, student device (laptop, tablet, phone)

Considerations (safety, technology, materials)

Make sure laptops are adequately charged.

EXPLORATION

Estimated Time: 15 minutes

Overview of Activity

Student groups will be given a baggie of statements about the theory of evolution. As a group, they must sort statements as “Fact, Fiction, or Opinion” about evolution. Teacher will then lead a discussion and clear up any misconceptions.

What the teacher does:	What the student does:	Possible questions to ask students – think like a student and consider possible student responses.
<ul style="list-style-type: none">• Hand out baggies of statements and direct students on the three groups to sort them into.• Lead a discussion after sorting to clear up any misconceptions.	<ul style="list-style-type: none">• Have a discussion in groups of 3-4 to sort statements into three groups.• Participate in discussion about sorted statements.	<ul style="list-style-type: none">• Ask students how they sorted each statement, why they chose fact, fiction, or opinion, and how they can support their choice.

Technology Enhancements: How will technology be used to enhance the exploration?

Technology will not be used in the activity, but many links to evolutionary research are shared during the discussion. Students may do individual research on their own time if they should choose to do so.

Resources Needed

Fact, Fiction, or Opinion Evolution card sort and answer key.

EXPLANATION

Estimated Time: 145 minutes

Overview of Activity

Student groups will be introduced to three different activities that will explain three different areas of evolution; mass extinctions, natural selection, and phylogeny. Groups will be required to complete all activities, but may complete them in any order. Groups will assign a student leader to each activity. This leader will present the activity to the teacher to grade and check for understanding.

The activities are as follows:

- A: Create an Instagram or other social media feed that describes the five mass extinctions. Include a picture, descriptive social media post, and any major events for each extinction.

B: Complete the Rock Pocket Mouse lab with population cards and video.

C: Participate in the six missions in Nova Labs “Evolution Lab”. Teacher will check each phylogenetic tree at the end of each mission.

What the teacher does:	What the student does:	Possible questions to ask students: Think like a student and consider possible student responses.
<ul style="list-style-type: none"> • Provide an example of a social media post and what is expected of their mass extinctions Instagram. • Provide hard copies of the Rock Pocket Mouse Lab which will direct students to online population cards and video. • Direct students to the Nova Lab website where they will compete in the Evolution Lab missions. 	<ul style="list-style-type: none"> • Complete a social media feed over the five mass extinctions. Use their own knowledge of social media and research the five mass extinctions as a group. • Complete the Rock Pocket Mouse Lab on paper. Use the online population cards and video to supplement lab. • Complete all six missions of the Evolution Lab. May split the missions between group members. 	<ul style="list-style-type: none"> • How do the mass extinctions relate to human evolution? • Why did we use a social media newsfeed format to represent mass extinctions? • If the Rock Pocket mouse population continues to adapt, what will happen to the population over a long period of time? • How does this support the theory of evolution? • What do phylogenetic trees represent? • When creating phylogenetic trees, how do you begin?

Technology Enhancements: How will technology be used to enhance the explanation?

Technology is used many times in this lesson. It is used for research, creation of a product (Instagram feed), watching videos, and playing phylogenetic evolution games in the form of missions.

Resources Needed

Laptop, tablet, or other student device. Hard copies of Pock Pocket Mouse Lab with video link and online population cards

Considerations (safety, technology, materials)

The teacher should continuously check for understanding and make sure that all students in each group are participating. Make sure all devices are adequately charged.

Reflection Questions

1. How does this lesson support students in developing a deep understanding of the concept/s addressed? How does this lesson help student to make connections between this concept and other disciplinary core ideas?

This lesson is a great way to introduce a sometimes controversial topic in biology. The students are faced with a multitude of resources that support evolution in many different ways; offering them a chance to form their own thoughts and clear up one another’s misconceptions within the group. Evolution is the backbone of every concept in AP biology. This lesson provides a firm jumping off point so that students may consider the theory of evolution in all areas of study in AP biology.

2. In what way does this lesson draw out and work with the pre-existing understandings of your students?

Students are introduced to the theory of evolution in 9th grade biology, but their studies are very superficial. This lesson allows students to delve into the theory without being explicitly led by the teacher. They are able to form their own thoughts on the theory and create a firm understanding of pieces of research that support the theory.

3. How does this lesson support students in being metacognitive? Which lesson elements support students in reflecting on and assessing their own learning?

The exploration activity poses them with a statement that they must group with other like statements. This is a great place for reflecting upon what they've learned in prior grades, what their peers know about evolution, and where they make be alike and different. This is a good activity for supporting those "Eureka!" moments in the science classroom.

**Reflection questions adapted from Key Findings in NRC How People Learn (available at <http://www.nap.edu/openbook.php?isbn=0309070368>)*

For more information and to discuss your professional development needs, please contact:

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