

Advancing School Leadership for Continuous Improvement

STEMulating High School Culture Through Leadership and Coaching!

Winter Instructional Leadership Conference

February 25 – 26, 2020

Dr. Ava Debro

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Dr. Ava Debro

- **Banneker High School** Assistant Principal | Director 3DE Business & STEM Magnet.
- **Years in Education-** 20 years.
- **Prior to BHS:** School Improvement Specialist, Instructional Coach, Lead Teacher, Department Chair & Science Instructor.
- **Interesting Fact:** Dislike chocolate but I love...



Dr. Valencia Bradshaw

- **Banneker High School** STEM Director | 3DE Business & STEM Magnet.
- **Years in Education:** 14 years.
- **Prior to BHS:** WBL Advisor, CTAE Department Chair & Marketing Instructor.
- **Interesting Fact:** In 2003 while working as a banking vice president, I volunteered with JA at a local high school. Shortly afterwards, I made a mid-life career change from banking to education and now work with JA through 3DE schools!

Session Norms

- Place electronics on silence/vibrate.
- Remain engaged in learning.
- Respectfully share opinions.
- Ask questions for clarification to avoid making assumptions.

Session Outcomes

- School instructional leaders will learn how to create collaborative environments.
- School instructional leaders will learn how to create effective high school interdisciplinary PLCs.
- School instructional leaders will learn how to use the design thinking model in classrooms.

Interdisciplinary High School PLCs



Outcomes: 5+ Years

Student Impact

- 55% ↑ Student Attendance
- 40% ↑ Graduation
- Student Leaders (SGA, CTSOs, Sports and Other Clubs and Organizations)

Instructor Impact

- 95% Teacher Retention
- Schoolwide Leaders (DC, Instructional Coaches, Testing Coordinators, WFD Coordinators, Lead PD, etc.)

Barriers to High School Interdisciplinary PLCs

Turn & talk:

What are some barriers to effectively implementing interdisciplinary PLCs in high schools?



Our Barriers:

- Scheduling conflicts (PLCs)
- Instructors with multiple preps
 - Uncomfortable
- Scope and sequence alignment
- Instructors unable to find connections



Why Interdisciplinary Teaching & Learning?

- Expose and introduce concepts from multiple disciplinary perspectives.
- Reiteration of concepts.
- Boost learning outcomes and enthusiasm.
- Improve instruction and expand teaching toolkit.
- Foster collaboration and cross-curricular connections.



Barriers to High School Interdisciplinary PLCs



Turn & talk:

What are some solutions to overcoming barriers to effectively implementing interdisciplinary PLCs in high schools?

Our Barriers:

- Scheduling conflicts (PLCs)
- Instructors with multiple preps
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Moving past challenges



Challenges	What did we do!
Course scope and sequence	Instructor flexibility
Scheduling conflicts	PLCs held during school day or afterschool
No connections, Instructors w/ multiple preps	Make connections where appropriate
Uncomfortable	Create consistent environment of collaboration

Whole Team PLC

Purpose: Assist Instructors Develop More Interdisciplinary Activities			
	Activity	Ownership	Activity
1x Each Month	Team Updates	<ul style="list-style-type: none"> ➤ Lead Teacher ➤ AP ➤ STEM Coordinator 	Departmental Updates
	<ul style="list-style-type: none"> ➤ Examine Case Study Challenge <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> ➤ Plan/ Identify STEM Interdisciplinary Project 	Grade Level Teams (Core + CTAE)	<ul style="list-style-type: none"> ➤ Unpack the case study challenge (examine the problem) ➤ Core teachers discuss possible ways to support case challenge and standards alignment <p style="text-align: center;"><u>Deliverables</u></p> <ul style="list-style-type: none"> ➤ Semi-detailed plan of how to integrate case challenge in class

Weekly Team PLC

**Purpose: Help Students Develop More Interdisciplinary Solutions
Support & Feedback From STEM Coordinator, Lead Teacher & AP**

	Activity	Ownership	Activity
PLC #1	Research-Based Instructional Strategy	<ul style="list-style-type: none"> ➤ Teachers ➤ STEM Coordinator 	Rotation- Each instructor demonstrates a research-based instructional strategy.
	Departmental Rotations	Teachers	<p style="text-align: center;"><u>Guided Questions</u></p> <ol style="list-style-type: none"> 1. How are you going to ensure that students understand the CASE Challenge problem in your class? 2. How are you going to assist students in researching and examining the problem in your class? 3. How will your discipline, content, or skills be spotlighted in the final presentation? 4. How will you assist in enhancing the top four team's presentations? 5. How do I take what we observed, learned or experienced during the site visit back into my classroom?
	Data Talks/ Student Work/ SMF Focus Lesson/ Remediation + Recovery	<ul style="list-style-type: none"> ➤ Lead Teacher ➤ AP 	<ul style="list-style-type: none"> ➤ Recovery + Remediation- 1x each month ➤ Data Talks- based on Assessment Calendar- 1x each month

Weekly Team PLC

Weekly PLC Structure Purpose: To provide time to plan lessons			
	Activity	Ownership	Activity
PLC #2	Protected Planning Time	Instructors	<ul style="list-style-type: none">➤ Lesson Planning➤ Update Gradebook➤ Parent Contact

Sample Project – Case Study



<p>TOPIC: What target market should Georgia Power focus on to increase sales within its online marketplace? Theme- Making Effective Decision Competency- Critical & Analytical Thinking</p>	
CTAE	Activity- Students completed a SWOT Analysis (Strengths, weaknesses, opportunities & threats to online marketing). Students created a decision tree to represent the outcomes of each possible outcome.
SOCIAL STUDIES & SCIENCE	Activity- Students utilized a decision tree in Social Studies & Science.
MATH	Activity- Students interpreted a graph using independent and dependent variables related to online marketing trends.
ELA	Activity- Students cited sources for research.

Sample Project – 9th Grade Team



TOPIC: SHOULD GOVERNMENT SUBSIDIZE GMOS?	
SOCIAL STUDIES (World Geography)	Activity: Students will read three articles (informative, pro and con) and will write a constructive response based on their reading.
SCIENCE (Physical Science)	Activity: Students will identify the molecular differences in GMOs and natural foods.
CTAE (Financial Literacy)	Activity: Students will compare and contrast GMOs and organic foods in order to evaluate/ analyze the economic impact of these agricultural practices in the US.
MATH (Algebra I)	Activity: Students will analyze and interpret GMO data to prove significance.
ELA (9th Lit)	Activity: Argumentative essay. Students will build upon their analysis of the articles examined in social studies and write a 6-paragraph argumentative essay supporting their position. Students are required to address and rebut the counterclaim.

Our Interdisciplinary PLC Model...

1. Common planning time.
2. Identify resources- technology, rubrics, etc.
3. Create checkpoints & timeline for completion.
4. Case study or project that will pique student interest

*Case Studies- Launched in business classes. Core instructors connect instruction to case study themes allowing students to apply their learning.

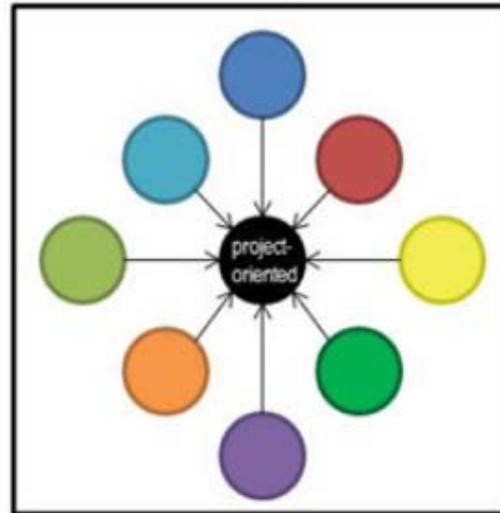
*STEM Interdisciplinary Projects!



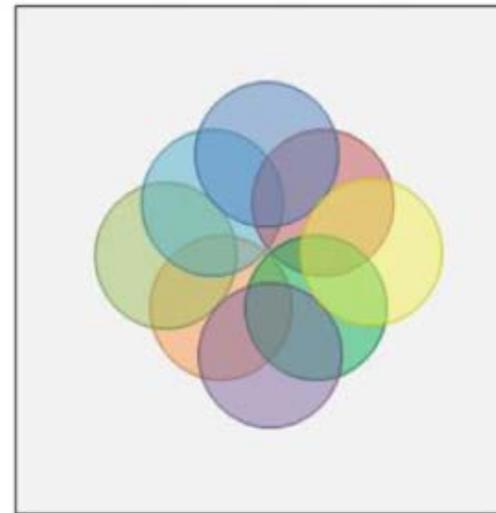
Multi- → Inter- → Transdisciplinary

STEM Education Continuum

Multidisciplinary



Interdisciplinary



Transdisciplinary

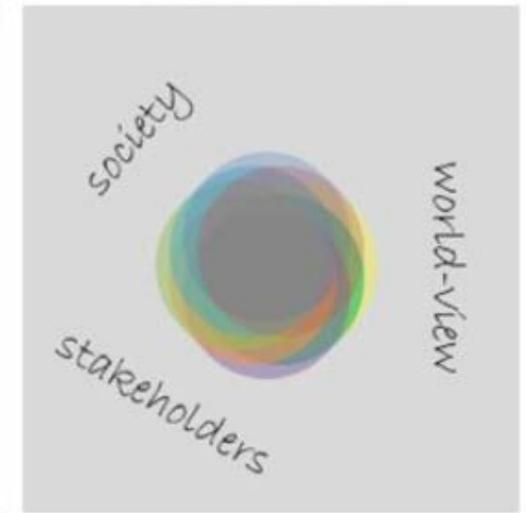


Table talk to come
to a consensus.

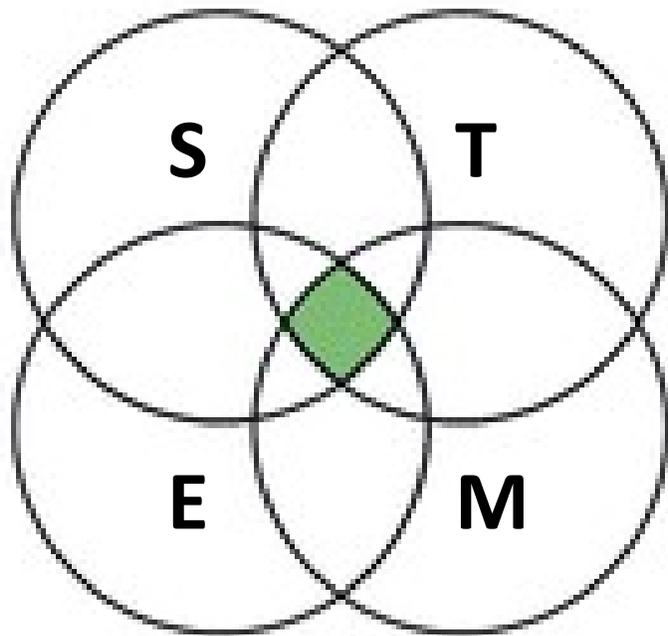


Select the scenario that best depicts a transdisciplinary learning environment based on the “STEM integration model” handout.

Transdisciplinary STEM Education

“Transcends” content specific learning

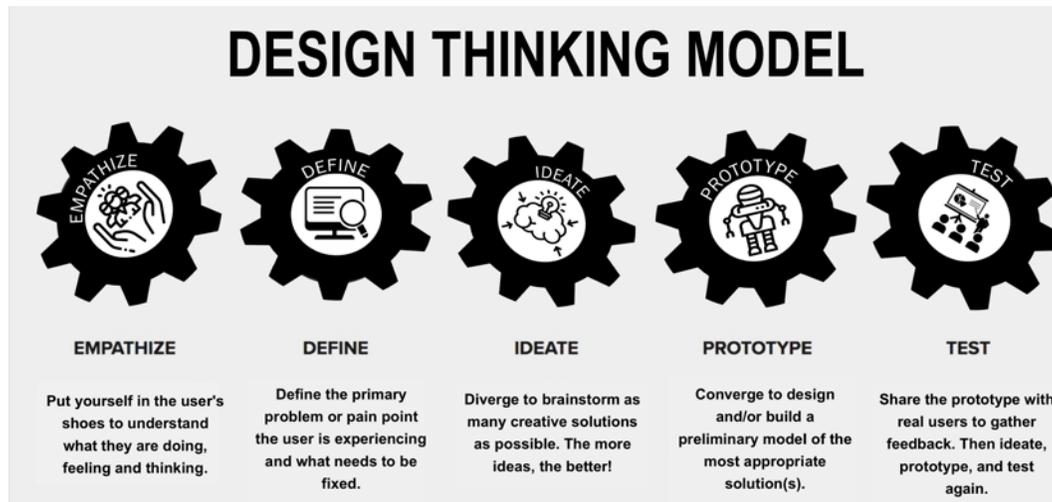
- **CAN** be taught through Project-Based Learning
- **CAN** be Problem-Based Learning (Case Studies)
- **CAN** include multiple curriculum connected through interdisciplinary instruction



- **NOT** thematic teaching
- **NOT** just teaching robotics or engineering
- **NOT** a CTAE class
- **NOT** forcing content together
- **DOES NOT** require a large budget



We Teach STEM Through Design Thinking



- Engages all students – not just the math and science students
- Helps students become more INNOVATIVE in their problem-solving activities

Design Thinking in Action



Doug Dietz designed what he thought was an amazing MRI machine. He designed it with himself in mind and not the users. It scared kids and they were having to be sedated at an alarming rate.



After using Design Thinking and gaining empathy for the users, both the kids and the hospitals, he redesigned his model and it has made tremendous gains for the users.



Design Thinking in Action at BHS (Artificial Intelligence For Good Transdisciplinary STEM Project)

get connected

The Problem

- Gender Equality
- Poverty
- Hunger
- Good Health and Well-Being

User Persona

- Women/ Men who support
- Low income families



HEALTHLIFE:
Health to the Max.



PROBLEM

- Access to a reliable and accurate health information
- **HEALTHLIFE PURPOSE:** provide reliable and accurate health assistance to people in developed countries.

USER PERSONOA

"Only 12 percent of adults have Proficient health literacy, according to the National Assessment of Adult Literacy. In other words, nearly nine out of ten adults may lack the skills needed to manage their health and prevent disease. Fourteen percent of adults (30 million people) have Below Basic health literacy."



- Poverty Background
- Unaware of health symptoms
- Refuses medical attention



<https://health.gov/communication/literacy/quickguide/factsbasic.htm>



About Health Life

FOUNDED IN 2014

HealthLife is a Health Life App, where you can find everything you need to take control of your health. It's the app that connects, organizes and empowers your health.

What's Not to Love? It's All There!

Thank You to the HealthLife App Developers

SOLUTION/PROTOTYPE

- Our Solution is the HealthLife App
- Shows the essential things associated with medical issues
 - Nearest Hospitals
 - "What are my symptoms telling?"
 - Hospital Data Base
- Clean Cut design created to ensure the user experience is fast and efficient



Problem

Life Below Water

- SDGs wants to sustainably support and protect marine and coastal ecosystems from pollution, as well as address the impacts of ocean acidification.

OCEAN User Persona

- **Ocean pollution** – particularly plastic which kills fish, birds, marine mammals and sea turtles
- **Overfishing** – removes species from a body of water at a rate that they cannot replenish in time
- **Ocean acidification** - makes life difficult for coral reefs and some plankton, to form their shells and skeletons.

Our Solution - Web App



Are you ready to be STEMulated?



Take the STEM Self-Assessment to see where your school or district falls on the STEM readiness continuum.

Session Feedback

Thank you for attending our session.
Please take a moment to provide
your feedback.

<https://tinyurl.com/2020ILC>



Share your conference highlights now!



[@GaDOESDE](https://twitter.com/GaDOESDE)

www.gadoe.org



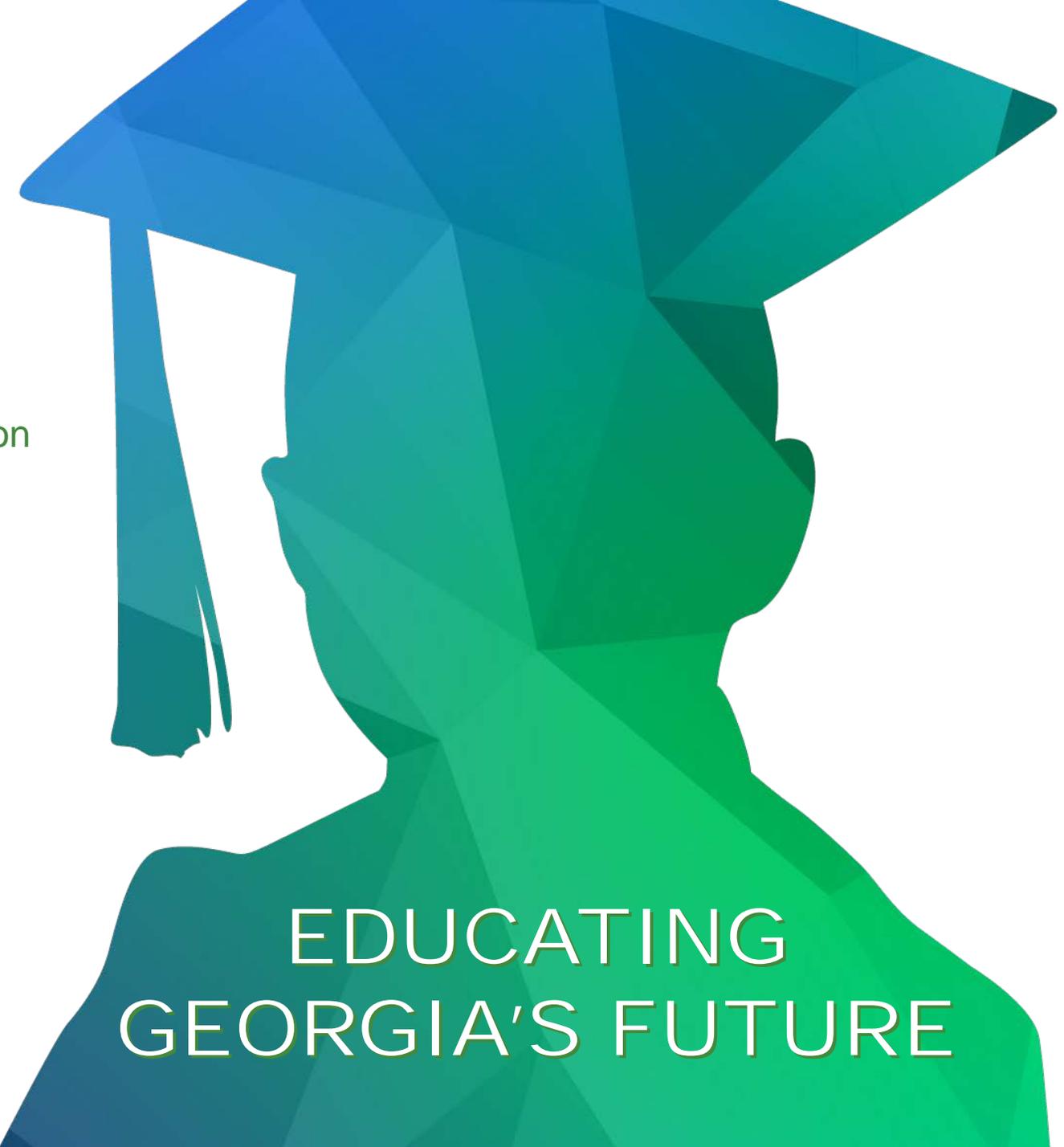
Contact Us:

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 A large, stylized silhouette of a graduation cap (mortarboard) in shades of blue and green, positioned on the right side of the page.

EDUCATING
GEORGIA'S FUTURE