Science Content, Incorporation, Engagement through Nascent Collaborative Experiences of Students

Session A at 10:40 a.m. (EST)

Moderator: Natalia Kouraeva, senior Instructional Designer – Rutgers Division of Continuing Studies, Teaching and Learning with Technology

“Wake-Up Call”

Paul J. Croft, Croft Consultations
Let’s begin with an Activity/Question...

Activity/Question: Using **ONLY** one word, describe the weather conditions YOU are witnessing or experiencing NOW

Questions? – Please use the ‘Q&A’ feature. Questions will be answered at the end.

~ Thank you for attending today!

Participants please follow these instructions...

- Use the ‘chat’ feature to post your one word reply; one per person
- Avoid repeating any word used by another participant
- You have one minute to enter your response

Paul J. Croft at Croft Consultations
“The answer is...”

What do the responses “tell us” re: teaching/learning?

- Discovery
- Observation
- Multiple Perspectives
- Measurement
- Assessing Relevance
- Predicting Impact
- Anticipate Responses

**Overarching Themes**

- Human Senses = Knowing
- Context = Place in time and space
- Alternate Senses = Satellites, Social Media, ...
Teaching/Learning Science = Processes

Science is...
Standardized
Categorized

Observation
Data for
Analysis, Experiments

Qualitative
and Personal
(Relevance)

Quantitative
Measures
(Repeatable)

Thresholds
Benchmarks
Fundamentals
Building Blocks

Construction of New Knowledge
Correlation, Decision-Making
Systems, Statistics, Modeling

Paul J. Croft at Croft Consultations
Storytelling = Engagement, Context

Problem Identification
Problem Solving
Collaborative
Disagreement

Sum Total = Growth, STEAM
(Policy, Governance, Laws)

Personalized
Situational
Cognitive
Pathways

Sum Total = Student Value
(Background & Experiences)
Check-point: Session Objectives

1. Develop Strategies to Broaden Student Engagement through the use of common contexts of content [e.g., ‘one word’ activity of weather now; senses!]

2. Create and incorporate Pathways that Access Student Value in construction of knowledge [e.g., perspectives, personal situations, processes of sciences]

3. Demonstrate STEAM in STEM as real-world connections to societal science engagement [e.g., pathways through natural hazards; storytelling and STEAM]

4. Elicit DEI and accessibility approaches through learning modalities and collaboration [e.g., social justice, cultural manifestations, societal implications]

5. Imbue the pedagogy underlying the technology used in teaching and learning [e.g., technology as tool/teacher v. impediment/obstacle; purposeful pedagogy]

To the Engagement and Relevance Zone!
The EM-Spectrum – “The whaaaaa...?”

Sample Questions for us to consider...

Can you ‘experience’ the EM-Spectrum?
Who has ‘lived’ in the “Land of the Midnight Sun”?
What peoples/countries rely on collection of ‘fog’ for potable water?
An Activity/Question...

Activity/Question:
Give a science topic/fundamental YOU struggled with and the reason why (in breakout groups)

Breakout Groups – please follow these instructions...

- Identify a common science item/topic of ‘struggle’ among you
- List key reasons for the ‘struggle’ concept
- Select one member of group to report-out
- You have 5 minutes!

Session Questions? – Use the ‘Q&A’ feature.
Questions will be answered at the end.

~ Thank you for participating today!
From the Breakout Groups –

Why do student inputs help?
- They are not SMEs
- Varied Perspectives
- Importance of Collaboration
- Diversity multiplies inputs
- Makes information accessible
- Value of Storytelling, Sharing
- Context informs pedagogy
- STEAM connects to and allows exchanges within their major

Learning Modalities

Knowledge with Context
Learner Type, Pedagogy Methods
Holistic View, Conceptualization, Mental Model
Activity/Question:
Give an example of YOUR pedagogy as tied to a classroom technology YOU use

Session Questions? – Use the ‘Q&A’ feature.
Questions will be answered at the end.

~ Thank you for participating today!

Participants please follow these instructions to respond...

- Use the ‘chat’ feature to post your reply; one per person
- Give the specific pedagogy intended for the technology that you use in the classroom
- You have two minutes to enter your response

The E-R-Zone!
Cave Drawings, Storytelling, & Immersive Realities

Comments about…
Based upon your ‘chat’ entries

- Common threads
- Facilitator v. Impediment
- Equitable, Bearable, Viable
- Ramp-up, Understanding, Use

Connections
- Access
- Inclusion

Does your use of Technology –

- Support student learning?
- Advance your pedagogy?
- Offer Access, Equity, and Inclusion?
- Add depth?
- Further develop concepts?
- Make use of Student VALUE?

Paul J. Croft at Croft Consultations
“If you act now...an old joke...”

“Heard there’s a great restaurant on the moon. Only problem is it has no atmosphere.”

Overall takeaways...

1. Teaching & Learning are not simple and Science is no exception.

2. Taking students to the ‘E-R-Zone’ (Engagement & Relevance) is a must!

3. That trip to the ‘E-R-Zone’ adds benefits (DEI/others) and creates deep learning atmosphere/settings.

4. ...next slide...
Overall takeaways…continued…

4. There will always be concepts and hidden meanings (& Hidden Figures) that challenge students’ learning.

5. Technology will always change, but it’s the fundamental pedagogy that’s essential to teaching/learning.

6. Anyone can cook, but we are the chefs – so we must work together with our natural resources (students!)