
Laurel Cardellichio
Global STEM Educator

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Master Teacher Instructional Coach & Consultant

OVERVIEW

I am a NYS certified secondary education science teacher with 28 years of teaching experience and formal training in STEM education, global education and NGSS/NYSSLS compatible three-dimensional learning. I aim to support new or experienced educators in their practice through virtual or in person professional learning workshops and coaching on topics tailored to individual, small group or large group needs. Workshops and coaching will provide opportunities for sharing pedagogical and content best practices, lesson planning, and facilitation of reflective dialogue all while respecting differences in teaching styles.

SPECIALTIES

1. Content area expertise: Biology, Chemistry, AP Environmental Science, Animal Physiology, Forensic Science, Psychology, and General Science (Gr. 7-college level)
2. Pedagogical expertise:
 - a. Implementation of NGSS/NYSSLS compatible 3D learning strategies (phenomenon-based lesson planning, scientific modeling, facilitating productive discussion, student centered sensemaking and experimental design)
 - b. 3D storyline unit planning and assessments
 - c. Culturally responsive teaching & lesson planning for global competency skills
 - d. Implementation of project based lessons and use of case studies in the classroom
 - e. Implementation of student-centered scientific research (novice to college level)

PROFESSIONAL LEARNING WORKSHOPS FOR MS/HS SCIENCE TEACHERS

Current offerings are described on the following pages and can be tailored to client needs.

WHAT INSTRUCTIONAL COACHING LOOKS LIKE

1. One-on-one or small group coaching
2. Preliminary goal setting meeting (virtual, video on)
3. Weekly/biweekly virtual meetings tailored to educator needs during the school year (video on, 1 to 1.5 hour long sessions with flexible meeting times)
 - o Meetings will have an agenda with opening greeting, one or more short collaborative work sessions on identified goals (i.e. classroom management, pedagogical best practices, lesson planning, etc.) and closing with reflection for next steps
4. Weekly support via email, phone, or text available as needed

Professional Learning Webinar Series on the Next Generation Science Standards and Three-dimensional Learning

Offerings Overview

Here, I present a series of Next Generation Science Standards (NGSS) and 3D Learning Webinars for middle school and high school science teachers. The full webinar series can be offered as a 15 hr CTLE course (12 hr webinar contact & 3 hr participant storyline lesson planning) or, depending upon client need, topics can be offered as stand alone professional development.

The first webinar in the series, titled “Core Understandings: Learning to Implement Three-dimensional Routines” will provide a complete basic overview of 3D learning, a major shift in science pedagogy as called for by the Framework for K-12 Science Education and NGSS. This webinar could serve as a starting point for participants to attend the five “Deeper Understandings” webinars focusing on the following 3D learning topics:

- Developing Explanatory Models
- Planning and Carrying Out Investigations
- Planning and Carrying Out Scientific Discussions
- Developing 3D Storylines
- Planning 3D Assessments

Timeline

Summer weekdays-during the day or evening

Fall and Spring

- Weekdays- late afternoons, evenings
- Saturdays- during the day

Webinar descriptions are continued on the next pages.

Title: NGSS Core Understandings: Learning to Implement Three-dimensional Routines

Program: Online Course

Audience: Science Educators 7-12

Dates: TBD

Max class size: 25

Catalogue Description

Do you want to jump right in to implementing the NGSS standards and 3D learning in your classroom but are short on time and don't know where to begin? Then this webinar is for you! In this webinar, you will actively engage in all 3D routines called for by the Framework for K-12 Science Education and you will leave *ready to try them out in your classroom*. The 3D routines that will be practiced in this webinar are: the anchoring phenomenon routine, the navigation routine, the investigation routine and discussion-based sensemaking (problematizing and putting pieces together routines).

After this webinar participants will be able to identify and implement 3D learning routines. Participants will

- observe and describe a phenomenon
- construct an initial explanatory model of the phenomenon
- decide what steps need to be taken to answer questions about the phenomenon
- analyze and interpret new data on the phenomenon
- propose revisions to the initial model
- construct evidence based explanations of the phenomenon
- evaluate the strengths and weaknesses of the model

Title: NGSS Deeper Understandings: Planning and Carrying Out Scientific Discussions

Program: Online Course

Audience: Science Educators 7-12

Dates: TBD

Max class size: 25

Catalogue Description

In this webinar, participants will learn strategies to create a culture of productive talk in their classroom. Productive talk is central to 3D learning and for creating an equitable environment for *all* students to experience success in their science education. Participants will don their “student hat” as they actively engage in several 3D whole class discussions about scientific phenomena. Additionally, participants will analyze classroom video clips of students engaged in a position driven discussion. Participants will leave this webinar with greater confidence in their ability to implement science talk strategies in their classroom.

After this webinar participants will be able to

- recognize discussions as necessary tools to effectively engaging diverse student populations in scientific sensemaking
- identify norms to co-construct with students for productive talk
- create public records for keeping track of student sensemaking (driving question board, initial model, word wall, summary chart and “gotta have-it” checklist)
- differentiate between initial, building understanding, consensus and position driven discussions
- employ “talk moves” to aid in student sensemaking during discussions
- analyze classroom video clips of students engaged in discussion
- reflect on the productivity of the discussions and norms

Title: NGSS Deeper Understandings Webinar: Developing Explanatory Models

Program: Online Course

Audience: Science Educators 7-12

Dates: TBD

Max class size: 25

Catalogue Description

In this webinar participants will explore scientific modeling as a powerful tool for explaining phenomena and making student thinking visible. Participants will develop their own model of a phenomenon, engage in scientific discussion and compare peer models. Participants will leave this webinar with greater confidence in their ability to implement modeling and will identify modeling activities for their classroom.

After this webinar participants will be able to

- construct an initial explanatory model to explain how and why a scientific phenomenon occurs
- identify observable and unobservable mechanisms involved in the phenomenon using sketches, words and symbols to represent the mechanisms
- propose revisions to the initial model after new information about the phenomenon is revealed
- create a “gotta have-it” checklist to indicate the required components of the model
- evaluate the strengths and weaknesses of the model
- analyze examples of student generated models
- identify phenomena for modeling to implement in their classroom

Title: NGSS Deeper Understandings Webinar: Planning and Carrying Out Investigations

Program: Online Course

Audience: Science Educators 7-12

Dates: TBD

Max class size: 25

Catalogue Description

In this webinar, participants will practice discussion strategies that will help students be able to plan and carry out their own laboratory investigations. Participants will leave this webinar with methods to teach their students how to formulate testable questions and how to conduct a properly designed experiment.

After this webinar participants will be able to

- facilitate a discussion in which the teacher and students co-construct investigation ideas originating from student posed questions about a phenomenon
- facilitate a discussion with students to elicit the requirements for proper investigations such as; how and what to measure and observe, what procedure and tools to use, and how to document data.
- guide students to assess the validity and reliability of data
- use strategies to help students develop conclusive arguments from evidence (claim, evidence and reasoning skills)

Title: NGSS Deeper Understandings Webinar: Developing 3D Storylines*

Program: Online Course

Audience: Science Educators 7-12

Dates: TBD

Max class size: 25

Catalogue Description

In this webinar, participants will come prepared with a unit of study that they will adjust to be implemented in the 3D classroom. Participants will actively engage in creating a student coherent storyline of learning activities to explain a phenomenon. A portion of the time will be allotted for peer review and feedback on each participant's "skeleton" storyline. Participants will leave this webinar with greater confidence in their ability to create 3D classroom storylines and will have created a viable "skeleton" plan in place for near future implementation.

After this webinar participants will be able to

- unpack the disciplinary core ideas, science and engineering practices, and cross cutting concepts that students will use in a unit of instruction.
- identify a student coherent series of steps to figure out an anchoring phenomenon
- compose a skeleton storyline articulating scope, sequence, and pacing of 3D activities for the unit
- analyze examples of storylines
- review and provide feedback for peer storylines

***3 hr Asynchronous "On Your Own" time for Developing 3D Storylines**

Participants will prepare and submit two or more 3D lessons for a unit storyline. The instructor will provide feedback for completed work.

Title: NGSS Deeper Understandings Webinar: Planning 3D Assessments

Program: Online Course

Audience: Science Educators 7-12

Dates: TBD

Max class size: 25

Catalogue Description

In this webinar, participants will come prepared with at least one assessment that they wish to adjust to be 3D learning compatible. Participants will evaluate their assessment in terms of the Next Generation Science Standards and formulate assessment tasks that provide evidence of what students know and are able to do in terms of 3D learning goals. A portion of the time will be allotted for peer review and feedback of assessment tasks. Participants will leave this webinar with greater confidence in their ability to create 3D assessments and will have examples of viable assessment tasks in place for future implementation.

After this webinar participants will be able to

- identify the “must have” features of multi-dimensional assessments
- compare the cross grade band learning progressions for disciplinary core ideas targeted in the assessment
- construct a multi-dimensional assessment task that requires students to use science and engineering practices and cross cutting concepts while engaging in sensemaking
- analyze examples of 3D assessment tasks
- review and provide feedback for peer assessment tasks

For More Information Contact:

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