Western Educational EQUITY Assistance Center

STEM and Teaching Multilanguage Learners K-12

Welcome

The WEEAC Virtual College is an online learning format designed for educators to participate in workshops that increase awareness in equity related topics. These courses will be self-paced and free of charge to all participants. The content aligns with the mission of the Equity Assistance Center grant funded by the United States Department of Education.

All areas highlighted in GRAY are video and document links that can be activated by clicking on the active link. The videos work best in the Google Chrome Browser. If your computer is set to open in different browsers, you might have to copy and paste the url address into Chrome to view open the link.

Course Overview

Persistent inequities exist for students of color and our English Language Learners (ELLs) in STEM education. The term ELL places the emphasis and importance on the English language while minimizing the importance of a student's primary language. More recently, the term multilingual learner (MLL) is being used to describe students whose primary language is not English, decentering English and honoring that students may be learning English as a second, third, fourth or even fifth language! This course will examine how language acquisition, culture, and principles of learning intersect to give participants tools to more effectively teach our MLLs. MLLs carry with them into our STEM classrooms (and ultimately, our STEM workplaces) "funds of knowledge" (Moll et al. 1992) and community cultural wealth (Yosso 2005) – knowledges born out of their experiences in their homes and communities and from their home languages and cultures. While the demands for a diverse STEM workforce have increased over time, MLLs continue to be underrepresented and marginalized from STEM fields. In this course, we will learn how to create student-centered STEM learning environments that allow MLLs to thrive by meeting the learning needs of our MLLs. This approach creates the learning space for MLLs to achieve high academic standards and fully participate in our STEM classrooms.

STEM and Teaching Multilingual Learners (K-12) – Course Overview Video:

Course Overview

Western Educational Equity Assistance Center (WEEAC)

This content was prepared by Dr. Jasmine J. Yap, Consultant with the Western Educational Equity Assistance Center. Watch the introduction video below to get to know Dr. Jasmine J. Yap.

Introduction Video

Dr. Jasmine J. Yap – Click for introduction video

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Communication Policy

If you have any questions, feel free to reach out via email or phone.

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Course Pre-Assessment

Before we get started with the first module in this course, please take some time to test your knowledge on New Language Acquisition.

- Pre-Assessment Access – Click to begin

Next Steps

When ready, continue to next section in this module.

Module 1.1: Introduction to New Language Acquisition

Overview

This module will explore what is known about second (or additional) language acquisition and guide how we teach our multilingual learners (MLLs) in our STEM classrooms.

- Introduction to new language acquisition – Why is understanding how humans acquire language important for STEM education:
  - STEM AND TEACHING MULTILINGUAL Learners (K-12) – Click to view video

Next Steps

When ready, continue to the next section in this module.

Module 1.2: Crash Course in Linguistic and New Language Acquisition

- Module 1.2 Video (YouTube) – Click to view video

Next Steps

When ready, continue to the next section in this module.

Module 1.3: Theories and Perspectives on Second Language Acquisition

- 2nd Language Theories and Perspectives (YouTube) – Click to view video

Next Steps

When ready, continue to the next section in this module.

Module 1.4: Five Stages of Second Language Acquisition

- McREL – The Five Stages of Second Language Acquisition (YouTube) – Click to view video

Next Steps

When ready, continue to the next section in this module.

Module 1.5: Attitude Towards Learning English Matters

- Learning a language? Speak it like you're playing a video game (YouTube) – Click to view video

Post-video Reflection: How can you apply what you learned from Marianna Pascal to your teaching of MLLs in your classes? What are practical things you can do to help MLLs build confidence and communicate effectively using English? What are your main take-aways from Marianna Pascal's TED talk?

Next Steps

When ready, continue to the next section in this module.

Module 1.6: Teaching English Without Teaching English

- Teaching English without Teaching English (YouTube) – Click to view video

Post-video Reflection: How can you apply what you learned from Roberto Guzman to your teaching of MLLs in your classes? How does what he talks about relate to the teaching and learning of STEM?

Next Steps

When ready, continue to the next section in this module.

Module 1.7: Module 1 Post-Assessment

Now that you have completed all sections in this module, it's time to do the post assessment!

- Module 1 Post Assessment Access – Click to view video

Next Steps

When ready, continue to the module 2.

Module 2.1: Adjusting You Instruction for Your Multilingual Learners in Your STEM Classroom

Overview

This module will focus on ways in which we can adjust our instruction to best serve our multilingual learners (MLLs) in our classrooms, with an emphasis on STEM literacy and writing. Learning how to communicate in STEM fields is akin to learning a new language, with the added challenge of also learning new concepts and new ways of thinking. The Sheltered Instruction Observation Protocol (SIOP) Model is a research-based method of making instruction understandable for MLLs acquiring English, drafted and field-tested through the Center for Research on Education, Diversity, & Excellence (CREDE) and funding from the U.S. Department of Education.

- Module 2.1 Intro to SIOP – Click to view video

Next Steps

When ready, continue to the next section in this module.

Module 2.2: Component 1 - Lesson Preparation

- Module 2.2 Lesson Preparation – Click to view video
  - SIOP Lesson Plan Template – Savvas has 4 different templates you can use. Use the one that makes the most sense to you: SIOP Lesson Plan Templates - 2020
  - SIOP Lesson Planning Checklist: SIOP lesson planning checklist
  - Example lesson plan for learning activity: Module 2.2 Lesson Plan Video (YouTube) – Click to view video

Next Steps

When ready, continue to the next section in this module.

Module 2.3: Component 2 - Building Background – tie instruction to student background knowledge – students carry a wealth of knowledge into the classroom

- Module 2.3 Building Background- Click to view video
  - Classroom examples to be viewed after Video 2.3:
    - Module 2.3 Video Example (YouTube) (riddle and bats)
    - Module 2.3 Video Example (YouTube) (science - design and build cooking stove)
      - Reflection: What can you incorporate in your own lessons from the videos you just watched?

Next Steps

When ready, continue to the next section in this module.

Module 2.4: Component 3 - Comprehensible Input

Watch the following videos on comprehensible input:

- Module 2.4 Video Example Introduction (YouTube) – Click to view video
  - **Classroom examples:**
    - Module 2.4 Video Example Math (YouTube) (math)
    - Module 2.4 Video Example Bats (YouTube) (bats)
      - Reflection: What can you incorporate in your own lessons from the videos you just watched?

Module 2.5: Component 4 – Strategies: Metacognitive Strategies Based on How Children Learn

Watch the following videos on metacognitive strategies:

- Module 2.5 Video Example Introduction (YouTube) – Click to view video
  - Lecture on strategies: Module 2.5 Video Example Strategies (YouTube)
  - Classroom example: Module 2.5 Video Example Classroom (YouTube) (bats)
  - How to foster metacognitive skills for independent learning: Module 2.5 Video Example Independent Learning (YouTube)
    - Reflection: What can you incorporate in your own lessons from the videos you just watched?

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Module 2.6: Component 5 - Interaction

Watch the following videos on interaction:

- Module 2.6 Video Example Interaction Introduction (YouTube) – Click to view video
  - Deeper look at interaction: Module 2.6 Video Example Interaction (YouTube) (**skip 9:24-9:51**, **stop video at 17:07** – right before he sniffles)
    - Reflection: What can you incorporate in your own lessons from the videos you just watched?

Module 2.7: Component 6 – Practice and Application

Watch the following videos on practice and application:

- Module 2.7 Video Example Introduction (YouTube)
  - Classroom example (Newton's Laws): Module 2.7 Video Example Classroom (YouTube)
  - Classroom example: Module 2.7 Video Classroom Example (YouTube)
    - Reflection: What can you incorporate in your own lessons from the videos you just watched?

Module 2.8: Component 7 – Lesson Delivery

Watch the following videos on lesson delivery:

- Module 2.8 Video Introduction (YouTube)

Compare unsheltered vs. sheltered instruction: Watch the following 2 videos. The first is a nutrition lesson that is unsheltered. The second is the same lesson content taught by the same teacher using sheltering techniques. Your job is to make note of the ways MLL students can get lost in the unsheltered lesson and then write down the ways the teacher proactively plans for and delivers the lesson in a way that helps MLLs. Write these things down as you go through both video examples. Finish Module 2.8 with a reflection.

- Unsheltered: Module 2.8 Video Example Unsheltered (YouTube)
- Sheltered: Module 2.8 Video Example Sheltered (YouTube)
  - Reflection: Compare and contrast – what's the same? What's different? What are other things this teacher can do to ensure her MLLs understand her lesson and meet content and language objectives?

Module 2.9: Component 8 – Review and Assessment

- Module 2.9 Review and Assessment – Click to view video
  - What role does assessment play in SIOP?: Module 2.9 Video Example Assessment (YouTube)
  - Use of portfolios: Module 2.9 Video Example Portfolios (YouTube)
  - Assessment for ELLs: Module 2.9 Video Example ELL Assessment (YouTube)
  - Classroom strategies for assessing ELLs – interview with Dr. Lorraine Valdez Pierce: Module 2.9 Video Example Strategies (YouTube)
  - Games for assessment: Module 2.9 Video Example Strategies (YouTube)
    - Reflection: What can you incorporate in your own lessons from the videos you just watched?

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Module 2.10: Ways to Build Literacy in The Science Classroom

Watch the following videos on building literacy in the science classroom:

- 4 Ways to Build Literacy into Science Lessons: Module 2.10 Video Example Science Lessons (YouTube)
- Classroom example: Module 2.10 Video Example Classroom (YouTube)
    - Reflection: What can you incorporate in your own lessons from the videos you just watched?

Module 2.11: Try It Out!!!!

- Module 2.11 SIOP Model Learning Activity
    - **Learning activity:** Create your own SIOP lesson! Read the following article and use what you've learned in this article and from this module to take a lesson plan you have previously taught or plan to teach and revise it using the SIOP lesson plan template and lesson planning checklist. Try it out with your students!
        - Using the SIOP Model to Improve Middle School Science Instruction: Using the SIOP Model to Improve Middle School Science Instruction - Document Access

Module 2.12: Module 2 Post-Assessment

Now that you have completed all sections in this module, it's time to do the post assessment!

- Module 2 Post Assessment Access – Click to activate

Next Steps

When ready, continue to the module 3.

Module 3.1: Disaggregate Instruction: A Culturally Responsive Approach to Teaching STEM

Overview

This module will serve as an introduction to disaggregated instruction, an approach researched and developed by Dr. Bryan A. Brown of Stanford University. Disaggregated instruction emphasizes the importance of connecting STEM education to students' backgrounds, identities, language and culture. Doing so centers our students in the learning environment and uses their strengths to improve STEM learning.

- Introduction to Disaggregate Instruction – Click to view video

Next Steps

When ready, continue to the next section in this module.

Module 3.2: Module 3 Post-Assessment

Now that you have completed all sections in this module, it's time to do the post assessment!

- Module 3 Post Assessment Access – Click to activate

Next Steps

When ready, continue to the next item.

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End-Of-Course "Wrap Up"

CONGRATULATIONS! you have completed all modules in this course!!

- End-of-course video: End-of-course video - STEM and Multi Language Learners
- Resource list: STEM and Teaching Multilingual Learners - Resource List
- Post-assessment: Course Post Assessment Access

Next Steps
When ready, continue to the next item.

Course Completion

Professional Development Units
The suggested amount of Professional Development Units for this course is 8 contact hours. MSU Denver will issue a certificate of completion and it is at the discretion of state licensing agencies, school districts, or local educational agency to recognize completion for professional development credits.

Certificate Requirements - Click to activate
Please fill out the following registration form in order to receive a completion certificate

Feedback survey - Click to activate
Please fill out the following exit survey to provide feedback on this course.