



SCRIPT-NC Webinar:

Go SySTEMic: Integrating STEM Learning Opportunities Across Higher Education Courses and Field Experiences

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References, Resources, and Course Assignments/Activities

What is STEM?

<https://stem4ec.ning.com/blog/what-is-stem>

DEFINITION: STEM is an acronym created by the National Science Foundation for science, technology (computational thinking), engineering, and mathematics. In early childhood, STEM can be taught alone or integrated intentionally in groups of two or three, or with the arts, language, literacy, and social-emotional learning throughout a child's typical routines and daily activities.

Why is STEM critical for all young children with and without disabilities?

This documentary premiered at STEMIEFest 2020 features practitioners, families of children with disabilities, and people with disabilities discussing why STEM is important for children with disabilities and giving examples of how children with disabilities CAN engage and excel in STEM. <https://stemie.fpg.unc.edu/stemiefest/stem-starts-now>

5 things to know about STEM learning: <https://stemie.fpg.unc.edu/node/2>

Frameworks and Tools

Learning trajectories

Learning Trajectories are a unique way to understand how much your child knows about STEM concepts. With that foundation, families and early childhood practitioners are then able to implement strategic language and activities into a child's playtime that enable them to progress towards a series of goals that help them grow in their STEM learning. This page brings you to the math learning trajectories, a blog post on LTs, and a microlesson: <https://stemie.fpg.unc.edu/our-work/learning-trajectories>

You may also use this archived presentation by Drs. Doug Clements and Julie Sarama about learning trajectories and why it is a relevant and critical approach for teaching and learning for each and every child: <https://youtu.be/3Q4gdqMobv8>

Inclusion Framework

We can use adaptations and teaching practices to ensure young children with disabilities can fully participate and engage in STEM (science, technology, engineering, and math) learning opportunities and experiences. Learn more about the inclusion framework as well as get access to the guides to adaptations and teaching practices

<https://stemie.fpg.unc.edu/our-work/inclusion-stem>

This video provides information on why STEM is for all young children with and without disabilities and introduces STEMIE's inclusion framework: <https://youtu.be/SJpSfc-a9UM>

The Early Science Framework

The Early Science Initiative (ESI) offers a variety of embedded professional development opportunities that support the adults (both educators and families) in children's lives in building their lens for science to be able to offer high-quality and culturally and contextually relevant science experiences to young children.

https://www.earlyscienceinitiative.org/?fbclid=IwAR0WgxtgrQ3OL9lKnREwkB3rdjAt1Ng8_vArUiGIO9gZtPLFcFjRvx6KF3w

The presentation reviews a framework that we adapted from the new framework for K-12 science education (NRC, 2012) that helps adults both "see" and support young children in their goal-directed science and engineering explorations, investigations and problem solving

<https://stemie.fpg.unc.edu/stemiefest/making-science-and-engineering-visible-early-childhood>

DREME Network

The DREME Network was created in 2014 to advance the field of early mathematics research and improve young children's opportunities to develop math skills. The Network focuses on math from birth through age eight years, with an emphasis on the preschool years.

<https://dreme.stanford.edu/projects/early-math-resources-teacher-educators>

Personas (<https://scriptnc.fpg.unc.edu/personas>)

Infant-toddler personas <https://scriptnc.fpg.unc.edu/sites/scriptnc.fpg.unc.edu/files/resources/InfantToddler%20Personas.pdf>

Preschool personas <https://scriptnc.fpg.unc.edu/sites/scriptnc.fpg.unc.edu/files/resources/Preschool%20Personas.pdf>

K-3 personas <https://scriptnc.fpg.unc.edu/sites/scriptnc.fpg.unc.edu/files/resources/k-3%20Personas.pdf>

Michigan personas <https://eotta.ccesa.org/Resources.php?id=4095&Resources=1>

Examples of Course Assignments/Activities

Child Development

Topic	Description of Assignment/Activity	Notes for Instructor
<p>Using the math learning trajectories</p>	 <p>About Jackson (This persona was adapted from https://scriptnc.fpg.unc.edu/personas): <i>Jackson’s teacher says she never knows what to expect when he bounces through the door each day. He may have a million questions about animals or want to know more about the metric system, depending on what he saw on television the night before.</i> <i>Jackson is a first child for his parents, each of whom is a high school graduate. His mother works at the local grocery store and his father is a delivery man. Jackson’s pediatrician has done some preliminary testing and feels this 3-1/2 is significantly above average. His parents have expressed concern about how unprepared they feel to support such a gifted child.</i> <i>In his preschool classroom, Jackson is usually the first to finish when the children have an art activity. In small group work he is the first to raise his hand, wanting to share the answer. His teacher noted that Jackson seems to have grasped more complex and sophisticated math thinking than his classmates and is able to skip count by 10s to 100, and enjoys placing towers of blocks from the shortest to</i></p>	<p>These are some additional resources that may be helpful for students to have while they are working on the assignment:</p> <p>A Guide to adaptations and teaching practices: https://stemie.fpg.unc.edu/guide-adaptations</p> <p>Additional early math videos: https://ies.ed.gov/ncee/edlabs/regions/central/partnerships/projects/young-child-math.asp</p> <p>Math at home tips: https://www.learningtrajectories.org/It-resources/for-families</p> <p>You may also want to consider using or adapting other personas: https://scriptnc.fpg.unc.edu/personas</p>

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	<p><i>longest. When the teacher calls on someone else, he is crestfallen, and then if another child give an answer that is not correct, he says “wrong! His teacher has expressed concerns about how to individualize the curriculum to support Jackson’s talents.</i></p> <ol style="list-style-type: none"> 1. Review the information on learning trajectories (see link above). 2. Review information about Jackson (see persona above): 3. Register for a free account https://learningtrajectories.org. Once you are in, select ‘Explore Learning Trajectories’. If desired, you may select Alignment tool (on left side of screen, in green) to review the trajectories by age. 4. Use the learning trajectories to identify Jackson’s current thinking level on counting and measurement (length). Compare that to what some of Jackson’s 3-4-year old peers may be at. 5. Identify and describe one classroom experience/activity that might be used to support his peers in counting or measurement (length) and can be individualized to support Jackson. 6. How can Jackson’s teacher work with his parents to implement or extend the activity at home during everyday routines and activities? And how might you encourage parents of your own students to incorporate such activities at home? 	
<p>Design an activity for infants and toddlers to engage in</p>	<p>Review the Guide to Noticing STEM Learning: https://stemie.fpg.unc.edu/guide-noticing-stem-learning and Adaptations to Everyday Routines and Activities Make STEM Happen for Infants and Toddlers https://stemie.fpg.unc.edu/stemie-pd-series-adaptations-</p>	<p>Additional resources may include having students review:</p> <p>The following blog posts: Cause and Effect Through the Lens of Children 0-2 with Disabilities</p>

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STEM learning.	<p>everyday-routines-and-activities-make-stem-happen-infants-and-toddlers to help students see what STEM learning might look like for infants and toddlers and how making simple adaptations to everyday routines and activities enables basic STEM concepts to be embedded into infants/toddlers' day. The additional resources may support their activity planning. Encourage students to think about STEM learning activities they might be able to use in their classrooms.</p> <p>Use this information to develop a plan to engage infants and toddlers in STEM learning. This can be done for a group of infants and toddlers in center-based care or as part of an early intervention visit with a toddler and their caregiver.</p> <p>For center-based learning activities, consider:</p> <ul style="list-style-type: none"> • Materials needed • Adaptations so that all children can access and learn during the activities • Specific STEM vocabulary to use • Specific STEM activities to engage children • Transition plans and timeframes <p>For early intervention sessions consider:</p> <ul style="list-style-type: none"> • Materials within the home to use • Adaptations so that child can access and learn • Strategies for coaching caregivers • Specific STEM vocabulary to use 	<p>https://stem4ec.ning.com/blog/cause-and-effect-through-the-lens-of-children-0-2-with-disabiliti?context=category-Practice</p> <p>Enhance STEM Learning and Participation for Young Children with Disabilities: Common Q&A for families https://stem4ec.ning.com/blog/enhance-stem-learning-and-participation-for-young-children-with-d?context=category-Practice</p> <p>These are some additional resources that may be helpful for students to have while they are working on the assignment:</p> <p>A Guide to adaptations and teaching practices: https://stemie.fpg.unc.edu/guide-adaptations</p> <p>A guide to open-ended questions: https://stemie.fpg.unc.edu/guide-asking-open-ended-questions</p> <p>Discovery play activities: https://stemie.fpg.unc.edu/discovery-play-activities</p> <p>Tummy time activities: https://stemie.fpg.unc.edu/sites/stemie.fpg.unc.edu/files/Tummy%20Time%20Explorations%20for%20Infants.pdf</p> <p>Mealtime exploration for toddlers https://stemie.fpg.unc.edu/mealtime-explorations-young-toddlers</p> <p>Mealtime exploration for infants https://stemie.fpg.unc.edu/mealtime-explorations-infants</p>

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	<ul style="list-style-type: none"> • Specific STEM activities to engage child <p>Students will submit their activity plan on a single page in the format of their choice. They will describe the center-based activity OR the home-based visit and include how the activity may be individualized for children with multiple needs.</p>	

Family Engagement

Topic	Description of Assignment/Activity	Notes for Instructor
Common misconceptions in STEM learning	<p>Read the statement and answer with true or false</p> <ul style="list-style-type: none"> • Only formal education, such as in a school classroom, is a real education. <ul style="list-style-type: none"> ○ FACT: Meaningful learning can happen outside the classroom setting, such as at home and in the community (e.g., museums, grocery store, outdoors). • STEM learning is expensive. <ul style="list-style-type: none"> ○ FACT: STEM learning opportunities and experiences are everywhere, and most often are completely free of charge. <p>Then, ask what other misconceptions have you heard?</p>	<p>Check students' understanding at the beginning of the class by asking a true/false question:</p> <ul style="list-style-type: none"> • Only formal education, such as in a school classroom, is a real education • STEM learning is expensive <p>Encourage students to respond using interactive methods, such as poll, thumb up/down. Encourage students to read STEMIE's guide to addressing STM myths</p> <p>You may also pick other STEM myths from STEMIE's guide to addressing STEM myths: https://stemie.fpg.unc.edu/guide-addressing-stem-myths to create trivia.</p>
STEM learning in daily routines	<p>Review STEMIE's Guide to teaching practices https://stemie.fpg.unc.edu/guide-teaching-practices and STEMIE's guide to adaptations: https://stemie.fpg.unc.edu/guide-adaptations and watch the</p>	<p>You may assign the following blog posts as reading: Fostering young children's mathematics skills at home https://stem4ec.ning.com/blog/fostering-young-children-s-mathematics-skills-at-home</p>

	<p>video https://stemie.fpg.unc.edu/video-demo-daily-routines-mealtime</p> <p>Part 1: In class - Watch the video and ask students</p> <ul style="list-style-type: none"> • What STEM concept is the child learning? • What do you see the child doing? • What strategies do you see the mom using? • How was the mom providing an opportunity for STEM learning? <p>Part 2: As part of student’s assignment, create a family note to encourage and support families in extending learning to the home based on the following scenario:</p> <p>Ms. Rondell’s preschool class has been engaged in exploring force and motion with ramps and a variety of objects including balls and blocks. Some vocabulary that has been introduced included words related to speed (e.g., fast, slow), or attributes of objects (heavy, light, round, flat), and action (e.g., push, pull) and the level of force (e.g., hard, gentle). Ms. Rondell would like to provide 3 different ideas, each with 1-2 examples of open-ended questions that families could try at home or in the community with their children.</p>	<p>Supporting young children’s science learning at home https://stem4ec.ning.com/blog/supporting-young-children-s-science-learning-at-home</p> <p>Additional videos that can be used for discussion that shows STEM learning in daily routines and activities: Ice cream sundae preparation and sequencing: https://stemie.fpg.unc.edu/stemie-video-demonstration-daily-routines-ice-cream-sundae-preparation https://stemie.fpg.unc.edu/stemie-video-demonstration-daily-routines-sequencing-sundae-toppings</p>
<p>Identify STEM interests and opportunities</p>	<p>Part 1: Review STEMIE’s guide to noticing STEM learning https://stemie.fpg.unc.edu/guide-noticing-stem-learning and watch the video: https://www.youtube.com/watch?v=slvHrWMcPPk&t=1s</p> <p>After watching the video, ask students:</p> <ul style="list-style-type: none"> • What are their interests? • How do you know that? • What are some potential STEM learning opportunities? 	<p>Additional resources you may use:</p> <ul style="list-style-type: none"> • Watch the archived presentation of Drs Doug Clements and Julie Sarama talk about starting with children’s thinking and interest (free registration to access – starts from 17:00 minutes in) https://events.hubilo.com/stemiefest-2021/session/96115 (note: this archived recording and more will be available on STEMIE website by Dec 8, 2022) • STEMIE resources for families: https://stemie.fpg.unc.edu/family-resources

Part 2: As part of student's assignment, use the following persona:



Kingston is a 22-month old boy who lives with his mom, dad, and older sister. His older sister is deaf due to a hereditary condition and has cochlear implants. She is able to access sound and has developed verbal communication. Kingston's parents had him tested before he was born and he does not have the same condition. As a result, his parents have been relatively unconcerned with his development throughout his infancy. He is a very happy toddler and was a pleasant infant. He enjoys playing with other children and easily enters into play situations, even with older children. When his sister is having play dates, Kingston is usually found with them, wearing a tutu and holding a Barbie.

Kingston loves trucks, trains, and buses. He likes to take all of his vehicles and line them up and push them to drive. He often makes the "brrrr" sound while playing and he likes to watch the wheels turn. He finds books with vehicles and asks adults to read by grabbing the adult's hand and pulling him or her down to the floor with him. He points to each vehicle and whines until the reader says the name of the vehicle.

Two months ago, Kingston's mother and father started to notice that he didn't say many words compared to other children his age. In fact, Kingston was saying less words than his older sister was saying at this age and she was deaf! Kingston is still very communicative, but he doesn't say very much. He uses gestures, vocalizations (uh, uh, uh, etc.), and relies on his older sister to communicate for him. This has been working given his easy-going nature. However, the past few weeks at the childcare Kingston attends each day, there have been reports of him getting aggressively physical with other children.

Kingston's mother talked to his childcare teacher about Kingston's speech. The teacher agreed that Kingston had a limited vocabulary and was not able to communicate effectively. She also noted that Kingston would learn a word but then not use it again.

Consider:

- What are ways that you could engage and collaborate with Kingston's family and childcare teacher in thinking about next steps?
- Based on what you know about what Kingston is interested in, how might you structure your interactions with him in home and childcare settings to take advantage of his interests and to use STEM as a vehicle for his development?

Part 3 (Finale): Watch Kingston and his mom in this video and discuss the strategies mom used to cultivate his learning and communication skills:

<https://videohall.com/p/2362>

Language and Literacy

Topic	Description of Assignment/Activity	Notes for Instructor															
<p>Choose a STEM book (Adapted from Script NC, 2020)</p>	<p>Ask students to discuss the following questions and take turns sharing their idea.</p> <ul style="list-style-type: none"> • Do you have a favorite children’s book that is STEM related? • Why is it a favorite? • What STEM topics/concepts are included in the book? Encourage students to listen to each other, and further discuss or expand on the ideas. <p>Use the checklist below (see Page 16) and ask students to review the books and ask them if they would recommend the book. Why or why not?</p> <table border="1"> <thead> <tr> <th>STEM Storybook selection criteria</th> </tr> </thead> <tbody> <tr> <td>Consider Diversity and Inclusion</td> </tr> <tr> <td>There are no stereotype and misrepresentation prompted in the story</td> </tr> <tr> <td>Diverse characters (e.g., characters with disabilities or characters of color; male/female) are represented in the book</td> </tr> <tr> <td>If diverse characters were portrayed in the book, they were identified as a positive and constructive role model or have leadership and action roles.</td> </tr> <tr> <td>There are no offensive or harmful words to individuals with disabilities or diverse population (e.g., slow, crazy, idiot, etc.)</td> </tr> <tr> <td>Consider STEM content</td> </tr> <tr> <td>Storybook provides an accurate STEM idea/concepts that can be expanded on through conversation; list all possible STEM concepts</td> </tr> <tr> <td>The story incorporates different STEM vocabularies; list STEM vocabularies used</td> </tr> <tr> <td>The story can make connections with children’s own experiences</td> </tr> <tr> <td>The story can promote STEM learning and process</td> </tr> <tr> <td>Is STEM content developmentally appropriate or align with standards</td> </tr> <tr> <td>Consider Storybook Conversation</td> </tr> <tr> <td>The book is appropriate and appealing for young children (content, length, vocabularies)</td> </tr> <tr> <td>The book has potential for STEM conversations/discussions</td> </tr> </tbody> </table>	STEM Storybook selection criteria	Consider Diversity and Inclusion	There are no stereotype and misrepresentation prompted in the story	Diverse characters (e.g., characters with disabilities or characters of color; male/female) are represented in the book	If diverse characters were portrayed in the book, they were identified as a positive and constructive role model or have leadership and action roles.	There are no offensive or harmful words to individuals with disabilities or diverse population (e.g., slow, crazy, idiot, etc.)	Consider STEM content	Storybook provides an accurate STEM idea/concepts that can be expanded on through conversation; list all possible STEM concepts	The story incorporates different STEM vocabularies; list STEM vocabularies used	The story can make connections with children’s own experiences	The story can promote STEM learning and process	Is STEM content developmentally appropriate or align with standards	Consider Storybook Conversation	The book is appropriate and appealing for young children (content, length, vocabularies)	The book has potential for STEM conversations/discussions	<p>Use STEMIE curated STEM book list (https://stemie.fpg.unc.edu/storybook-conversations-curated-book-lists) as an example.</p> <p>Divide students into small groups and discuss the following questions:</p> <ul style="list-style-type: none"> • Do you have a favorite children’s book that is STEM related? • Why is it a favorite? • Would you recommend this book? Why or why not? • What STEM topics/concepts are included in the book?
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<p>Plan dialogic reading using STEM-related</p>	<p>Read the information about Joseph and Winston and identify a book from STEMIE curated STEM book list (https://stemie.fpg.unc.edu/storybook-conversations-curated-book-lists) that matches child’s developmental level and interests and discuss <i>What STEM topics/concepts are included in the book?</i></p>	<p>Note: You may be already teaching about dialogic reading, so this could be an activity that comes after the students have learned about the practice. If you are interested, use CONNECT Module 6 (see link above to provide the knowledge acquisition for learners)</p>															

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<p>storybooks and personas (Adapted from Script NC, 2020)</p>	<p>Use the Connect CROWD strategy planning sheet to plan dialogic reading strategies.</p> <p>Record yourself practicing CROWD strategy using the chosen books and upload the video to FlipGrid.</p> <p>Joseph</p> <p><i>Not Joe, Joseph, he will tell you, as he is the third Joseph in his family, and using his full name is a tradition. With a younger sister coming behind him, he is continuing a family tradition of learning and education. Joseph’s mother and father both completed advanced degrees and are eager to understand how they can support him in achieving his full potential.</i></p> <p><i>Joseph’s family can trace their roots in North Carolina back several generations to the era of slavery. They take pride in sharing the stories of both their roots and their aspirations. In fact, carrying the stories of the past forward is a commitment Joseph’s family shares both at home and in their place of worship.</i></p> <p><i>In his Kindergarten classroom, Joseph is quick to raise his hand when he knows the answer. He is fascinated with any aspect of science – animals, planets, dinosaurs, etc. But reading is not Joseph’s favorite thing. When it’s time to focus on reading, Joseph tunes out. When his family has asked him about this, his response has been that reading is “boring” and doesn’t relate to him. Joseph’s teacher is very concerned about his lack of interest in the reading curriculum.</i></p> <p>Winston is a three year old oftentimes referred to as “Sir”. He lives with his parents who are of Native American and African American descent. He is an only child in the household. The</p>	<p>Assign the following blog post: Reading beyond the book: Incorporating dialogic reading strategies https://stem4ec.ning.com/blog/reading-beyond-the-book-incorporating-dialogic-reading-strategies?context=category-Storybook+Conversation</p> <p>You may use STEMIE’s storybook conversation series (https://stemie.fpg.unc.edu/resources?f%5B0%5D=field_resources_for_families%3A100) as examples</p> <p>Divide students into small groups. Use Jamboard, Padlet, or Google doc to write down their discussion.</p> <ul style="list-style-type: none"> • Use STEMIE curated STEM book list to select storybooks match child’s developmental level and interests and list STEM concepts • Plan dialogical reading strategies using Connect CROW strategy planning sheet <p>Ask students to create a presentation using FlipGrid</p>

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	<p><i>family dynamics are richly based in culture consistent to morals and being authentic.</i></p> <p><i>Winston’s obsession with dinosaurs has evolved over the past two years. He is very strong in learning about dinosaurs and incorporating “his favorite” T-Rex in his learning and social environment. He loves to share his adventures with family and friends through literacy and play. Another strong emphasis Winston has is science.</i></p> <p><i>His mother is a strong advocate for literacy by which books are read to him daily. Winston has evolved in his reading by identifying objects, some words, and talking about the images he sees in the books. The concern his parents have is finding images in books that look like him.</i></p> <p><i>Winston’s parents are concerned that he does not speak as clearly about other concepts outside of dinosaurs and nature. He is ready to learn new concepts introduced to him formally or informally. He is well versed in the alphabets, numbers to twenty, colors, shapes, opposites and some aspects of the earth such as differences in night and day, cold and hot.</i></p> <p>Consider also how important it is to positively affirm both children in their STEM identity by learning more from this blog post written by Winston’s mom:</p> <p>https://stem4ec.ning.com/blog/positive-affirmations-in-stem</p>	
STEM talk and adaptations	<p>Review STEMIE’s guide to asking open-ended questions and adaptations.</p> <ul style="list-style-type: none"> • Watch the video and share additional questions you might ask to initiate STEM talk with children on Padlet. <ul style="list-style-type: none"> ○ Consider questions related to help support children in observing, making predictions, discussing, exploring and experimenting. 	<p>Review the Rosie’s Walk tipsheet developed by STEMIE and watch the video https://stemie.fpg.unc.edu/stem-video-demonstration-storybook-conversation-rosies-walk and the following blog posts: Ideas to introduce a STEM storybook to children with visual impairment</p>

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	<p>Review STEMIE’s guide to adaptations.</p> <p>Watch the video and share additional adaptations you might use to increase children’s STEM learning opportunities</p> <ol style="list-style-type: none"> a. Consider adaptations to environment, materials, instruction <p>After watching the video, ask students:</p> <p>What are additional questions you might ask to initiate STEM talk with children and support their thinking?</p> <p>What are additional adaptations you might use to increase children’s STEM learning opportunities?</p> <p>Ask students to use Jamboard, Padlet, or Google Docs to write down their response</p>	<p>https://stem4ec.ning.com/blog/ideas-to-introduce-a-stem-storybook-to-children-with-visual-impai?context=category-Storybook+Conversation</p> <p>Adaptations for engaging children with disabilities in STEM story</p> <p>https://stem4ec.ning.com/blog/adaptations-for-engaging-children-with-disabilities-in-stem-story?context=category-Storybook+Conversation</p>
<p>Everyday STEM talk</p>	<p>Review the Everyday STEM talk document and use the examples to describe how STEM talk could look like within everyday routines and activities</p> <p>After reviewing the examples, ask students to provide additional prompts, questions or STEM talk for the following scenarios:</p> <ul style="list-style-type: none"> • At bathtime • While at the grocery store • While going for a walk • Changing diapers • At mealtime <p>Ask students to use Jamboard, Padlet, or Google Docs to write down their response</p>	<p>Additional resources that may be helpful:</p> <ul style="list-style-type: none"> • A guide to noticing STEM learning https://stemie.fpg.unc.edu/guide-noticing-stem-learning • A guide to asking open-ended questions https://stemie.fpg.unc.edu/guide-asking-open-ended-questions

Health, Safety, and Nutrition

Topic	Description of Assignment/Activity	Notes for Instructor
<p>Sequence/Algorithms in Cooking and Snacks</p>	<p>Review resources on foundational computational thinking. This blog post: https://stem4ec.ning.com/blog/stem-talkable-2-computational-thinking-in-early-childhood and this recording: https://stem4ec.ning.com/blog/STEM+talkABLE from STEMIE are focused on what computational thinking is for young children. Then think about how you can use some of this logic with your students during snack time, mealtime, and any class cooking activities.</p> <p>Design a learning activity for students to create a step by step sequence to illustrate how to make their favorite healthy snack. You will need to be sure that the students are able to identify each step in the right order.</p> <p>Example healthy snacks: Celery with nut butter and raisins on top, peanut butter and jelly sandwiches, yogurt with fresh fruit. on top.</p> <p>Students will submit their plan for helping children develop the series of steps in correct order to create their favorite snack(s). Include specific adaptations (visuals, materials, etc.) to support child engagement in the development of the sequence.</p>	<p>When you are covering healthy snacks and meals as part of your HSN class, this is a great opportunity to teach about sequences and algorithms.</p> <p>Additional Resources from STEMIE: Computational Thinking Blog Post: https://stem4ec.ning.com/blog/stem-talkable-2-computational-thinking-in-early-childhood</p> <p>Computational Thinking Podcast: https://stem4ec.ning.com/blog/STEM+talkABLE</p> <p>Additional Resources outside of STEMIE: GBH Kids - Supports for preschool educators to teach computational thinking https://wgbhkids.com/</p>
<p>Considering outdoor play and diverse natural outdoor settings</p>	<p>Review Outdoor play + Learning = STEM (Free registration to access) https://events.hubilo.com/stemiefest-2021/session/87939 to learn why children need to have the opportunity to engage in natural settings outdoors.</p> <p>Have students imagine they are taking a small group of toddlers on a nature walk on a beautiful sunny day. Give them five</p>	<p>This activity can be used in class to catalyze discussion or as an online discussion board activity. An alternative would be to ask the same question but instead of an outdoor activity, they could focus on how many concepts they could teach using the sand or water table in the classroom.</p>

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	minutes to write down the STEM concepts they could teach using only the naturally occurring materials they find on the walk (e.g., big and little with stones, alike and different with leaves, shade/sun/shadows), then have each of them share back an idea.	

Practicum Courses

Topic	Description of Assignment/Activity	Notes for Instructor
Integrative STEM Teaching Project	<p>In practicum settings, students will create a teaching unit that centers STEM learning, culturally relevant, and/or inclusive pedagogy for young children. Students will create an anticipatory web of STEM topics and possible questions to explore, lesson plans that address multiple domains of learning and demonstrate inclusivity for diverse learners, inventory of materials including texts, resource list, and a culminating action project that young children can engage in to increase STEM content knowledge, awareness, and confidence.</p> <p>Students will either record their teaching activity in their practicum site or present their activity to their classmates during a synchronous session. The activity should be about 10 minutes in length and include interactive components and supports for all children to engage in the STEM learning activity.</p>	<p>Have the students review the blog post on the Project Approach and STEM learning for All: https://stem4ec.ning.com/blog/project-approach-and-stem-learning-for-all and read and learn about topic webs: https://illinoisearlylearning.org/pa/project-planning/topicwebs1/</p> <p>Additional Resources:</p> <p>A Guide to Teaching Practices: https://stemie.fpg.unc.edu/guide-teaching-practices</p> <p>A Guide to Adaptations: https://stemie.fpg.unc.edu/guide-adaptations</p> <p>Project Approach: https://stem4ec.ning.com/blog/project-approach-and-stem-learning-for-all</p>

STEM Storybook selection criteria
Diversity and Inclusion
There are no stereotype and misrepresentation prompted in the story
Diverse characters (e.g., characters with disabilities or characters of color; male/female) are positively represented in the book.
If diverse characters were portrayed in the book, they were identified as a positive and constructive role model or have leadership and action roles.
There are no offensive or harmful words to individuals with disabilities or diverse population
STEM content
Storybook provides an accurate STEM idea/concepts that can be expanded on through conversation; list all possible STEM concepts
The story incorporates different STEM vocabularies; list STEM vocabularies used
The story can make connections with children's own experiences
The story can promote STEM learning and process
Is STEM content developmentally appropriate or align with standards
Dialogic Reading/storybook conversation/shared book reading
The book is appropriate and appealing for young children (content, length, vocabularies)
The book has potential for STEM conversations/discussions
Other strengths of story/book

This check list was adapted by Hsiu-Wen Yang from Connect Module 6.2; Adapted from Cavanaugh, C. L. (2010); Nasatir and Horn(2003); STEM literacy, 2017; Van den Heuvel- Panhuizen, M. & Elia, I. (2012)

