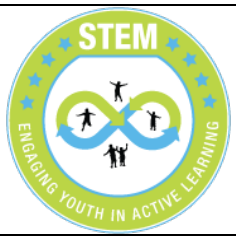
FOUNDATIONAL DIGITAL CREDENTIAL	
Creating Informal STEM Learning Environments 	**A facilitator who earns this digital micro-credential can show** **ORGANIZATION:** 1. Prepares materials in advance and makes materials available and arranges them so youth can access them without time loss. 2. The facSmooth transitions between sub-parts of the activity. 3. Effective use of time. 4. STEM back-up plan in place for when situation changes (weather, less kids than expected, something breaks), that still focuses on a STEM-related learning goal. **Appropriate and Appealing MATERIALS:** 1. Culturally sensitive (considers youth of different genders, cultural backgrounds, ethnicities, socioeconomic status, and with disabilities.) 2. Developmentally appropriate. 3. Supportive of intended STEM learning goals. 4. Safe (don't pose dangerous situations/safety precautions taken.) 5. Interesting and appealing to the youth. 6. Some may not show overt appeal. In this case it is enough for the youth to be actively using the materials and not pushing them away to do other things (e.g. use their phones.) **SPACE UTILIZATION:** 1. Space used in an informal manner that is conducive to STEM learning in OST (i.e., different from a formal, teacher-directed set-up, promotes collaboration, movement and informal learning. 2. Space appropriate for all aspects of the STEM activity being enacted (e.g., there is enough room to move around, there are appropriate areas/conditions to work with particular materials, free from any physical/safety hazards, etc.) 3. Minimal distractions or things that divert youth attention or detract from their overall experience during the STEM activity.
CORE DIGITAL CREDENTIAL(S)	
Promoting Purposeful STEM Activities 	1. Questions and activity structure that has a clearly defined STEM learning goal. 2. Time used for activities that productively have youth move towards the STEM learning goal.
Engaging Youth in Active STEM Learning	1. Opportunities for youth to actively construct their understanding of a STEM concept by interacting directly with materials or virtual materials (simulations, etc.) 2. Youth having opportunities to engage in hands-on activities. 3. Youth taking an active role in their learning—they are doing the cognitive work

	instead of the facilitator doing all the exploring/thinking about STEM content. 4. Youth being encouraged to ACTIVELY engage with the concept and ideas and avoiding keeping youth in the PASSIVE role.
Ensuring Equitable Participation in STEM 	1. Activity set up to provide equal opportunities for all youth to engage in ALL aspects of the activity. 2. Prompting, re-engaging, or providing access to youth If some young people are dominating an activity or being left out.
Establishing STEM Identity and Relevance 	1. Setting up or prompting discussion about how the STEM activity connects with an idea, occurrence, phenomena, or experience in youth personal lives/experiences, other subject areas or community/careers. 2. Ensuring that the youth discuss relevance of an experience in their own words. 3. Ensuring there are a diversity of examples or enough understanding of the youth in the group so that relevance is not only available to a subgroup of youth (e.g., making a reference to golf if the youth have never played or seen golf, or making a reference to using salt on driveways in the winter if the youth live in a geographic area where they don't get snow.)
Creating a Positive STEM Learning Atmosphere 	1. Positive and equitable relationships with the youth (and other facilitators, if applicable.) 2. A warm learning environment (eye contact with youth, smiling and using first names, listening to their ideas and MODELING similar excitement, curiosity and engagement with the STEM activity as they hope youth to have.) 3. Encouraging, prompting for, and supporting positive interactions among youth (examples below): a. Making eye contact when speaking to youth. b. Addressing youth by their names. 4. Facilitators and **the group of youth:** a. Being cooperative and sharing materials and ideas. b. Interacting respectfully. c. Listening to each other and taking turns. d. Not criticizing, judging or using sarcasm.

ADVANCED KNOWLEDGE AND COMPETENCY DIGITAL CREDENTIAL(S)	
Ensuring STEM Content Learning 	1. Presenting STEM content accurately. 2. Making connections across content ideas to deepen youth understanding of concepts. 3. Encouraging youth to make comments and questions to indicate that the activities support their understanding of the content 4. Providing opportunities for youth, and majority of youth can, apply their knowledge beyond superficial memorization/repetition. 5. Responding to youth errors in content learning and guiding youth towards understanding (e.g. the facilitator encourages youth to think of ways to find the answer rather than rushing to tell them the right answer.) 6. Not allowing misconceptions to build without addressing them in some way.
Encouraging STEM Practices 	1. Creating opportunities that allow the majority of youth to engage in STEM practices such as making observations, modeling, asking questions, conducting investigations, analyzing data, and constructing explanations (for engineering--identifying the problem, testing and re-testing, modifying design, etc.) 2. Supporting the majority of youth in participating in the STEM practices in **authentic ways** (versus superficially going through the motions of inquiry) to pursue scientific questions, address a design problem, collect data, etc. (e.g., just mixing two things together to see a color change is not an "experiment.")
Facilitating STEM Reflection and Connections 	1. Prompting youth to think about what they just did, what it means, how it relates to next or previous steps. 2. Prompting youth to engage in sustained reflection (throughout the activity) beyond a few quick questions at the end. 3. Encouraging youth to explain their learning and experience in their own words. 4. Supporting youth reflection that goes beyond incomplete or inconsistent statements and help youth organize their ideas and build connections. 5. Making sure the majority of youth get opportunities to reflect and that this is not an activity only happening in notebooks or in select groups in the room.
Encouraging Youth Voice in STEM 	1. Seeking out and supporting youth ideas and points of view. 2. Giving youth roles that allow for genuine personal and group responsibility. 3. Supporting youth to make important and meaningful choices. 4. Offering choices beyond superficial decisions (a color, a group name, where to sit) and instead allowing youth to weigh on decisions impacting the direction of the learning experience (e.g. selecting the supplies needed to investigate the phenomena.) 5. Youth having opportunities to share their ideas outside of the program to school/community members and move to making impact at larger-scale.