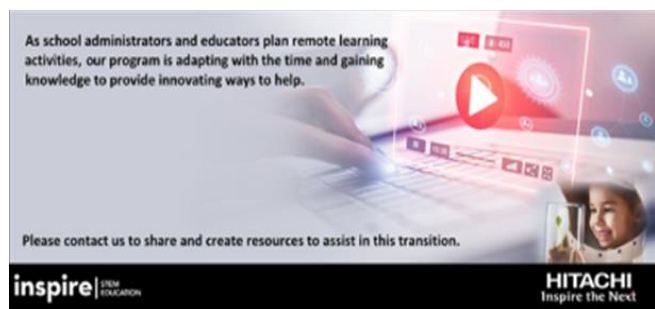


Thinking Through the *SHIFT* to Online Learning Location... Location... Remote

The shift has happened, education is moving forward and the Hitachi High-Tech America’s Inspire STEM Education Program is adjusting to be more than a change leader in education but a key contributor within it. It was necessary to listen to the input of our communities and what was heard was clear: there is a forced shift in education to remote/online learning and teachers are overwhelmed and on information overload. To be effective, the Inspire STEM Education Outreach Program needed to figure out how to support educators as they transform brick and mortar classrooms in schools to immediate full time virtual learning environments with a blended learning environment to start the new school year, which will be both person to person and virtual teaching and learning.

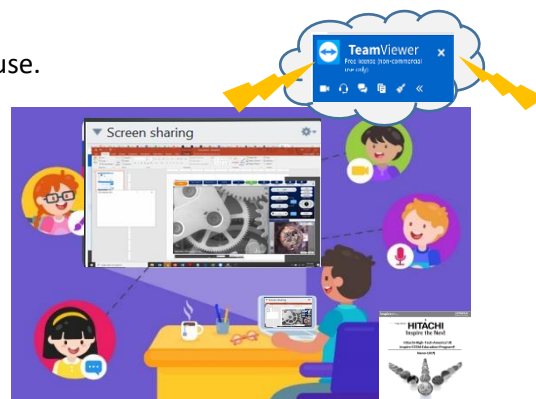


To support teachers in creating the classroom of tomorrow we are adapting to our communities’ different needs. The Inspire STEM Education Outreach Program made an immediate and seamless shift providing remote access with a few of our regions where adapting to this platform was available. The program then worked to make sense of Nano resources available to educators to streamline the time it can take to teach microscopy in their classrooms. This included developing Learning Modules for educator to use for their lesson plan designs. This overview shares how our program would adapt at outreach sites around the world in order to meet the needs of educators and communities.

To address the immediate need of virtual learning. SEM units were used to provide video lecture style learning. Educators would provide the information via a video platform while operating the SEM and viewing the images. To move learning to real time use, we partnered with MIT Museum who tested a pilot concept to use our program realtime via virtual classrooms. The following process to transition from person to person experience to virtual was found to be the most efficient and user friendly for educators to use. It would work as follows:

Virtual Classroom

1. Schedule a block of time on an SEM that is set up for remote access.
2. The Educator needs TeamViewer application downloaded and ready to use.
3. Calendar invite and TeamViewer code will be received.
4. Optional for remote communication; Webcam, Microphone, Speakers.
5. The remote user can now control the SEM through the SEM software remotely. They will be able to use all of the controls in the software. The person at the location of the SEM can now vent/evacuate the chamber and change samples as needed.
6. Save images to a shared folder (Google Drive) will allow SEM images to be available to remote users and to complete their outreach report to be submitted.



Resources:

1. Educator downloads receive/downloads Nano Learning Module of choice; Nano101, Bio, Forensics, & more
2. Educator follows modules and uses SEM remotely.

Inspire STEM Education Outreach Program

3. Learning module hands-on activities were chosen to be done as part of in-classroom or virtual classroom activity through common household items.
4. Other learning options on www.inspireSTEMeducation.us under Resources.

The extension to this program will not only meet the need of the shift in education today going digital, but it can also expand our reach. This remote connection can not only increase the number of users and regions that can be served, but extend the use and learning/outcomes achieved. Outreach instructors can now use virtual learning leading up to opportunity of having an SEM visit their classroom for hand on project based learning. They can then continue their connection to Nano via remote access on their projects. This will meet the need of blended learning that will connect brick and mortar classrooms with virtual learning. The EOP program envisions remote access as more than just an “alternative” as you will notice in both our traditional and virtual scenarios, remote access is a critical part of making a difference in students’ education and STEM knowledge. We aim to leverage the inherent advantages remote access makes available to educators: Flexibility & choice.

This blended learning uses Inspire STEM Education Outreach Program as designed. Outreach regions will continue to utilize our program in their classrooms:

Traditional/Brick & Mortar School

1. Schedules the delivery of the SEM visit with outreach region leader.
2. The SEM is delivered and training of the program and use of the SEM is done.
3. The Educator and students use activities and resources to learn about Nano Technology.
4. SEM gets picked up
5. Reports are submitted on their experience.
6. The educator can dive deeper and continue microscopy/Nano lessons via remote access.
 - a. Allows for wider outreach footprint
 - b. Provides flexibility for educator and students to better incorporate Nano concepts to existing classroom work.



Resources:

1. Educator downloads receive/downloads Nano Learning Module of choice; Nano101, Bio, Forensics, & more
2. Educator follows modules and uses SEM remotely.
3. Learning module hands-on activities were chosen to be done as part of in-classroom or virtual classroom activity through common household items.
4. Other learning options on www.inspireSTEMeducation.us under Resources.

The program is working to blend traditional program use with remote access. This will be more than just an “alternative” as you will notice in both the traditional and virtual scenarios, remote access is a critical part of making a difference in students’ education and STEM knowledge. The goal is to leverage the inherent advantages remote access makes available to educators: Flexibility & Time.

The HTA Inspire STEM Education Outreach Program is continuing its work. Adapting with the time to provide innovating ways to transition from in person to virtual experiences is including online capability, live sessions, remote teaching and resources for virtual classrooms. RTNN, Stanford, BioBus, MIT Museum, NNCI and other partners are coming together to Inspire the NEXT in Powering Good to be change leaders in these times.

Inspire STEM Education Outreach Program

The program continues to follow our mission to inspire the next generation of innovative science pioneers through the advancement of STEM and explore a new gateways into the minds of students by showing the power of science and technology. This program uses the tabletop scanning electron microscope, both traditionally and remotely to expand the learning experiences with best practices and resources from our work in the field and from education and business collaborators. **Inspire the Next...towards Powering Good** for a better tomorrow.

Here is a diagram of our outreach locations and our collaborations and partnerships:



Here is a diagram of the flow of how we see our program supporting educators and expanding in the future.

Inspire STEM Education Blended Learning



Please contact us to get involved with the Hitachi High Tech America Inspire STEM Education Outreach Program by visiting our website – www.inspireSTEMeducation.us or email Lori.Harvey@Hitachi-HighTech.com.