

A Note to All Parents and Educators

from Dr. Koshi Dhingra, talkSTEM founder

I know that you will use the Her STEMLens virtual exhibition and movement in a wide variety of ways. Many of you will come up with new activities and games that will engage your children and students, and I sincerely hope you will share your ideas with the talkSTEM and Her STEMLens community by commenting on the website and/or posting to social media. The exhibition continues from our launch date of February 11, the International Day of Women and Girls in Science, through May 31, and will be refreshed three times - in March, April, and May. There will be lots of opportunities for children to interact with the exhibition, to ask questions, and to discover STEM moments of their own.

In this Educator Resources packet you will find three resources that can be used for a broad range of ages. The goal of the exhibition is to foster STEM identity and to spark STEM questions, grounded initially in the exhibits and later in the child's own environment.

1. Student Activities Sheet

This consists of questions you can provide, so that students feel a sense of purpose while they interact with the exhibition – though by all means feel free to add additional questions of your own! Of course, students' thoughts and reactions beyond the questions included in this sheet are also valuable, and I hope you have some fascinating conversations both within and outside of the question structure provided.

Best for: Upper elementary, middle, and high school

For younger children, many of these same questions can be used but will require a facilitated conversation. This may be something you do with a small group, or with a larger whole.

2. Gallery Guide (February, 2021)

This is a detailed list of all images and videos featured in the exhibition from February 11 to March 13. Some examples of ways to use this list include:

- A scavenger hunt, where you can direct students to work in pairs or teams to discover a certain number of exhibits and share their findings with their peers.
- A guide by which to explore the exhibition in stages.
- A reference, to help encourage students write reflections on one of the four galleries or select exhibit pieces.

Best for: Middle and high school

For younger children, this guide is a useful tool, but will require an adult to walk children through the lists and check for understanding.

3. Quest (February, 2021)

This is a fun scavenger hunt for “objects” hidden around the gallery halls that relate to select exhibit pieces. As a hint to both students and teachers, most objects can be found nearby a related submission . . .

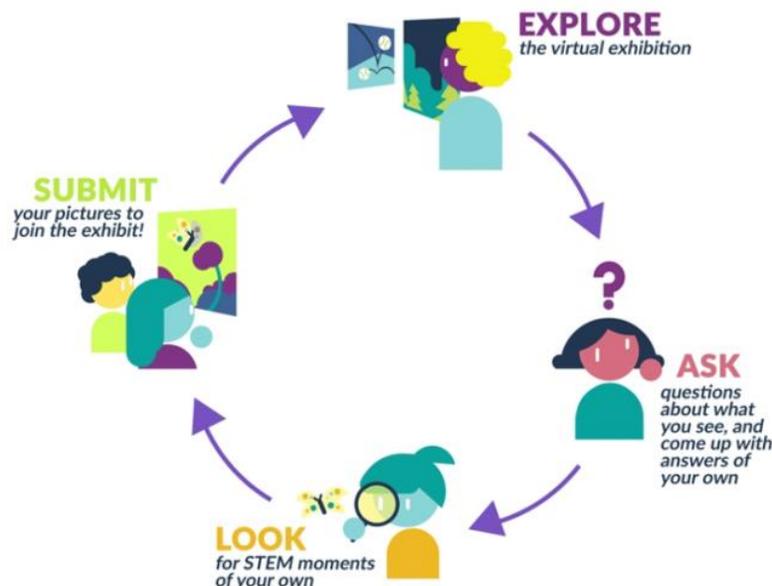
Best for: Elementary and middle school (although older children might enjoy it as well!)

Her STEMLens, a virtual exhibition

Take a walk through the four galleries in the exhibition:
Art, Food, Outdoors, and Sports & Fitness.

Here are some things to do on your own or with a partner as you go on your virtual walk:

1. Select two images or videos in each gallery that stood out for you and discuss why.
2. Pick any two questions that *Her STEMLens* contributors asked and try to answer them or discuss how you would go about coming up with an answer.
3. Pick any two images in each gallery and come up with your own, different questions based upon what you see
4. After viewing our exhibit, how do you think STEM and art are related? How about STEM and food?
5. Can you think of a career that combines
 - both sports/fitness with STEM?
 - both art with STEM?
 - both food with STEM?
 - both outdoors environments (urban, suburban, or rural) with STEM
6. What do you enjoy about seeing the world through a STEM lens?
7. Which room in the gallery was your favorite? Why?
8. SHARE: If you identify as a girl aged 5-18, would you like to be featured in *Her STEMLens*? We invite you to participate in the #HerSTEMLens movement and we will select new images to feature in our exhibition each month (February-May, 2021). We'd love to see what you share on social media – whether you participate with your family at home, in an afterschool group, or anywhere! Don't forget to tag us and use the #herSTEMLens.

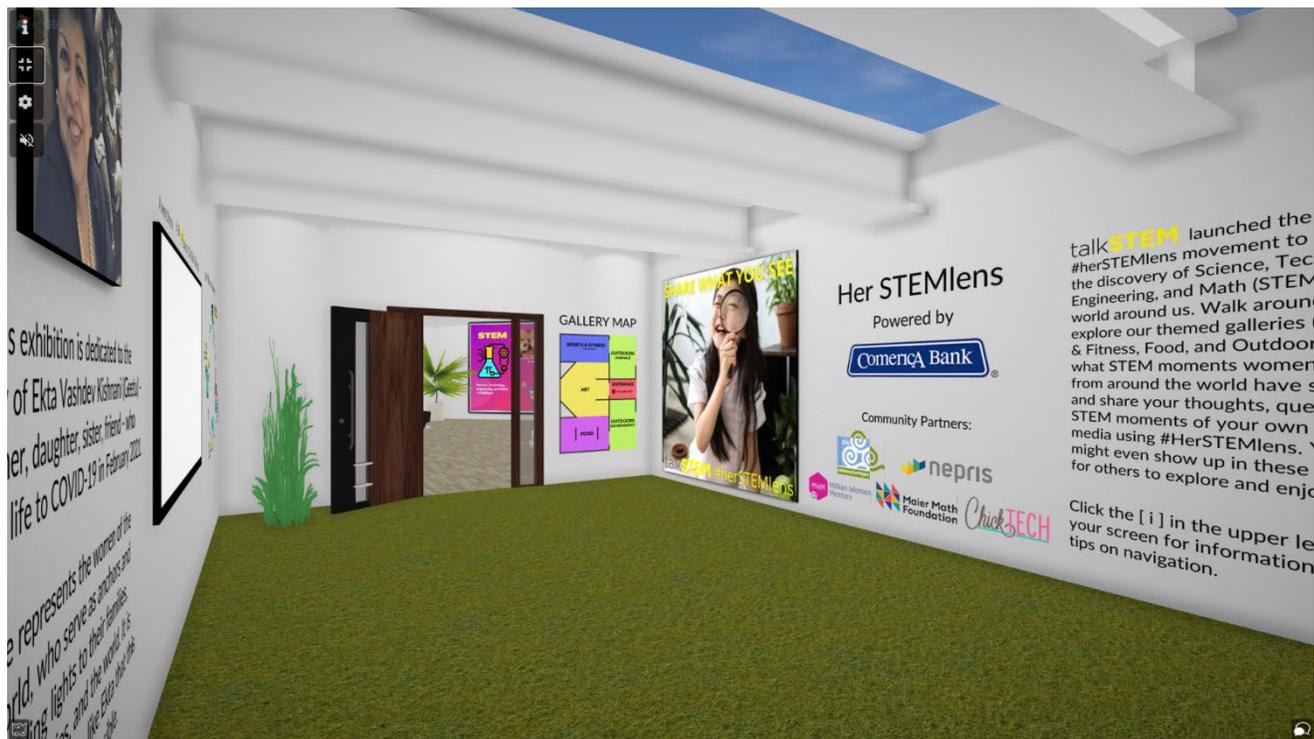
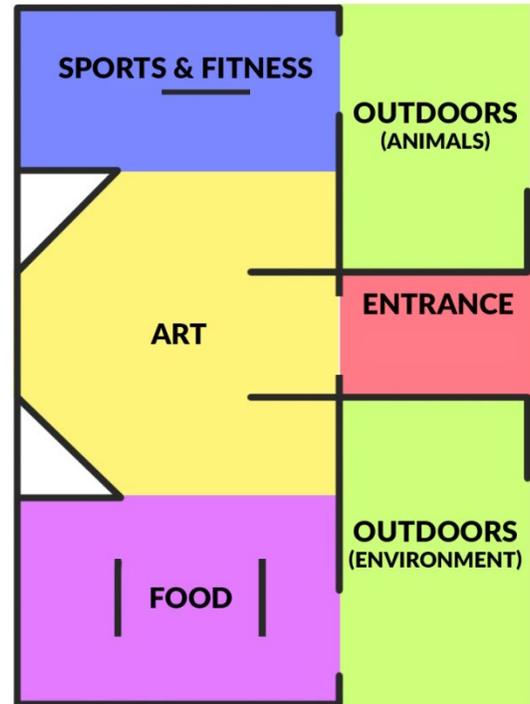


Her STEMLens February Gallery Guide

The *Her STEMLens* exhibition space is organized into multiple themed galleries – Art, Sports & Fitness, Food, and Outdoors. The pieces in these galleries come from all over the world, from young girls and accomplished women in STEM fields alike.

We've included below a list of all pieces on display in February, with video submissions marked in **bold**, and women in STEM contributors marked with an * asterisk.

Enjoy touring the exhibition, and be sure to leave a comment or submit your own thoughts and questions by posting on social media using #herSTEMlens – your piece might even show up in next month's hall!



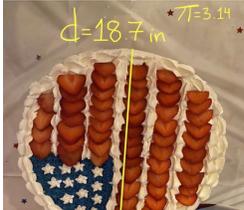
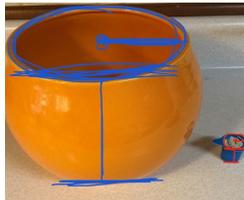
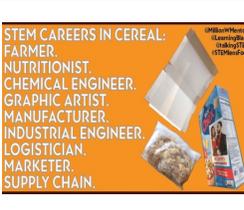
Art

Submitted Pieces		Contributor
1	<p>Approximately how many diamonds are sewn onto this quilt?</p>	Submitted by Min Wang, doctoral student in Math Education at SMU.
2	<p>How many books could fit on this bookshelf?</p>	Submitted by Astra Zeno of the Young Women's College Preparatory Academy in Houston, TX, on behalf of her students.
3	<p>What shapes do you see?</p>	* Submission from Dr. Leanne Ketterlin Geller, PhD.
4	<p>How many different angles do you see?</p>	Submission from Dallas Love Field Airport.
5	<p>https://youtu.be/rYJE7JiNmvc STEAM in design at Solar Prep</p>	Submitted on behalf of the Solar Preparatory School for Girls, Dallas ISD, by Assistant Principal Jennifer Turner.
6	<p>How does a pinhole camera create a solar graph?</p>	Submitted by Sonia Dhingra, high school senior at Greenhill School, Addison, TX.
7	<p>Why do minerals come in so many colors?</p>	* Submitted by Dr. Linda Silver, Eugene McDermott Chief Executive Officer at the Perot Museum of Nature and Science.

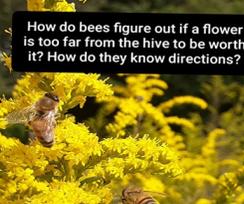
<p>8</p>		<p>Dress circles, balance beams, and square tiles.</p>	<p>Submitted by Astra Zeno of the Young Women's College Preparatory Academy in Houston, TX, on behalf of her students.</p>
<p>9</p>		<p>Why does the length determine the tone?</p>	<p>* Submitted by Maya Leibman, talkSTEM board member and CIO of American Airlines.</p>
<p>10</p>		<p>Cross-generational sharing of STEM</p>	<p>* Submitted by Sonja Bernhardt OAM, Australian technology entrepreneur.</p>

Food

Submitted Pieces		Contributor
<p>11</p>	<p>The mass and initial temperature of the water are shown. How much energy is required to bring the water to boiling? (Assume total heat transfer) (HINT: $q = mc(T_f - T_i)$)</p>	<p>How much energy is required to bring the water to boiling?</p> <p>* Submitted by Morgan Merriman, high school chemistry teacher, Dallas ISD.</p>
<p>12</p>	<p>Why doesn't toffee break in straight lines when you cut it?</p>	<p>Why doesn't toffee break in straight lines when you cut it?</p> <p>An anonymous submission.</p>
<p>13</p>		<p>How many green beans come in each can?</p> <p>Submitted by Astra Zeno of the Young Women's College Preparatory Academy in Houston, TX, on behalf of her students.</p>
<p>14</p>	<p>Would my bread have risen differently in a metal pan?</p>	<p>Would this bread rise differently in a metal pan?</p> <p>* Submitted by Karen Carney, Head of School at the Chicago Friends School.</p>

15		How can the circumference of this dessert be calculated?	Submitted by Min Wang, on behalf of Dallas ISD high school students in the SMU college access program.
16	https://youtu.be/MzhHKKmPTds	What is the ideal temperature for cooking?	* Submitted by talkSTEM. Special thanks to Starbucks Community Café in RedBird neighborhood of Southern Dallas and City of Dallas Office of Cultural Affairs
17		Given these differences in scale, what percentage of the coffee cup with the creamer fill?	Submitted by Min Wang, on behalf of Dallas ISD high school students in the SMU college access program.
18		STEM careers in cereal	* Submitted by Sheila Boyington, CEO of Learning Blade and National Senior Advisor to STEMconnector® and National States Chair for Million Women Mentors®

Outdoors

Submitted Pieces		Contributor	
19	 <p>What seems to be the average "height" of an adult bunny?</p>	What seems to be the average "height" of an adult bunny?	* Submitted by Min Wang, doctoral student in Math Education at SMU.
20	 <p>Why is this creature blending in to its surroundings?</p>	Why is this creature blending in to its surroundings?	* Submitted by Kim L Galloway, Education Specialist at Region 13.
21		How do bees figure out if a flower is too far from the hive to be worth it? How do they know directions?	* Submitted by Prof. Laurice Nemetz, of Pace University.

<p>22</p>		<p>How long will it take for this flower to grow?</p>	<p>Submitted by Astra Zeno of the Young Women's College Preparatory Academy in Houston, TX, on behalf of her students.</p>
<p>23</p>	<p>https://www.tiktok.com/@tofuwarlock/video/6917377063137676550?</p>	<p>Questions in nature</p>	<p>* Submitted by Jennifer Fee and Victoria Varlack of the Cornell Lab of Ornithology.</p>
<p>24</p>		<p>Why are some flowers globe-shaped?</p>	<p>* Submitted by Karen Carney, Head of School at the Chicago Friends School.</p>
<p>25</p>		<p>What simple machine do you see?</p>	<p>* Submitted by Meghan Curry, Executive Director at Insights El Paso.</p>
<p>26</p>	<p>https://youtu.be/OJokngXBp4</p>	<p>What volume of water can the rain barrels hold?</p>	<p>* Submitted by talkSTEM in partnership with Girl Scouts of North East Texas, with support from the High Tech High Heels non-profit.</p>
<p>27</p>		<p>Why such great symmetry?</p>	<p>* Submitted by Maya Leibman, talkSTEM board member and CIO of American Airlines.</p>
<p>28</p>		<p>Why do these minerals look like feet?</p>	<p>* Submitted by Kimberly Vagner, Director of the Gems and Minerals Center of Excellence at the Perot Museum of Nature and Science.</p>

Sports

Submitted Pieces		Contributor
29	 <p>How can the size of a stadium be estimated from its capacity?</p>	An anonymous submission.
30	 <p>What shoe pattern works best for a long run?</p>	An anonymous submission.
31	 <p>What is the diameter of the basketball hoop?</p>	Submitted by Astra Zeno of the Young Women's College Preparatory Academy in Houston, TX, on behalf of her students.
32	<p>www.mathathome.mathlearningcenter.org/activity/1437 Skateboard questions</p>	Submitted by the Math Learning Center, as part of their Math at Home series (mathlearningcenter.org).
33	 <p>What is happening in the brain during meditation?</p>	* Submitted by Dorsey Standish, Chief Mindfulness Officer at Mastermind Meditate.
34	 <p>What is the ideal pickleball angle?</p>	Submitted by Sonia Dhingra, high school senior at Greenhill School, Addison, TX.
35	<p>https://youtu.be/jdbdZYUxtio Why is the roof this shape?</p>	Submitted by Girls Inc. of Metropolitan Dallas as part of their Create Your Own walkSTEM project.
36	<p>https://youtu.be/RuBR-ivttNI Designing Games at the Cameron Indoor Stadium's Basketball Court</p>	* Submitted by Katherine Drinkwater, undergraduate at Duke University's Pratt school of engineering and member of Duke's chapter of Society of Women Engineers.