



# A Transformative Transmedia Framework For Early STEM Learners

Dr. Roni Ellington, Morgan State University  
Beth Daniels, TPT – Twin Cities PBS  
Felicia Orozco, TPT – Twin Cities PBS



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# Agenda

- Why develop this Framework?
- How we developed the Framework
- What is the Framework?
- How we use the Framework
- What have we learned from this work?
- Moving forward

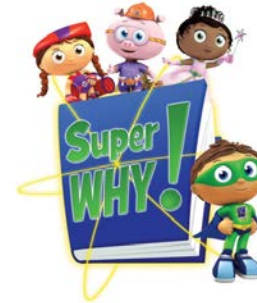
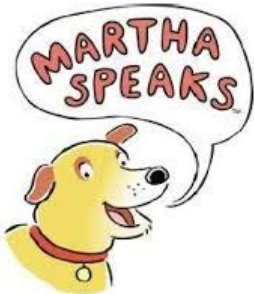




# Why develop this Framework?



# Ready to Learn





**GOAL**

**Reach children in an authentic way,  
to engage them in meaningful  
STEM and LITERACY learning**



# ISSUES

**Structural Barriers**

**#OscarsSoWhite**

**#WritersSoWhite**

**#InvisibleInMedia**

**#RepresentationMatters**

**#DismantleStereotypes**

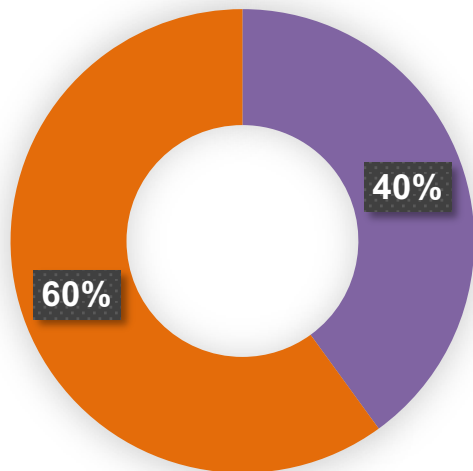
**#DiverseVoicesMatter**

**#WindowsAndMirrors**

**No one knows every culture**

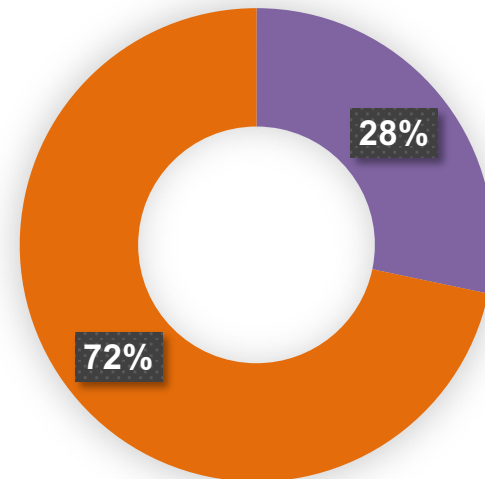


## U.S. Population



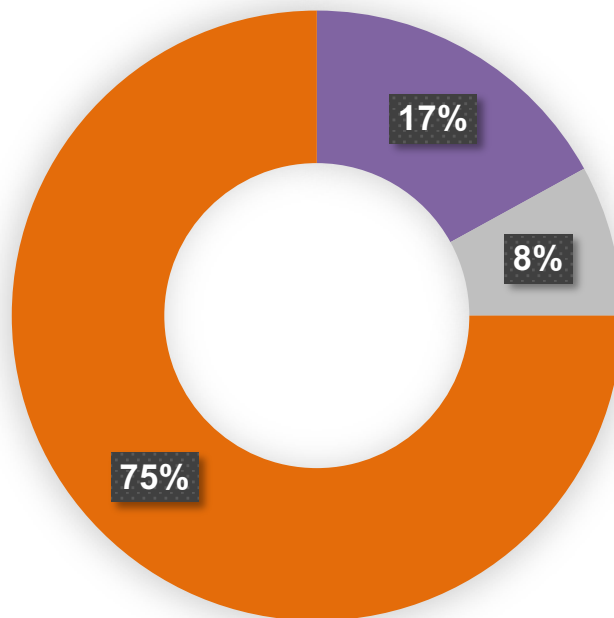
<https://www.census.gov/quickfacts/fact/table/US/PST045217>

## Representation in Media



[https://annenberg.usc.edu/sites/default/files/2017/04/07/MDSCI\\_CARD\\_Report\\_FINAL\\_Exec\\_Summary.pdf](https://annenberg.usc.edu/sites/default/files/2017/04/07/MDSCI_CARD_Report_FINAL_Exec_Summary.pdf)

## Representation in Children's Cartoons



<https://www.huffingtonpost.com/iulie-dobrow/oscars-may-be-so-white-but-9375072.html>



# HERO ELEMENTARY



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# WHAT TO DO?

**Look at content development  
through an equity lens**

**Critical theory approach**

**Synthesize information**

**Communicate with content developers**

**Interrogate deeply**

**Interrogate continuously**





# Content Development

TV stories

Hands-on  
Activities

Digital  
Games

Analog  
Games

Super  
Science  
Notebook



***We DO  
Science***

***Using the  
SCIENCE and  
ENGINEERING  
PRACTICES***

***To  
ENGAGE  
WITH  
Big Ideas***

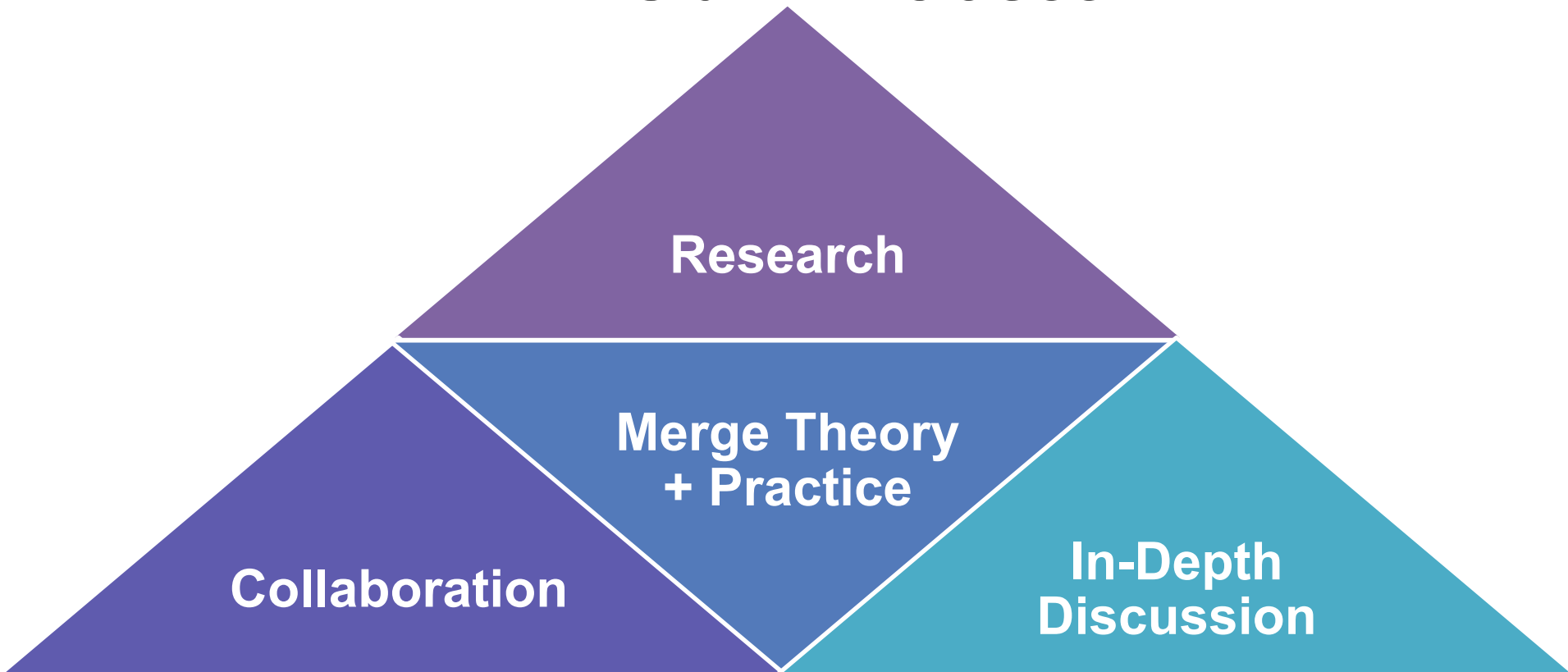




# How we developed the Framework



# Our Process





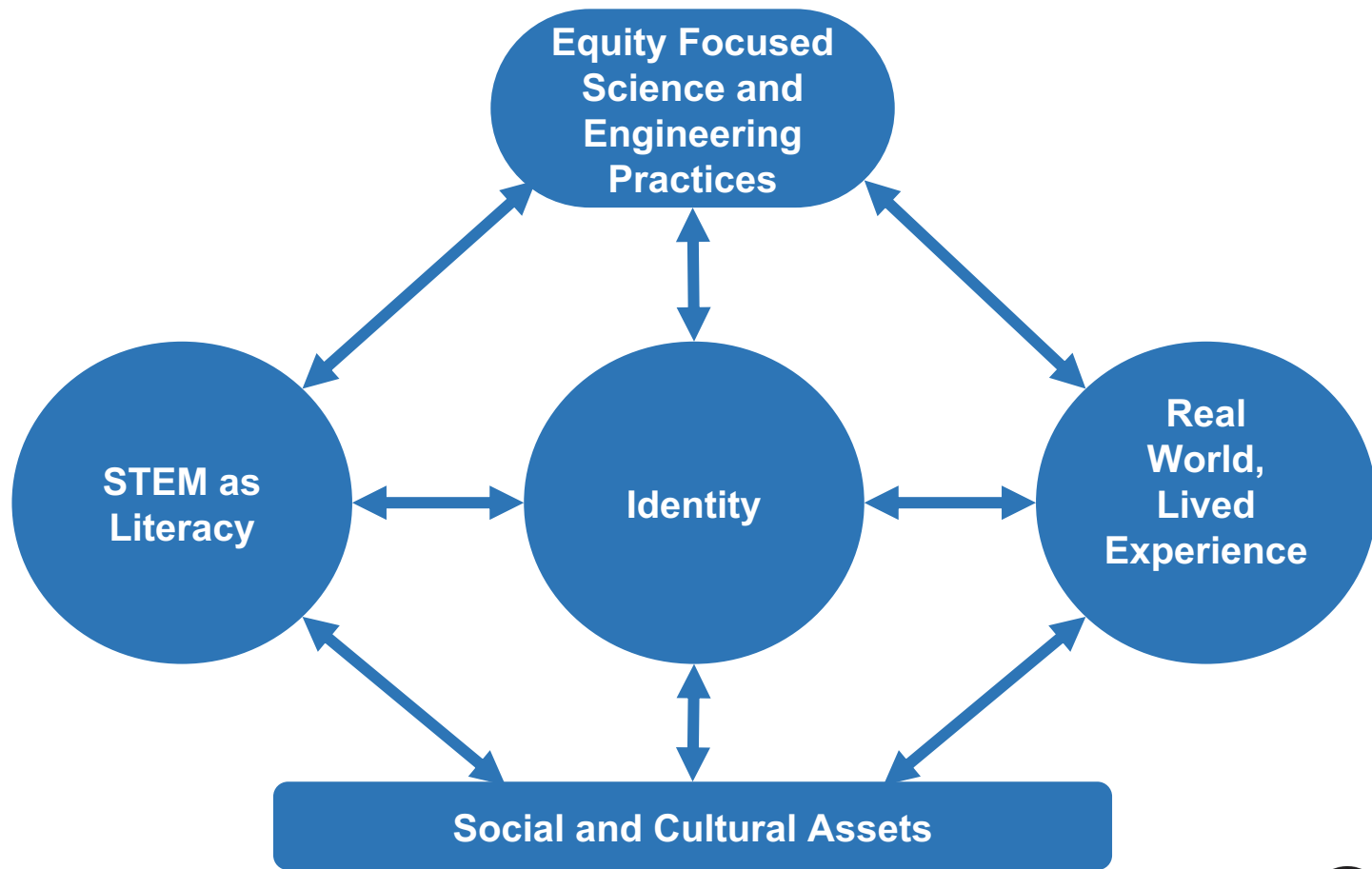
# What is the Framework?



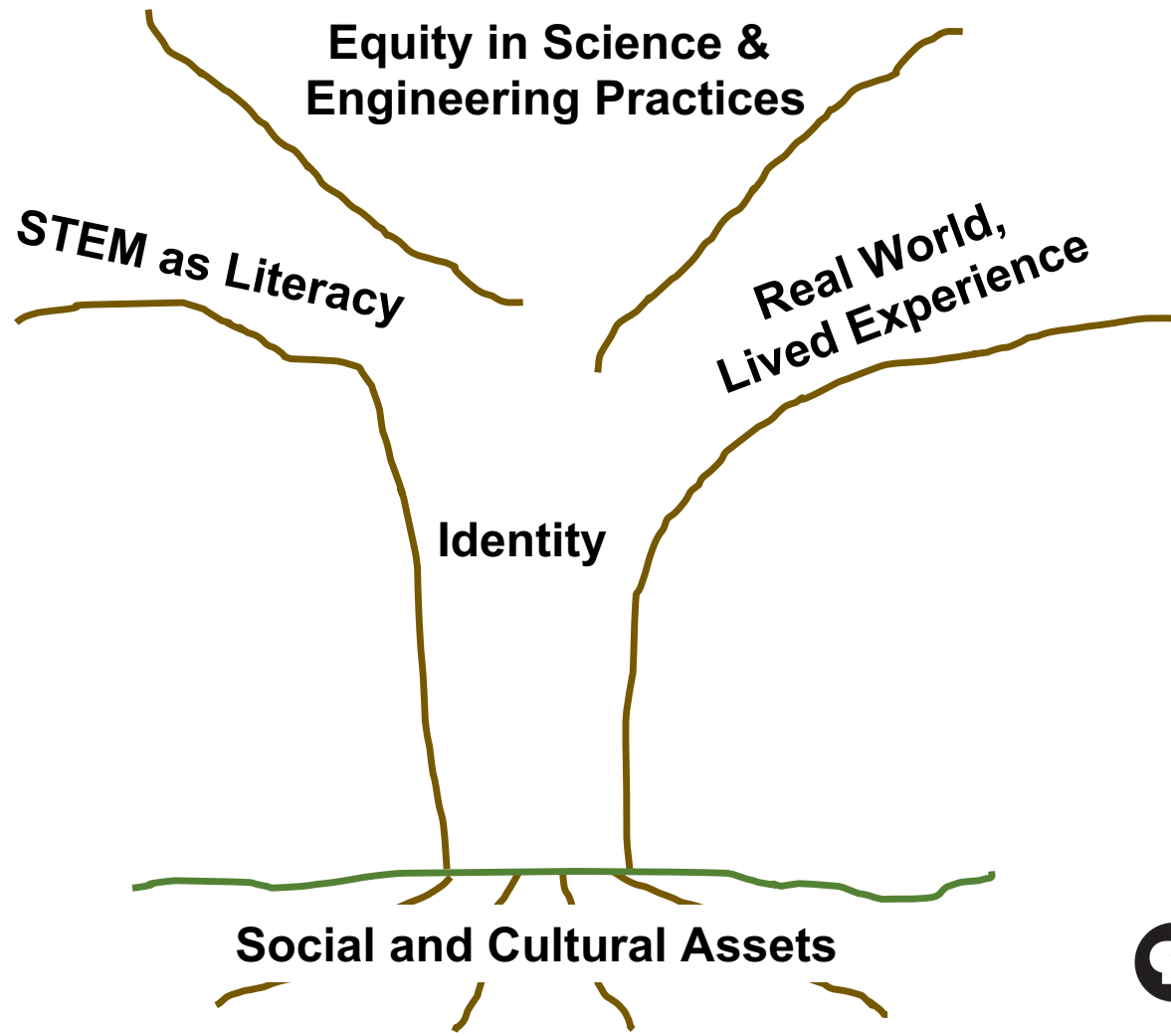
# ***Transformative Transmedia Framework for Early STEM Learners***

- 1. Help young learners connect their racial, cultural and STEM identities.**
- 2. Create real world STEM experiences grounded in the realities of diverse learners' lives.**
- 3. Integrate social and cultural assets in young learners' STEM powers and experiences.**
- 4. Engage young learners in the Science and Engineering Practices in ways that build equity.**
- 5. Help young learners experience STEM as literacy.**









# 1. Help young learners connect their racial, cultural and STEM identities.

- Emphasize community and sense of belonging and that they are a viable part of a STEM community.
- Where can we find the balance? How can we connect what they do in STEM with who they are?
- STEM isn't just for the “special” ones.
- Develop each characters' qualities to make sense for who they are – what are their interests, hobbies, quirks, etc.?



## 2. Create real world STEM experiences grounded in the realities of diverse learners' lives.

- Feature realistic environments that feel familiar to Latino children, Black children, and children from low-income families.
- Superpowers of *Hero Elementary* children grounded in their realities as Black children and Latino children.
- Hmm, the stories start when the *Hero Elementary* children get to school; how to bring in their lived realities?



### 3. Integrate social and cultural assets in young learners' STEM powers and experiences.

- Focus on STEM powers to support community and social justice outcomes.
- Creating something out of “nothing” - resourcefulness, initiative.
- Navigating culture when you don't speak the language.
- Strengths of being female in a male-dominated world.
- Superheroes are not special, they're just representative.
- Difference between supers and non-supers; what does it mean to be a superhero in a power and non-power world?



## 4. Engage young learners in the Science and Engineering Practices in ways that build equity.

- Utilize the Superpowers of Science prominently in TV episodes, games, and activities.
- Feature culturally relevant approaches in hands-on activities.
- Collaborate with communities and families to recognize and reinforce their cultural ways of knowing in our content.
- How do the Superpowers of Science play out in our audience's everyday lives?





# Superpowers of Science

Planning & Carrying Out Investigations



Analyzing & Interpreting Data

Designing Solutions



Defining Problems



Asking Questions

Constructing Explanations



Obtaining, Evaluating, &  
Communicating Information

## 5. Help young learners experience STEM as literacy.

- The Superpowers of Science all involve different kinds of communication.
- Feature multiple modes of communication in TV episodes and activities.
- Science as a way to “read the world.”



# We Need Your Wisdom



“The past places no absolute limit on the future.”

Photo by Samir Hussein via Getty Images  
[https://www.huffpost.com/entry/lin-manuel-miranda-parenting-tweets\\_n\\_5c3d689ce4b0922a21d80885](https://www.huffpost.com/entry/lin-manuel-miranda-parenting-tweets_n_5c3d689ce4b0922a21d80885)



“The things that make us different, those are our superpowers...”

Photo by Christine Chew/UPI  
[https://www.upi.com/Entertainment\\_News/TV/2017/09/18/Lena-Waithe-Donald-Glover-make-history-at-Emmys-in-comedy-categories/1191505736618/](https://www.upi.com/Entertainment_News/TV/2017/09/18/Lena-Waithe-Donald-Glover-make-history-at-Emmys-in-comedy-categories/1191505736618/)





# Take Action, Give Feedback

- Look at the Guiding Principles
  - How do you understand each Guiding Principle as a group?
  - Any questions?
  - How does each Guiding Principle look in practice, in multimedia?



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# How we use the Framework



# Starting the Conversation

- It's not always comfortable
- Want to "do right" but afraid to say the "wrong thing"
- We are ALL LEARNING, it's a JOURNEY
- It takes COURAGE!
- The Framework gets the conversation started



# Writers' Webinar

**Overview of Framework and  
Guiding Principles**



**Applying the Guiding  
Principles for Script Writing**



**Frequently Asked Questions**



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# FAQs

- What does it mean when we say STEM isn't just for the “special” ones?
- What do young children know about racial and cultural and class identity?
- What's a “STEM identity”?
- How can we tell if we are depicting a realistic “lived reality”?
- How do we stay real without stereotyping?



# Transformative Experience



Carol-Lynn Parente  
Hero Elementary  
Executive Producer



# Character Development

- Authentic characters
- Connect to diverse childrens' lived experiences
- Language
- Culture
- Interests, hobbies, family





# ***LUCITA SKY***

**7-year-old girl**

**Ethnicity:** Mexican-American, bilingual

**Superpower:** Can fly

**Personal Traits:** Empathetic; strong connection to family



# ***AJ GADGETS***

**7-year-old boy**

**Ethnicity:** African-American

**Superpowers:** Making super gadgets, thought projection

**Personal Traits:** High-functioning autistic; passionate about all things super



# ***SARA SNAP***

7-year-old girl

**Ethnicity:** Japanese and Caucasian

**Super Powers:** Super strength, teleportation

**Personal Traits:** Confident, resilient, eager; loves sports



# ***BENNY BUBBLES***

**7-year-old boy**

**Ethnicity:** Caucasian

**Superpower:** Bubble Creation

**Personal Traits:** Protective; noble; thoughtful; animal lover



# ***MR. SPARKS***

**Male, under 30**

**Ethnicity:** Mexican (he is bilingual, speaks with an accent)

**Super Power:** Unknown... is he a superhero or isn't he? He'll never tell!

**Personal Traits:** Inquisitive; quirky;  
enthusiastic about his students' power to learn



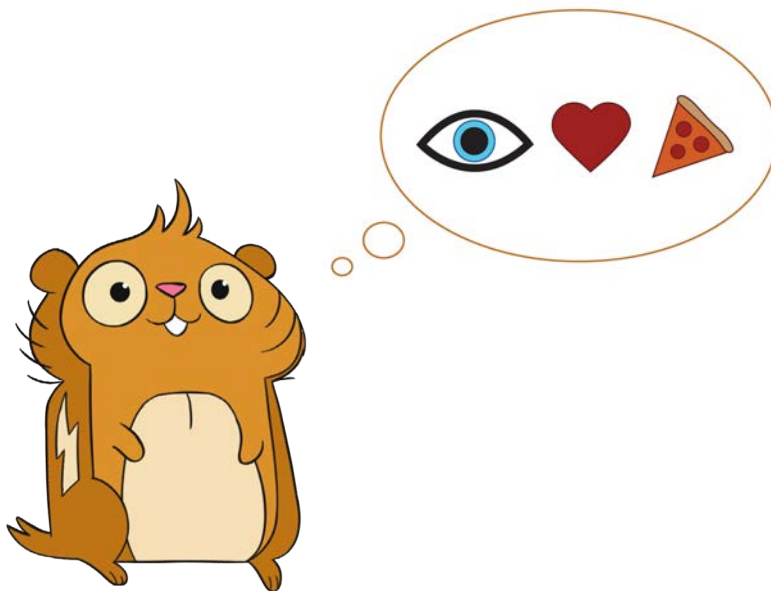
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# ***FUR BLUR***

**Super Pet (Class Hamster - female)**

**Superpower:** Super Speed

**Personal Traits:** Epic appetite



# Script Reviews

1. Help young learners connect their racial, cultural and STEM identities.
  2. Create real world STEM experiences grounded in the realities of diverse learners' lives.
  3. Integrate social and cultural assets in young learners' STEM powers and experiences.
  4. Engage young learners in the Science and Engineering Practices in ways that build equity.
  5. Help young learners experience STEM as literacy.
- Character portrayal
  - Scenarios
  - Words & phrases
  - Actions



# Art + Animation Reviews

1. Help young learners connect their racial, cultural and STEM identities.
  2. Create real world STEM experiences grounded in the realities of diverse learners' lives.
  3. Integrate social and cultural assets in young learners' STEM powers and experiences.
  4. Engage young learners in the Science and Engineering Practices in ways that build equity.
  5. Help young learners experience STEM as literacy.
- Character design
  - Scenes
  - Environments
  - Animations





# ...and More!

- Expand the reach
  - Digital developers
  - Hands-on Activity developers
- Everything gets reviewed many times
- Everything gets tested with audience members
- Outreach – framework for educators based on *NGSS for ALL Students*





# What have we learned?





# Moving forward...!



# We're Still in the Game

How do ***you*** think  
we should move forward?



# Thank You!

Dr. Roni Ellington [Roni.Ellington@morgan.edu](mailto:Roni.Ellington@morgan.edu)

Beth Daniels [bdaniels@tpt.org](mailto:bdaniels@tpt.org)

Felicia Orozco [forozco@tpt.org](mailto:forozco@tpt.org)

