LIBRARIES AS THE HEARTS OF STEM LEARNING ECOSYSTEMS

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INTRODUCTIONS

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SEE THAT BUILDING THERE? THAT'S THE LIBRARY
IF YOU EVER WANT TO BORROW A BOOK, ALL YOU HAVE TO DO IS GO IN THERE AND TELL THEM WHICH ONE YOU WANT, AND THEY'LL LET YOU TAKE IT HOME!
4-14-08
FREE?
ABSOLUTELY FREE!
SORT OF MAKES YOU WONDER WHAT THEY'RE UP TO!
SCHULZ
www.snoopy.com

WITH UP TO 3 WORDS – WHY IS IT IMPORTANT FOR LIBRARIES TO BE CONSIDERED COMMUNITY LEARNING HUBS?

Please go to:

Slido.com

Code: **#1250556**

“The classroom was a jail of other people’s interests. The library was open, unending, free.”

— Ta-Nehisi Coates

"Books permit us to voyage through time, to tap the wisdom of our ancestors. The library connects us with the insight and knowledge, painfully extracted from Nature, of the greatest minds that ever were, with the best teachers, drawn from the entire planet and from all our history, to instruct us without tiring, and to inspire us to make our own contribution to the collective knowledge of the human species.

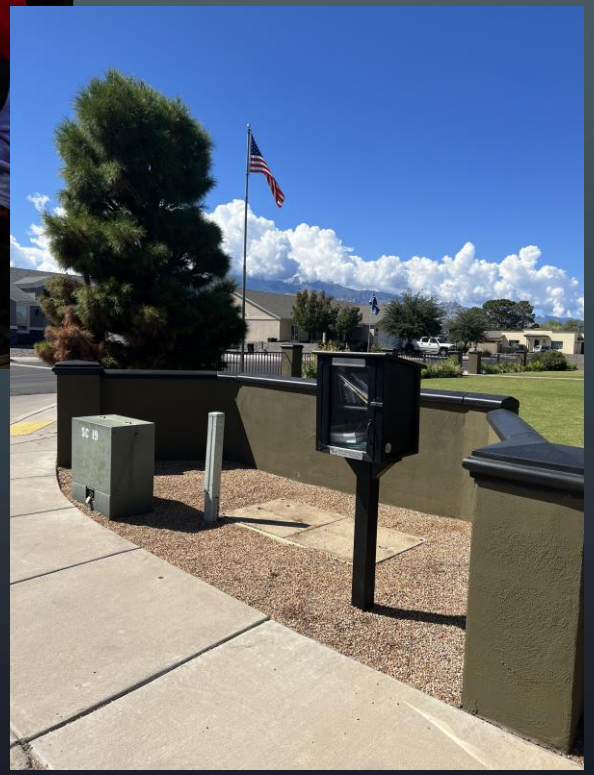
I think the health of our civilization, the depth of our awareness about the underpinnings of our culture and our concern for the future can all be tested by how well we support our libraries."

— *Carl Sagan, Cosmos*

Questions !

- What is STEM?
- Libraries as STEM Learning DEAIB spaces
- What is a Learning Ecosystem and how are libraries involved?
  * Libraries as Learning Hubs
  * How can my library integrate into a L.E.?
- Action planning

BIT OF HISTORY



RURAL ACTIVATION AND INNOVATION NETWORK DEVELOPMENT AND DESIGN.

THE PROPOSAL GREW FROM AN OBSERVED NEED FOR PLACE BASED INFORMAL STEM LEARNING OPPORTUNITIES IN RURAL AND REMOTE COMMUNITIES.

AND

A LACK OF UNDERSTANDING ON HOW TO BUILD A CULTURE OF RURAL STEM IDENTITY.

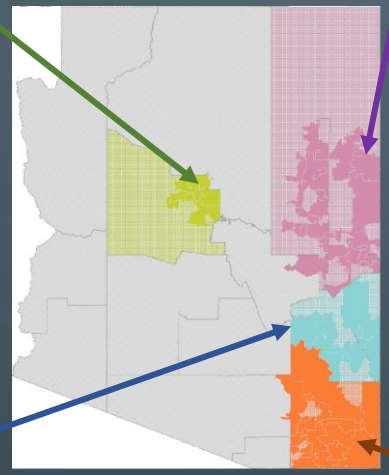
VIEW INTO RAIN'S ECOSYSTEMS

Verde Valley (VV)

Isolated river valley with four towns and one tribal nation.

Sq Mi: 748
Pop: 65,300

Audiences gathered at Yavapai College's Xplorology



Navapache (NA)

Remote mountain community with 4 cities, 4 towns, numerous unincorporated villages, and 1 tribal nation. 80% of the land is federal or state controlled.

Sq Mi: 10,000
Pop: 100,000

White Mountain Apache, Innovation Nation STEM Expo

Graham/Greenlee (GG)

Mining and agriculture community with 2 cities, 5 towns and 1 tribal nation.

Sq Mi: 6,489
Pop: 46,000

STEM Summer Camp - Eastern Arizona College

Cochise County (CC)

Blends agriculture, military, and natural resources with 1 city, 5 small towns, and several unincorporated villages. Shares southern border with Mexico.

Sq Mi: 6220
Pop: 127,000

Maker Lab at Studio 128 - Willcox

DRL #1612553

THE FOLLOWING QUESTIONS GUIDED THE RESEARCH:

? How do rural communities perceive, access, and engage in informal STEM learning?

? How, and to what extent, do community members identify themselves and their communities in relation to STEM?

? How do NETWORKS foster STEM related identity at personal & community leve

RURAL INNOVATION COUNCIL NETWORK SNAPSHOTS MULTI GENERATIONAL OPPORTUNITIES

RESEARCH TO PRACTICE

Successful STEM learning opportunities

- **Align attitudes and beliefs** that community members hold about STEM (e.g. its importance for the future and economy, for understanding the world, learning how things work, and solving problems),

And

- their **STEM-related attributes** (e.g., curiosity about the world, interest in learning about how things work, and engaging with new ideas)

STEM PROGRAM CONSIDERATIONS

- Offer **practical applications** to everyday life within non-education contexts
- Highlight **key STEM partnerships and industries** (e.g. mining, agriculture) in the community
- Finding ways to make STEM content **personally relevant and appealing – tie learning to local concerns, successes, and barriers.**

Focus on **local content**

This offers an opportunity for STEM learning practitioners to **leverage existing STEM partnerships and industries** in their communities.

- Encouraging community members to learn more, and building partnerships beyond formal education institutions can be strategies for **growing local, place-based STEM identity**.

“A library outranks any other one thing a community can do to benefit its people. It is a never failing spring in the desert.”

— *Andrew Carnegie*

RAIN & THE WHITE MOUNTAINS

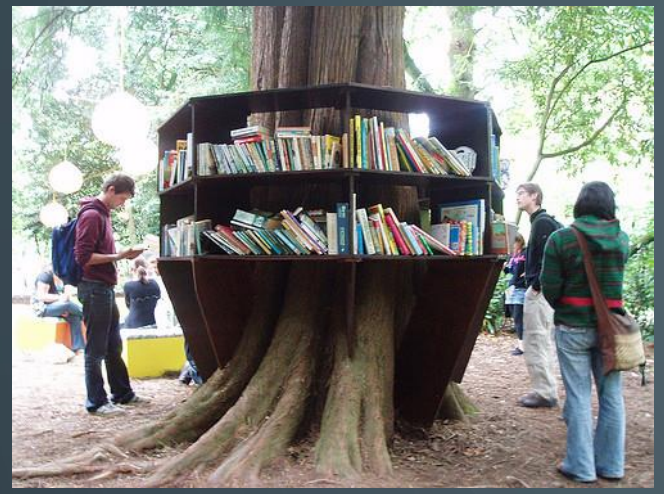
- Lisa Lewis – Library Director: Florence Community Library
  - Past Director – Show Low Public Library & Member of the Rural Innovation Council of RAIN

- Priorities of the Library
- How the library's Learning Hub vision was supported by inclusion in the RAIN project
- Outcomes from being part of the White Mountain L.E.

NASA SCIENCE ACTIVATION
BROADENING PARTICIPATION WITH ECOSYSTEMS

KOLLMAN, E., ANDERSON, A., OSTMAN, R. (2022)

STEM Learning Ecosystems are a project structure that unites **people**, **communities**, **organizations**, and **resources** to create STEM engagement and education experiences for all people throughout their lifetimes.



Strong STEM learning ecosystems are embedded in and reflect their geographic and cultural **context**.

Strong STEM learning ecosystems succeed through personal and organizational **relationships**

Strong STEM learning ecosystems are built and sustained through **intentional** principles, practices, and activities.

3 CORE VALUES IDENTIFIED BY BROADENING PARTICIPATION WITH STEM ECOSYSTEMS

3 CORE VALUES

1. Structure and culture of the SLE impacts their work with partners and the public. Successful strategies include:

- Making space for time
- Willingness to learn and make changes
- Regular, flexible, and open communication with various ways to get information

3 CORE VALUES

2. Healthy relationships are important for any partnership, when working within a SLE and with the public genuine relationships and making people feel they belong is vital. Successful strategies may include:

- Engaging with patrons/public as project partners
- Fostering reciprocal and mutually beneficial partnerships
- Valuing and incorporating different ways of knowing and different perspectives
- Showcasing collaborative spaces in the library

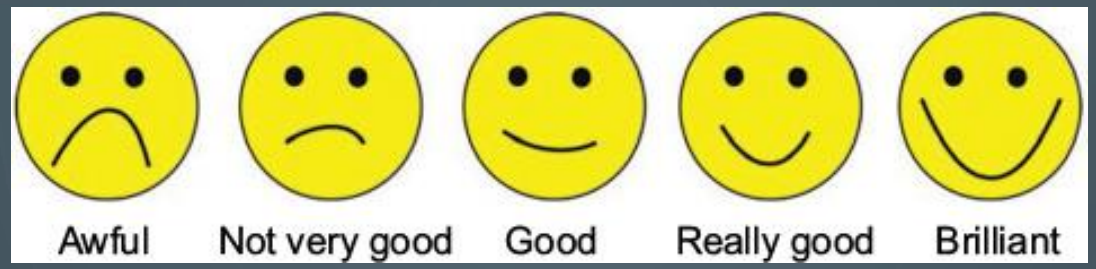
3 CORE VALUES

3. Being open and sharing resources (people, relationships, information, programming, etc.) helps support the L.E. at an organizational level and in building trust. Successful strategies include:

- Using existing networks and resources
- Removing barriers for partners to engage with resources or audiences
- Working cooperatively and sharing with partners.
- Accepting the role of an informal and continuing education hub

Q & A about the 3 Core Values

SPECTRUM ACTIVITY



- 1. My Library is already part of a STEM Learning Ecosystem
- 2. I feel there is enough buy-in from my administration to become a STEM Learning Hub in our community.
- 3. My community wants a more robust set of STEM programs at my library
- 4. I take time to look for STEM Learning opportunities for my library
- 5. My Library is seen as an integral part of the Learning Ecosystem in my region.
- 6. My library could use help becoming part of my local Learning Ecosystem.

SUCCESSFUL LEARNING ECOSYSTEMS ARE **INTENTIONAL**

1. Purpose is clear
2. Identified Leaders and Core Partners
3. Clearly established Structure
4. Gather Stakeholder Input
5. Be Intentional with DEI
6. Communication Plan
7. Identify Outcomes and Measures

“ Education is not the filling of a pail, but the lighting of a FIRE.”

- W.B. Yeats

Rural Activation and Innovation Network Collaborators

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WHERE DISCOVERIES BEGIN

THANKS SSI FOR HOSTING THIS FANTASTIC SUMMIT

INTRODUCTIONS

- TODAY'S FACILITATOR

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