STEAM Power Your Library!

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During this session...

- What is STEAM?
- Why STEAM in the library
- Preschool Programs & Elements
- School-Age Programs
- Services & Resources
So, what is STEAM?
So, what *is* STEAM?

- Arts ≠ Crafts
- Arts = Creativity
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• Arts = Creativity

“The arts and sciences are avatars of human creativity.” - Mae Jemison
So, what *is* STEAM?

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- Arts = Creativity
- Arts = Open-ended
So, what is STEAM?

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• Arts = Creativity
• Arts = Open-ended

Open-ended activities promote “the problem-solving, the fearlessness, and the critical thinking and making skills.” -John Maeda
So, what *is* STEAM?

- Everyone can STEAM. Yes, even YOU.
- No content expertise necessary.
Why STEAM in a library?
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- Literacy is multifaceted.
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- Lifelong learning includes all ages.
Why STEAM in a library?

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• Lifelong learning includes all ages.
• We can facilitate discovery.
Why STEAM in a library?

- Literacy is multifaceted.
- Lifelong learning includes all ages.
- We can facilitate discovery.
- Interest is a powerful motivator.
1. Promote the collection.
1. Promote the collection.
2. Introduce fundamental concepts & skills.
Preschool STEAM

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2. Introduce fundamental concepts & skills.
3. Facilitate interest in STEAM.
Preschool STEAM

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3. Facilitate interest in STEAM.
4. Promote love of the library.
Preschool Science

• For programs & activities...
  - Introduce a concept.
  - Talk!
  - Offer hands-on activities.
• Example: Explosions!
Preschool Science

• Always...
  • Promote observation.
  • Include relevant vocabulary.
Preschool Technology

• For programs & activities…
  • Technology = tool.
  • Explore & create!
  • Example: Digital story in storytime.
Preschool Technology

• Always…
  • Encourage joint media engagement.
  • Incorporate caregivers.
Preschool Engineering

• For programs & activities…
  • Pose a challenge.
  • Provide materials, space, & time.
• Example: The Highest Tower
Preschool Engineering

- Always...
  - Encourage comparing & contrasting.
  - Encourage modifications.
Preschool Arts

• For programs & activities…
  • Incorporate a STEM concept.
Preschool Arts

• Examples:
  • Gravity Painting
  • Pattern Necklaces
  • Paper Chain Measuring
  • Dough Sculptures
Preschool Math

• For programs & activities…
  • Think DAP.
  • Offer games & activities.
• Example: Measure Mania
Preschool Math

• Always...
• Work math in everywhere.
School-Age STEAM Programs

1. Promote the collection.
School-Age STEAM Programs

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2. Introduce & deepen STEAM understanding.
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4. Promote love of the library.
School-Age STEAM Programs

1. Promote the collection.
2. Introduce & deepen STEAM understanding.
3. Facilitate interest in STEAM.
4. Promote love of the library.
5. Engage “reluctant readers.”
School-Age Science Programs

• For programs...
  • Concept learning.
  • Hands-on activities.
  • Test & observe.
• Example: Airplane Science
School-Age Science Programs

• Always...
  • Demonstrate whenever possible.
  • Leave time for trial & error.
  • Tie to resources.
School-Age Technology Programs

• For programs...
  • Provide the equipment.
  • Give space to create.
• Example: Create videogames
School-Age Technology Programs

- Always...
  - Introduce how the technology works.
  - Encourage peer-learning.
  - Show off to caregivers.
School-Age Engineering Programs

- For programs...
  - Pose a challenge.
  - Provide open-ended materials.
- Example: Marshmallow Towers
School-Age Engineering Programs

• Always...
  • Provide access to resources.
  • Encourage testing & modifying.
  • Talk through all creations.
School-Age Arts Programs

• For programs...
  • Infuse a STEM concept into a creative project.
School-Age Arts Programs

- Examples:
  - Constellation Books
  - Camouflage Patterns
  - Art Bots
  - Light Painting
School-Age Math Programs

• For programs...
  • Make math an element of a larger activity.
• Example: Art Market
School-Age Math Programs

• Always…
  • Make it visual.
  • Be prepared to scaffold.
1. Provide personal access to STEAM.
STEAM Services

1. Provide personal access to STEAM.
2. Facilitate self-paced exploration.
STEAM Services

1. Provide personal access to STEAM.
2. Facilitate self-paced exploration.
3. Highlight STEAM collections.
STEAM Services: Activity Stations

- Carve out a space.
- Keep it simple.
- Include signage.
- Change regularly.
STEAM Services: Displays

• Curate intentionally.
• Be liberal with formats & reading levels.
• Make it visually interesting.
STEAM Services: Publicity

- Make it easier to find great resources.
- Be responsive to your community.
STEAM Services: Readers’ Advisory

• Get to know your collections.
• Get to know your readers.
• Make connections across formats.
• Encourage interests.
Resources to STEAM

• You don’t have to go it alone.
• USE YOUR RESOURCES!
Resources to STEAM: Books

• Explore the stacks!
• Books with experiments & activities:
  • Janice Van Cleave
  • Kids Can Press
• Find go-to authors:
  • Gail Gibbons
  • Steve Jenkins
Resources to STEAM: Blogs

- Library Makers
- Abby the Librarian
- Read Sing Play
- Library Bonanza
- Never Shushed
- Teach Preschool
- PreKinders
- So Tomorrow
- Gadgets, Gizmos, and Goo (G3): The Mad Scientists Club
- The Show Me Librarian: All Things STEAM
Resources to STEAM: Websites

- Steve Spangler Science
- Little eLit
- Start With a Book
- Wonderopolis
- Mixing in Math
- Bedtime Math
- Pinterest
Resources to STEAM: Partners

- Community Experts
- Community Businesses
- Local Hobby Groups
- Local Museums, etc.

[Images of logos: Chicago Botanic Garden, Museum of Science and Industry, ALSC National Institute]
Resources to STEAM: Funding

• Friends of the Library
• LSTA Grants
• Other Grants (via LEGO Education)
• Donations
• Local Business Support
In Conclusion...

- You CAN offer STEAM in your library.
- Start with what you have.
- Above all else, engage interests.
Thoughts to share? Questions?

• Do you have stories to share on:
  • STEAM programs?
  • Favorite STEAM reads?
  • Planning resources?

• Questions? Shoot me an email:
  • akoester@skokieliibrary.info
Further Reading

• “Every Child Is Born A Scientist” from Marcelo Gleiser on NPR 13.7 Cosmos And Culture

• “From STEM to STEAM: Science and Art Go Hand-in-Hand” from Steven Ross Pomeroy on Scientific American

• “Full STEAM Ahead: Injecting Art and Creativity into STEM” from Amy Koester on School Library Journal

• Improving STEM Curriculum and Instruction: Engaging Students and Raising Standards, Successful STEM Education Initiative, a National Research Council report funded by the National Science Foundation

• “What does STEM look like in preschool and what is STEM anyway?” from Deborah J. Stewart, M.Ed., on Teach Preschool