all on their own

unfacilitated making experiences in exhibits

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Andrew Poppen
Exhibits Developer

Science Center of Iowa

- 110,000 sqft
- 6 exhibit galleries
- 50 full time staff
- 2 exhibits staff
- 7 major exhibit reno's in last 4 years
Project Goals

- Introduce “maker movement” to community
- Encourage creative exploration
- Demonstrate real-world connections
- Multiple levels of entry
- Seasonal offering (initially)
- Keep overhead as low as possible
Institutional Challenges

- No consistent staff presence in exhibit galleries
- Busy exhibits team is also maintenance team
- Shared space
- Ongoing cost of consumables
Makers Studio

- Exhibit based around the steps of design thinking/iterative process/maker mindset, etc...
  - Explore
  - Design
  - Build
  - Test/Improve

- A space about making
- 3,000 sqft
- 10 exhibits, 1 facilitated activity
- Zoned by iterative process.
- Local maker videos

- Exhibits all revolve around kinesthetic open activities
- Traditional didactic content supplements for the curious
Case Study 1
Maglev Wind Racers

Visitors are given paper and straws and tasked with creating a sail to propel levitating cars down the track.
• Failure is good in small doses
• Limitations breed creativity
• Keep materials simple
  ○ helps with cost
  ○ helps balance dwell time
  ○ helps with staff mental health
• Yes the cars are free floating, and no, no one steals them.

See Slide 1 in videos.pptx
Case Study 2

Bulletproof Circuit Blocks

The circuit blocks you know and... have feelings about. Except tweaked like Doomsday to live as long as possible.

See Slide 2 in videos.pptx
- Limit variety for your own sake
- Resettable fuse added to battery packs prevents short circuit
- Magnetic connections and brad tipped wires
- Handcrank generators, but with wheels instead of cranks
Self Serve Tinkering at the Montshire

SHERLOCK TERRY
ASSISTANT DIRECTOR OF EXHIBITS
Tinkering @ Montshire

Design Principles
(Designed experiences are/incorporate/leverage)

- Real Tools
- A Problem Worth Solving/Engaging & Fun
- Personally Relevant
  - Interest Driven
  - Familiar Entry/Connection Point
- Encourage Learning in Social Groups

Practices
(Learner participation; What we design to support)

- Opportunities to Develop Engineering Skills
- Opportunities to Develop Problem Solving Mindset
- Challenging - Opportunities to Develop Grit
- Room for Creativity - Your Own Divergent Solution
- Art & Design - Making
- Sharing Work/Working Together

Engagement Outcomes
(As a result, learners...)

- (Engage in/with) Rich STEM Content
- Promote Community of Learning

Inclusive

Project-Based
Key considerations for designing self serve tinkering activities

▪ Self serve activities need extra careful design
▪ Keep your goals in the forefront of your thinking
▪ Design to your intended audience
▪ Coordinate facilitation and maintenance
▪ Consider the gallery space/context
▪ Good layout/navigation is essential
▪ Signage is your friend
Making in a Low-Facilitation Maker Gallery

Kat Dornian, Champion of Engineering Communication
Open Studio

- Make and Tinker
- 7000 sqft
- 25 exhibits
- 1-2 facilitators
- Animation, Music, Electronics, Building, Fashion, Design

TELUS Spark

REAL TOOLS DEVELOP REAL SKILLS
YOUNG KIDS MAY NOT BE READY TO USE SOME OF THE TOOLS IN OPEN STUDIO.
Case Study:

Hack the Flock
Case Study:
Take It Apart & Play with Circuits & Hot Glue Gun Table
Case Study:
Take It Apart & Play with Circuits & Hot Glue Gun Table
Take-Aways

- Allow visitors to find a variety of challenges and solutions
- Use prompts and labels thoughtfully
- Past-creations as prompts
- Visitors as facilitators
- Range of activities as strength
Maker Space

David Wells, Director of Maker Programming
Open Ended
Minimally Scaffolded
See Slide 3 in videos.pptx
Scaffolded
Power Tools
See Slide 4 in videos.pptx
See Slide 5 in videos.pptx
See Slide 6 in videos.pptx
I Can
Things to consider

- Objectives: What would you like to see happen?

- Flexibility: Open to change and modification.

- Trust: Step back and provide a platform for personal exploration.

- Do It: If you're not sure if it will work, put it on a table and see what happens.
The Big Questions

What’s the biggest obstacle or downside with low/no facilitation?

What is different about designing a unfacilitated activity?

How do you encourage positive interactions?

What are the advantages of going unfacilitated?

How to you determine your goals for a project and manage expectations?

What role does signage play in your spaces?

What about the mess?

How do you incorporate other departments in your building?