Evaluating Informal Learning Experiences

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Session Overview

- Why is evaluating informal learning important?
- Types of evaluation
- Examples from a few of DHA's recent projects
- Lessons learned
- Contributing to the field

David Heil & Associates, Inc. (DHA)

Specializes in designing, implementing and evaluating a range of educational and public outreach initiatives

- **Formal Learning:** DR K-12, curriculum and program development, magnet/mentor programs, educational standards (NGSS), educator professional development
- **Informal Learning:** Program and exhibit development, museums and science centers, scientist and educator professional development, citizen science, non-profit business planning, family engagement
- **Corporations, Government Agencies, Foundations**
- **12-15 projects at a time with eight full time staff**

"Happiness lies in the joy of achievement and the thrill of creative effort."

Franklin D. Roosevelt

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"Show me the money."

Cuba Gooding Jr.
as Rod Tidwell in "Jerry Maguire"

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The Nature of Informal Learning

What's different about learning outside of a classroom?

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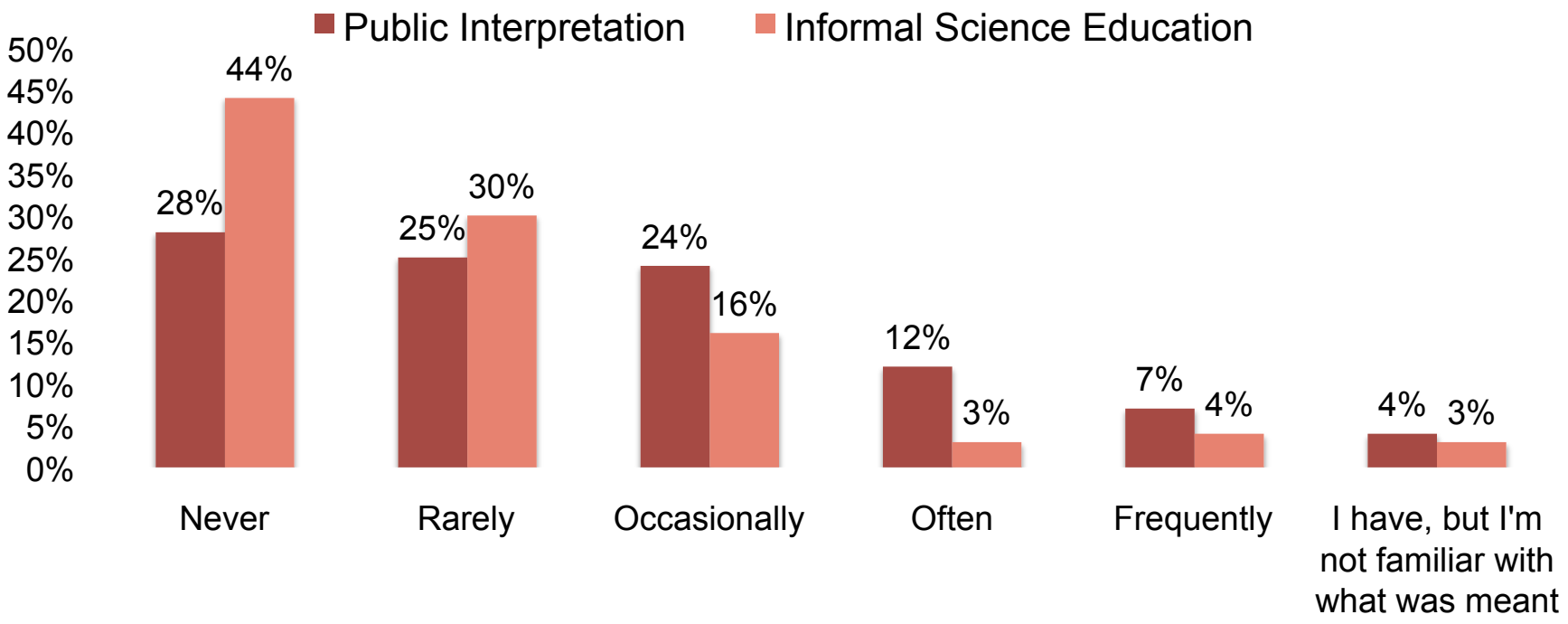
The Nature of Informal Learning

- Learning is “informal” or “free-choice”
- Learning is self-directed and voluntary
  - satisfying personal curiosity
  - Sometimes organized for enrichment (schools)
- Variety of audiences
- Numerous learning styles
- Context is key to learning experience
- More accessible, flexible, relevant, and often more fun than classroom learning!

APWA Membership Survey

Have you ever heard the following terms used to describe ways of reaching out to public audiences?



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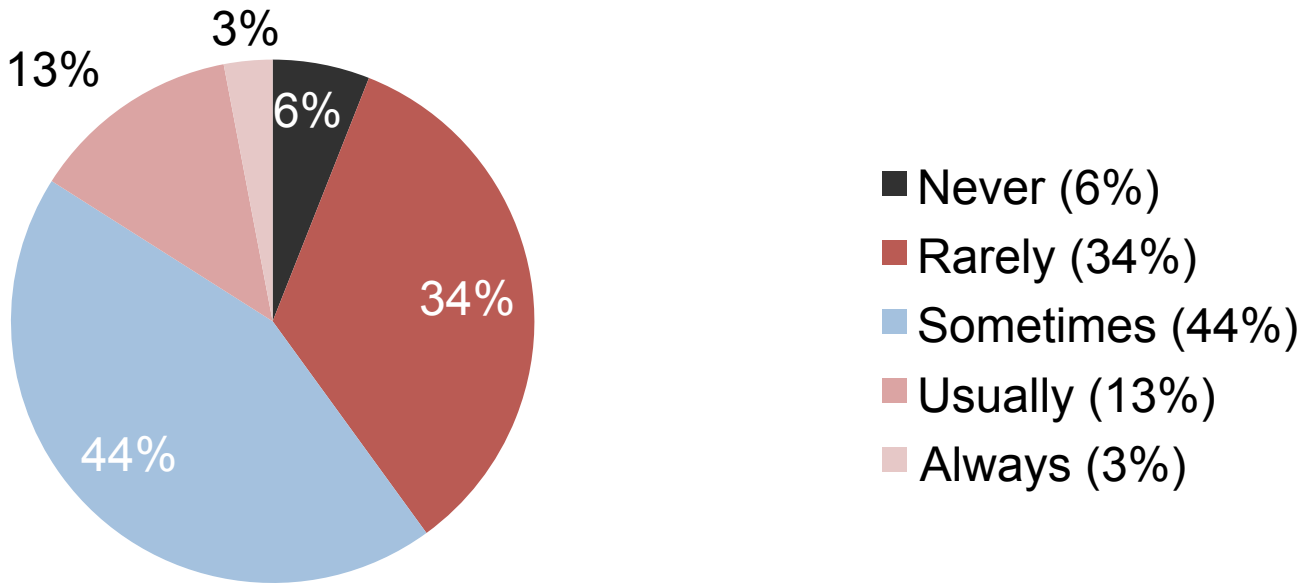
APWA Membership Survey

Do public works agencies and/or contractors in your community currently provide education and outreach activities that share with community members the <u>science</u> and <u>engineering</u> involved in their work?



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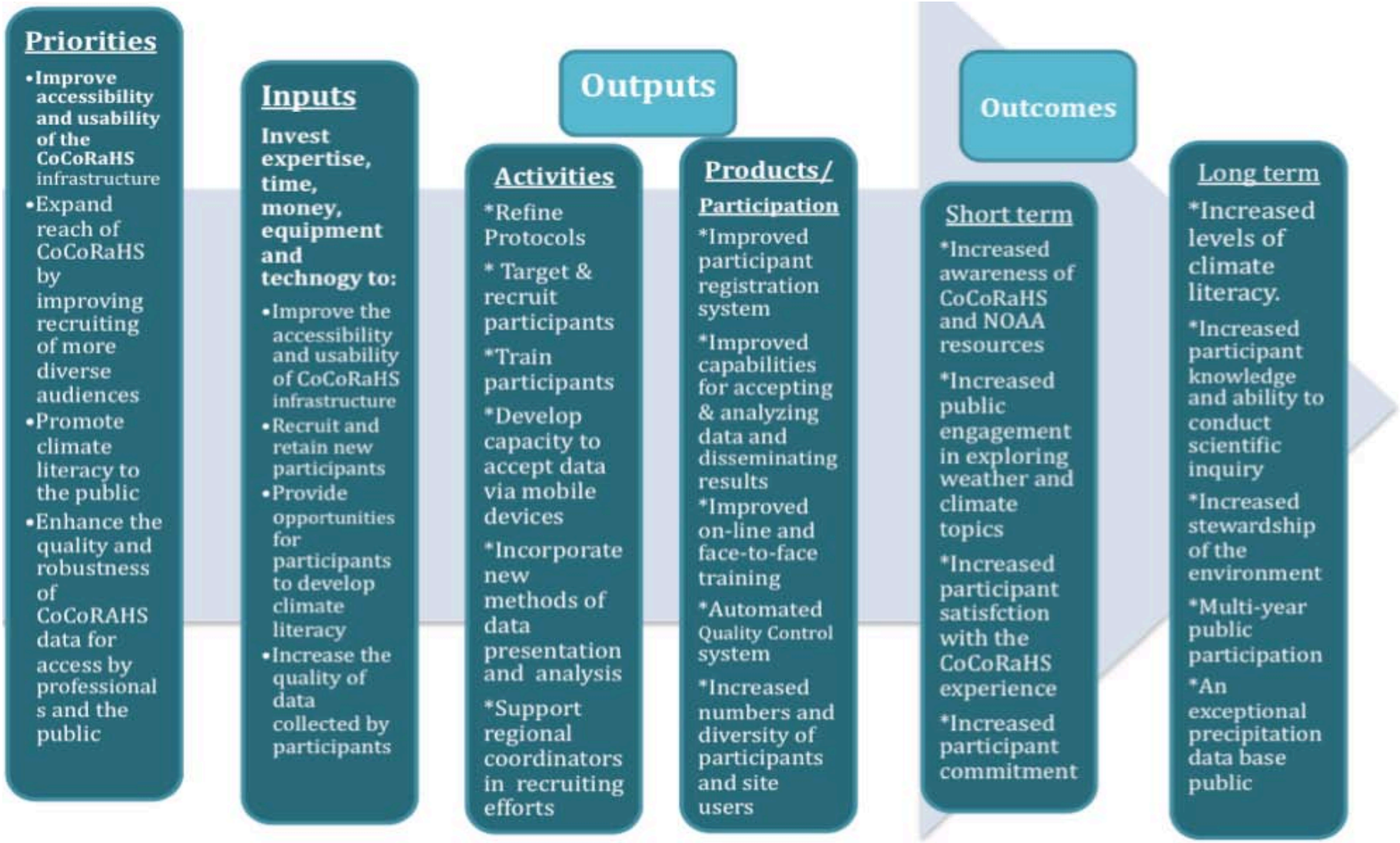
Why Conduct Research & Evaluation?

- Informs project design, refinement and improvement
- Compares project intent with reality
- Measures project performance, if goals are being met
- Funders want to know project impact & reach, many require external/independent evaluators
- Evidence-based decisions require good data & analysis
- Documenting lessons learned and return on investment benefits project team, funders, and greater informal learning community
- Informal learning community needs more rigorous evaluation to demonstrate impact and value

Three Key Types of Evaluation

- Front-End Evaluation
  - Target audience interests, needs, and expectations
  - Testing preliminary program concepts, assumptions
  - Informs project planning and initial design
- Formative Evaluation
  - Testing/prototyping initial program products, strategies
  - Informs project refinement
- Summative Evaluation
  - Measuring program outcomes and impacts
  - Reporting to project partners, funders
  - Informing the field

Sample Project Logic Model [DHA]
Community Collaborative Rain, Hail & Snow Network (CoCoRaHS)



Evaluation Methods

Site visits

Focus groups

Surveys

Observations

Expert reviews

Interviews with learners

Interviews with project staff

Interviews with project stakeholders

Focus Groups

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Stakeholder Interviews

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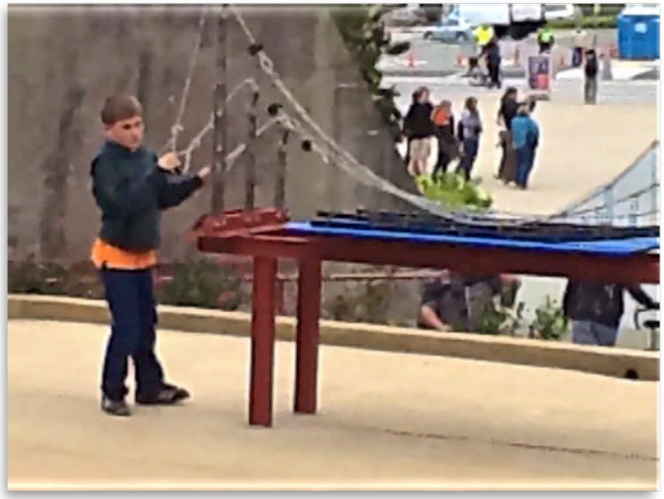
Observations In The Field



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Discussions with Developers

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Conducting More Interviews

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Sample Project – Inverness Research & DHA Golden Gate Bridge Interpretive Exhibits

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Brief Summary of Front-End Findings

- It's all about the Bridge – photos are everything!
- Visitors *are* interested in knowing more about:
  - Earthquakes
  - Why the Bridge is designed the way it is, and how it compares to other bridges
  - The history/construction of the Bridge
  - The effect of wind on the Bridge
  - Ongoing maintenance
  - Environmental impact/long-term sustainability

Insights From Front-End Evaluation

- Designing for large numbers of tourists visiting an outdoor space is different from designing for visitors to a museum.
- Opportunities and challenges exist in creating memorable learning moments in the shadow of a very powerful icon.
- Visitor attentiveness varies based on the nature of their visit

Formative Findings

- Exhibit usage varied, depending on whether the bridge was visible or not
- Visitors enjoyed their experiences with interactive exhibits/displays
- Taking photos of the bridge is first priority
- Visitor mix requires multi-lingual interpretation and evaluation
- School groups and some unsupervised children used the exhibits *vigorously*

Summative Evaluation Focus

Public Audiences

- Interest in and knowledge of STEM concepts
- Public understanding of science and engineering related to the Golden Gate Bridge
- Golden Gate Bridge website impact on public understanding

Professional Audiences & Strategic Impacts

- Awareness of public works sites' potential for STEM education
- Capacity at public works sites to deliver hands-on science education activities and increased visitor engagement
- Understanding influence of project design and implementation
- Awareness of funding opportunities for informal learning
- Model for STEM education projects at public work sites nationwide

Lessons Learned From Research & Evaluation

- Evaluators should be an integral part of project team
- Evaluators should be at the planning table early
- Front-end evaluation helps ensure project relevance
- Formative evaluation helps ensure project success
- Summative evaluation helps document project impact, return on investment, and lessons learned
- Independent data collection, analysis, and reporting strengthens evidence-based decision making and advances the field

Sources of Funding for Research & Evaluation

- Federal agencies (NSF, NASA, DOE, NIH, etc.)
- Corporations interested in supporting STEM education and increasing pipeline of future employees
- Private foundations that support educational research and program development
- Local K-12 schools and universities interested in advancing teaching and learning

Contributing To The Research & Evaluation Field

- Join An Existing Network Or Collaborative
  - Field-test site for emerging program
  - Implementation site for new or existing program
  - Research and/or evaluation partner
- Sharing Research & Evaluation Findings
  - Regional and National Conferences
    - American Association of Physics Teachers (AAPT)
    - American Assoc. for the Advancement of Science (AAAS)
    - National Science Teachers Association (NSTA)
    - American Evaluation Association (AEA)
  - Publications focused on science and engineering education
  - School Boards, legislatures, other policy making groups

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