

Evaluating science outreach programs

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Researcher-in-Residence project

- July 2007-June 2008
- Okanagan Science Centre
 - created in 1985
 - located in Polson Park, Vernon, British Columbia
 - OSC mission - to inspire scientific inquiry through dynamic and interactive educational programs and exhibits and to encourage children and adults to appreciate the relevance and universality of science and its application in the Okanagan.
 - The Researcher-in-Residence is assisting with capacity building of the educational team and board of directors through reviewing relevant research and developing a future agenda for research on learning at the Centre
- Funded by the Canadian Council on Learning

Researcher-in-Residence project (cont.)

- Phase 1. How can we work most effectively with the **schools** and school curricula?
- Phase 2. How can we foster an interest in and an enthusiasm, for science among children and adults who are currently **not well served** by the Centre?
- Phase 3. How can we **understand the learning** that is occurring in current programs and exhibits?
 - What practices are effective in assessing the impact and learning that occurs in exhibits and programs?

Learning in informal settings

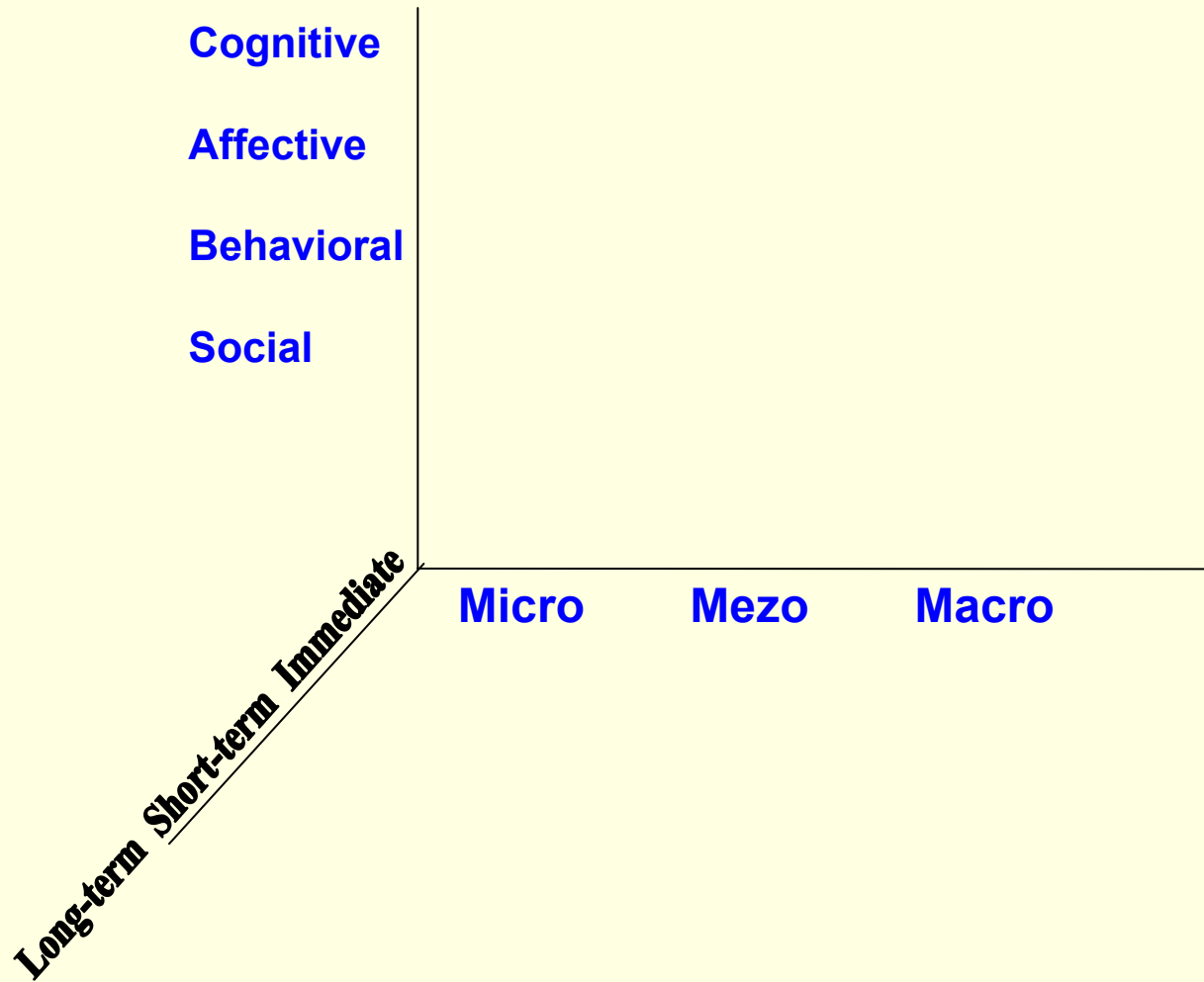
- **Diverse and multidimensional**: variety of learning outcomes
 - Cognitive
 - Affective
 - Behavioral/physical
 - Social/Cultural
- **Authentic** - real life problem-solving, hands-on construction or creation of tangible functioning artifacts, community-based science-related actions, and work with scientists.
- **Contextual** –the personal, physical and sociocultural contexts and time influence learning (Falk & Dierking, 2000).
 - visitors' motivation and expectations for a visit;
 - prior knowledge, interests and beliefs;
 - choice and control;
 - interactions within groups as well as with centre staff;
 - physical environment.
- **Constructivist** - individual interpretation and meaning making.

Learning in informal settings

Brody, Bangert and Dillon (2006) identified three different levels/ “scales” of experience:

- **micro** (experiences of individuals),
- **mezo** (group experiences)
- **macro** (overall program outcomes).

Learning in informal setting



Challenges in assessing learning in informal setting

- Complexity of learning experiences
- Multiple influences
- Indirect impact
- Unexpected events and outcomes
- Timescale
- Group interactions.....

Literature review: Search criteria

- **Overall focus:** Studies and publications on learning in informal settings (science centres and museums) and effective assessment and evaluation practices that are employed by centres
- **Time scale:** 1987-2007
- **Age range:** children, youth, adults, seniors
- **Geographical scope:** International (sources published in English only)
- **Types of publications:** Published articles (research, position and theoretical papers, descriptions of the programs), government/other institutions reports and publications
- **Sources:** libraries, online databases, websites

Literature review: Canadian context

- 25 Science centres and museums across Canada
 - Evaluation strategy/plan
 - Samples of evaluation instruments
 - Evaluation reports, summaries, etc.

Research & evaluation “landscape”

- Variety of methods and methodologies
- Methodologies:
 - Descriptive/interpretive
 - Experimental/quasi-experimental
 - Case studies
 - Correlational
 - Ethnography

Research & evaluation “landscape”

- Methods:
 - Interviews
 - Surveys
 - Observations
 - Focus groups
 - Tracking, sweeps, timing
 - Critical review of the program
 - Concept maps
 - Dialogue analysis
 - Video
- Most used several methods

Research & evaluation “landscape”

- Majority focused on “micro” level – experiences of individuals
- Outcomes assessed:
 - Most studies focused on cognitive, affective and/or behavioural learning outcomes
 - Few studies looked at social interactions

Messages from the literature

- Evaluation should be an ongoing process and an integral part of the program development and delivery process
 - involve staff who deal with public as well as decision makers
- Understand who your audience is and “slice” it well - target groups
- Take people’s perspectives, emotions and attitudes into account
- Consider collecting data from those who usually do not visit the museum or do not participate in the outreach programs
- Create programs that actually provide for experience that will address the potential changes you envision in the audience

Messages from the literature

- Success should be measured against goals: define realistic goals, revisit them as the project unfolds
- Develop a research design and methods that actually measure valid outcomes and answer your questions
- Use multiple methods
- Consider the context of the program
- Collect data in more than one location
- Employ long-term timeline and study a significant part of the lifespan of a program

Things to consider....

Does your assessment take into account:

- Context of the experience
- Social interactions within groups
- Emergent nature of the experience
- Integration of thinking, feeling and acting
- Variance in space and time
- Complexity and variability of setting and audience
- Motivation, curiosity and interest
- Expected and unexpected outcomes
- Related everyday learning

(from Brody et al, 2006)

Invitation to participate.....

- **Researcher-in-Residence @ Okanagan Science Centre:** we are gathering information about evaluation strategies used by science centres and science museums in Canada
- If you are willing to share information about your evaluation initiatives – please contact

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