



Best Practices for Field Days

Modified Delphi used for Observation Tool Development

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A team of 40 people from across the country were invited to the Best Practices for Field Days (BPFDD) Delphi panel to develop an effective observation instrument for determining the quality of field day components that represent best practices. Thirty nine people accepted the invitation and 27 people participated.

A modified Delphi process was used with input and reactions from a diverse panel of individuals (practical and theoretical) from field days and related informal science educational programs. The Delphi method was designed by Dalkey and Helmer (1963) and revised by Delbecq et al. (1975) and expanded in its application by Brooks (1979). It is a process of using written responses to build group consensus around a variety of issues/components. The Delphi approach modified in that the panel was used to turn theory into practice and to do so with limited rounds. A third major modification was the use of a two-day retreat for a partial panel (subgroup) to do the final work on consensus building. This Delphi panel was conducted electronically via (3) rounds of responses. Responses were kept anonymous and underlying assumptions were discussed until a working consensus was reached. The first round addressed what the literature suggests are the components necessary to make a field day successful by having panelists respond to, rate, and identify gaps in Field Day components. The second round was reacting to round 1 and rating each item as to what the whole group said. It explored more specific ways for determining if a Field Day component is met. The final round reacted to and rated the groups' ideas from the second round, and responded more specifically to items of fidelity and the observability of each inquiry. The data were collected in the winter – spring of 2007 and a subgroup of 10 experts met with the BPFDD leadership team to finalize the list.

The Delphi panelists were encouraged to respond but were not dropped from the pool if their responses did not get turned in after each round. Because of the nature of the data, panelists could join in even if they missed a round and react /rate on the next round. A Web-CT (U of MN VISTA) platform allowed panelists to download the questions and then upload their answers. The Delphi allowed everyone to see all the comments but not who said them. Only the researcher and graduate students were able to see where the responses came from. Responses were clustered around themes with all comments included. Panelists were not compensated for their time, but given credit in published documents on the project as an expert panel participant and received advanced copies of the instrument and reports.

Twenty-five panelists responded to the first round, 23 responded in the second round, and 18 completed the third round of questions. Each round got progressively longer with 29 pages of comments to address in the third round. Overall, 27 experts completed all or a minimum of one round of the Delphi. The length and time commitment was one of the major reasons for decay in the panelists.

Field Day Components

This study looked at the seven components making up the development and delivery of field day programs derived from the literature (Carlson, 2008; Meyer & Pardello, 2005). These include marketing, program design, audience, setting, program implementation, instruction, and program evaluation. Each of these components is made up of several sub-components that include the following:

Marketing is the process that results in increased participation and potential revenue and is made up of promotion of the event and use of different media.

Program Design is used to build a structure that links activities to desired outcomes and includes needs assessment, novelty, objectives and goals, thematic focus, and responsiveness to the needs of learners and/or schools.

Audience Engagement reflects the various participants and how they experience the event and includes engagement, preparation, comfort, choice, and reflection.

Setting includes the total environment where the field day occurs and how it is used including site choice; resource of the setting; physical set up, flow, and movement through the site; safety; and the learning environment.

Program Implementation refers to the way the field day is organized and carried out and includes timing, prepared communications, cohesion of message, cohesion of all experiences, presenters, participant management, logistics, and signage.

Instruction contains the elements of the teaching-learning exchange and how presenters use them. It includes presenter quality, relevance, pedagogy, conceptual density, methods, and assessment of learning.

Program evaluation is a process to determine how objectives have been achieved and include design, methods, utilization, and appropriate level of measurement.

Results of Round 1 Part 1

In Round 1, Part 1, the seven components were discussed and agreement was reached on whether they were part of a field day program and the level they played in the program. Information was organized into themes under each component and the components were ranked.

Marketing: Twenty-two people said yes and three people said no to the importance of Marketing as a component for a Field Day.

Strengths of Marketing

Increases attendance

Increases exposure in the community/visibility

Targets specific audiences

Creates public awareness of issues

Weaknesses of Marketing

Requires time and money

Requires skilled staff

Variability

Program Design: Twenty-five people said yes and no one said no to the importance of Program Design as a component for a Field Day.

Strengths of Program Design

Links to educational standards

Presents clear goals and objectives

Maintains focus toward desired outcomes and builds topical connections

Builds support and follow up

Weaknesses of Program Design

Requires time and effort

Does not always target audience

Does not always include theme adherence/presenter consistency

Audience Engagement: Twenty-five people said yes and no one said no to the importance of Audience Engagement as a component for a Field Day.

Strengths of Audience Engagement

Reflects understanding of audience needs and goals, history and background

Focusses program content and delivery

Influences marketing

Weaknesses of Audience:

Misses the audience mark

Remains outside the field day influences

Requires difficult balance of participants and delivery

Setting: Twenty-four people said yes, one person said no, and one person did not rate the importance of Setting as a component for a Field Day.

Strengths of Setting:

Provides unique opportunities

Allows experiential/theme-relevant activities

Uses what is available

Weaknesses Setting:

Requires guidance and signage at and leading to the site

Requires creativity and flexibility

May distract students

Program Implementation: Twenty-five people said yes and no one said no to the importance of Program Implementation as a component for a Field Day.

Strengths of Program Implementation:

Builds the structure and logistics for the day

Improves the flow of the day

Provides consistency toward theme and outcomes

Weaknesses of Program Implementation:

Requires in-school connection

Results in difficult evaluation if poorly done

Confuses and frustrates organizers and participants if poorly done

Needs adaptability

Instruction: Twenty-five people said yes and no one said no to the importance of Instruction as a component for a Field Day.

Strengths of Instruction:

Requires the presenter to prepare and provide guidance

Incorporates strategies for multiple learning styles

Focuses on the message

Connects to related topics

Weaknesses of Instructor:

Depends on presenter talent

Limits control

May not meet learning objectives

Program Evaluation: Twenty people said yes, three people said no, one person said yes/no, and one person did not rate the importance of Program Evaluation as a component for a Field Day.

Strengths of Program Evaluation:

- Creates an understanding of the impact*
- Leads to marketing and funding efforts*
- Identifies future program adaptations*

Weaknesses of Program Evaluation:

- Requires money and skill*
- Can be difficult to assess*
- May be misleading*

Round 1
Part 2
Ranking the
Components

Each component was ranked against the others in a scaled weight of importance for each item, ranging from 1 (lesser important) to 7 (greatest importance). This gave us a “relative importance” ranking for each of the components.

TABLE 1
Round 1, Order of importance:

<i>Program Design</i>	Mean: 6.7	Median: 7	Mode: 7
<i>Instruction</i>	Mean: 6.1	Median: 7	Mode: 7
<i>Audience Engagement</i>	Mean: 6.1	Median: 7	Mode: 7
<i>Program Implementation</i>	Mean: 6.0	Median: 6	Mode: 6
<i>Program Evaluation</i>	Mean: 5.3	Median: 5	Mode: 5
<i>Setting</i>	Mean: 4.9	Median: 5	Mode: 5
<i>Marketing</i>	Mean: 4.3	Median: 5	Mode: 5

Listed in their order of ranking and means suggest that program design, instruction, and audience are ranked the highest and most frequently. Program implementation was in the middle of the ranking but still relatively high with mean, median, and mode at 6.

TABLE 2
Round 1, Top Two Components:

Ranking:			
<i>Program Design</i>	#1: 16	#2: 1	Total Score = 33.5
<i>Instruction</i>	#1: 1	#2: 12	Total Score = 14.5
<i>Audience Engagement</i>	#1: 5	#2: 2	Total Score = 13
<i>Program Implementation</i>	#1: 3	#2: 5	Total Score = 11
<i>Program Evaluation</i>	#1:	#2: 2	Total Score = 2
<i>Marketing</i>			Total Score = 0
<i>Setting</i>			Total Score = 0

Results from Round 1 suggest that the seven components (Program Design, Instruction, Audience, Program Implementation, Program Evaluation, Setting, and Marketing) have consensus and are well supported. When ranking the top two components: Program design, instruction audience and program implementation are all at the top. It is interesting to note that this ranking was the opposite of the leadership team’s original order.

Results of Round 2

A total of 23 completed surveys were returned in a timely fashion from Round 2. There was still consensus on the seven components.

TABLE 3
Round 2, Consensus on components

<i>Marketing</i>	Y: 22	N: 0	Not Sure: 1
<i>Program Design</i>	Y: 22	N: 0	No Response: 1
<i>Audience Engagement</i>	Y: 23	N: 0	
<i>Setting</i>	Y: 21	N: 0	No Response: 2
<i>Program Implementation</i>	Y: 23	N: 0	
<i>Instruction</i>	Y: 23	N: 0	
<i>Program Evaluation</i>	Y: 22	N: 0	No Response: 1

Additional components

Based on Round 1, the following components were suggested. In Round 2, participants were asked if these items should be a separate component. They are listed from the highest “yes” to “no”.

TABLE 4
Round 2, Separate components

<i>Teacher connecting to the classroom</i>	Y: 7	N: 15		No Response: 1
<i>Pre & Post visits and/or Instruction</i>	Y: 6	N: 15	Y&N: 1	No Response: 1
<i>Presenters</i>	Y: 4	N: 18		No Response: 1
<i>Educator training in delivery techniques</i>	Y: 4	N: 17		No Response: 2
<i>Alignment with state standards</i>	Y: 3	N: 19		No Response: 1
<i>Preparation of audience</i>	Y: 3	N: 19		No Response: 1
<i>“Home” or institutional support</i>	Y: 2	N: 20		No Response: 1
<i>Safety arrangements & staff safety training</i>	Y: 2	N: 20		No Response: 1
<i>Teacher concerns/expectations</i>	Y: 1	N: 20		No Response: 2
<i>Theme, topic or story focus</i>	Y: 1	N: 21		No Response: 1
<i>Partnerships</i>	Y: 1	N: 20		No Response: 2
<i>Coordination</i>	Y: 0	N: 22		No Response: 1
<i>Program objectives</i>	Y: 0	N: 22		No Response: 1

Comments

Most said that they believed that each of these items are important but should be contained WITHIN each of the respective areas. There were several reasons why teacher communication and connecting to the classroom was important, including, but not limited to the marketing component. Teacher communication should connect to each of the seven components—not just marketing. It should either be a separate component of “Marketing” or it should be renamed “Marketing and Communications.” This category should also connect “Teacher concerns/expectations” with “Marketing and Communications.”

The **Ranked order** of components stayed fairly consistent after Round 2 with some discussion on the order of the last three items: Evaluation, setting and marketing.

Program Design
Instruction
Audience Engagement
Program Implementation
Program Evaluation
Setting
Marketing

The majority of Round 2 was to get consensus on factors and item clarification for each subcomponent. Reviewers rated subcomponents on a seven-point scale from 1= lesser importance to 7=extremely important. Items were added if they were needed to measure the component.

TABLE 5
Round 2, Subcomponents

1. Program Design

	Yes	Mean	Median	Mode	Measure subcomponent
Needs assessment	22	6	6	7	Teacher's needs met
Novelty	16	5	5	5	Criteria for choice of setting
Objectives & goals	23	7	7	7	Measure the desired outcome
Thematic focus	22	6	6	7	
Responsive to school/learner needs:	21	6	7	7	Pre-post activities, address standards, age appropriate
Roles and responsibilities	19	6	7	7	Falls on planners and implementers.
Responsive to agency/organization needs:	18	5	6	6	Long term commitments

2. Instruction

	Yes	Mean	Median	Mode	Measure subcomponent
Presenter quality	22	7	7	7	Enthusiasm, presenter skills, flexibility, confidence, competence, reliability
Relevance	21	6	7	7	Program answers "why"
Pedagogy	21	6	6	6	Thinking and reasoning of presenters
Conceptual design	19	5	5	5	Openness, reinforcement of key ideas
Methods	18	7	7	7	Processing, reflecting, engagement, questioning technique, props
Assessment of learning	18	6	6	6	Engagement of audience

3. Audience Engagement

	Yes	Mean	Median	Mode	Measure subcomponent
Engagement	21	6	6	7	Interaction, enthusiasm
Preparation	19	5	6	6	Pre-test / activities
Comfort	21	6	6	6	ADA compliance
Choice	21	6	6	5	Age appropriate activities
Reflection	17	5	6	6	Post-test / activities
Learner characteristics	20	6	7	7	Prior knowledge, cultural norms, pre-conceptions, attitudes, social groups

4. Program Implementation

	Yes	Mean	Median	Mode	Measure subcomponent
Timing	21	6	6	6	Orientation to the days event
Preparedness	22	7	7	7	Have a Plan B, emergency response for weather, what to wear
Communication	22	6	6	7	Site map, lost and found, signage, linkage with volunteers, parents, teachers
Cohesion of message	20	6	6	7	Clear theme at each site
Cohesion of all experiences	19	5	5	7	Volunteers, snacks, use of site, recycling
Presenters	23	7	7	7	Preparation before the event, management
Participant management	21	5	5	6	Volunteers, dignitaries
Logistics	23	6	6	7	Transportation, parking, site orientation

5. Program Evaluation

	Yes	Mean	Median	Mode	Measure subcomponent
Design	21	6	7	7	Timing, goals, measurable outcomes, evaluation
Methods	21	6	7	7	External/internal, qualitative and quantitative, focus groups, front-end and summative, long-term, observational measures
Utilization	21	6	6.5	7	Analysis and reporting results, integration with future planning
Appropriate level of measure	21	6	6	5	Cultural sensitivity, validity of the tools

6. Setting

	Yes	Mean	Median	Mode	Measure subcomponent
Site choice	21	6	7	7	Accessible for disability, novelty
Resources of the setting	20	6	6	6	Ample facilities, proximity of the resource
Physical set	22	5	6	6	Indoor/outdoor options, distractions, interactive element
Flow/movement through the site	22	5	6	6	Space, opportunity for social learning verse individual
Safety	22	6	7	7	Risk management
Learning environment	22	7	7	7	Conduciveness of the setting to supporting objectives and outcomes

7. Marketing

	Yes	Mean	Median	Mode	Measure subcomponent
Media	22	4	4	3	Awareness of environmental issues, money raised, number of news articles
Exposure to the community, visibility	22	6	6	7	Organization networks, connect to decision makers, money raised, word of mouth
Target audience	22	6	6	7	Educate agencies and organizations, increase attendance, number of volunteers
Promotion	20	5	5	5	Mode of delivery, skill of staff, time and money
Marketing research	20	4	4	6	Understand potential audiences

Results from Round 2 show consensus of the components and sub-competences (18 of 22 agree) of field day programs. The top four components, sub-components had a mean of six-seven on a seven-point scale of importance. This suggests that the group has consensus on the sub-components.

Results of Round 3

In Round 3, 18 surveys were completed. This round looked at the interactions of sub-components and built consensus in terms clarification for each sub-component. Most importantly, it looked at consensus on each item to see if it could be measured through observation. Reviewers were asked to determine if the item was “too big,” “just right” or “too small” to determine overall size of the item as it relates to the subcomponent.

It was agreed that there was interaction between the components and sub-components but the group was willing to accept the majority opinion (Yes, =17, No, = 0, No Response = 1) on the components and sub-components. The ranked order of the components was also still accepted (Y: 17, N: 1):

Program Design
Instruction
Audience Engagement
Program Implementation
Program Evaluation
Setting
Marketing

The reviewers also had consensus on the subcomponents/factors (Y: 17, No Response: 1), accepting the factors/sub-components as equaling that component.

Item Clarification

The following components are listed with sub-components, item description and whether the item was observable. The size of the item for each sub-component was also ranked from “too big,” “just right,” and “too small.”

TABLE 6
Round 3, Subcomponents and item support

Component #1: Program Design						
Sub-component	Item	Check One			Yes	Issues
		Too Big	Just Right	Too Small	Observable	
Needs assessment	Teacher’s needs met	3	13	1	Y-10	
	Alignment to standards	1	15		Y-14	
	Cost effective	8	5	3	Y-5	
Novelty	Use of setting	2	14		Y-14	
	Criteria for choice of setting	1	14	1	Y-11	
Objectives and goals	Resource allocation	5	7	2	Y-6	
	Link between design elements and other components	4	12		Y-10	- Too ambiguous
	Implementation concept	6	5		Y-4	- Unsure what this means
	Audience	3	8		Y-8	- Too Ambiguous
Thematic focus	Does it tell a story?	1	12	1	Y-11	- Environmental Literacy Scope and Sequence
	Complete thought	1	9	4	Y-9	

Responsive to school/ learner needs	Follow up materials for teachers; kits	1	15	1	Y-14	- This is a teacher need more than a student need
	Addresses standards or testing objectives	3	13	1	Y-11	This is a teacher need
	Permissions for "risky" activities	3	6	7	Y-13	- This can be on a check off list
	Appropriate methods (hands-on, group work,	3	14		Y-16	- May need subtopics to be measurable.
	Developmentally appropriate	5	11	1	Y-12	-Part of previous item
	Based in program theory	7	8	1	Y-5	- Part of "appropriate methods"
Roles and responsibilities	Presenters	2	12	1	Y-12	-Needs subtopics in order to be measurable.
	Planners	2	13		Y-12	-Needs subtopics to be measurable.
	Implementing	2	11		Y-10	- Checklist stuff
	Insurance	2	8	4	Y-10	- Checklist stuff
	Logistics	5	10	1	Y-12	- Checklist stuff,
Responsive to agency/ organization needs	Long-term engagement	6	10	1	Y-7	- Too ambiguous
	Transparency	4	6	1	Y-3	-Too ambiguous

Component #2: Instruction

Sub-component	Item	Check One			Yes	Issues
		Too Big	Just Right	Too Small	Observable	
Presenter Quality	Presenter training (effectiveness in skills)	2	12		Y-11	-Overlaps with "presenter skills"
	Enthusiasm		12	4	Y-14	- Needs criteria
	Presenter skills	3	12		Y-13	- Itemized skill
	Presenter flexibility	1	12	2	Y-11	- Needs criteria
	Instructor support and preparation	2	12		Y-8	- Different levels?
	Confidence	1	10	5	Y-10	- Should be lumped with competence
	Competence	2	13	1	Y-11	- Subject mastery? - (similar to "Skills")
	Reliability		13	1	Y-12	- Showed up?
Relevance	Answers "why"	3	10	2	Y-11	"Addresses" not answers
	Connects to EE issues	3	9	2	Y-9	-- Too broad
Pedagogy - Question - there are so many pedagogical elements,	Thinking and reasoning	5	8	1	Y-8	- Need a rubric
	Opportunities for application	5	11		Y-11	- Needs criteria
	Language access	3	8	2	Y-8	- Do you mean translation?

	Impact of gender on the learning exchange	4	7	5	Y-5	- Why not impact of culture?
	Processing	1	10	2	Y-9	- Need a rubric
	Reflecting		11	2	Y-12	-Need a rubric
	Engagement	1	15		Y-15	- Needs criteria
	Questioning techniques	1	13	1	Y-15	- Needs criteria
Conceptual density	Openness	3	5	1	Y-2	-Don't know what this means.
	Reinforcement (of key ideas)	2	13	1	Y-14	Not measureable
Methods	Interactions	2	12		Y-11	- Interactions of?
	Ample and appropriate resources		15		Y-12	
	Role of teacher	1	14	1	Y-13	
	Role of chaperone	1	13	2	Y-13	
	Use of props	1	12	2	Y-12	- Include role-playing, demonstrations,
Assessment of learning	Question and answer	1	13		Y-11	- In a lot of items

Component #3: Audience Engagement

Sub-component	Item	Check One			Yes	Issues
		Too Big	Just Right	Too Small	Observable	
Engagement	Discipline	2	10	1	Y-10	- Measurable
	Interactive		15		Y-14	
	Teachers as audience		12	2	Y-12	
	Enthusiasm	1	11	3	Y-11	- Overlaps with interactive
	Motivation	2	9	3	Y-8	- Overlap with enthusiasm
Preparation	Pre-learning	3	12		Y-9	-Maybe if resources allow
Comfort	Expanding comfort zone	8	4	3	Y-3	-(social?)
	Accommodation	1	13	2	Y-10	-(physical or social?)
	ADA compliance	1	12	3	Y-15	- Special needs?
	Special needs		14	1	Y-12	-Maybe not observable
Choice	Variations according to grade level (age appropriate)	1	12		Y-14	- What is audience choice? -"Choice" is unclear
	Ability (physical skills, cognitive capacity)	3	11		Y-11	
Reflection	Response to questions		13		Y-13	Program design?
	Quiet time		12	2	Y-15	-"Wait time"?
	Post-learning activities		11	2	Y-7	-Depending on time scale
Learner Characteristics	Prior knowledge	6	10		Y-8	
	Cultural norms	6	9	1	Y-4	-Not sure how
	Preconceptions	7	6	3	Y-5	- Lumped with prior knowledge

	Attitudes they bring to the event	5	9	2	Y-7	- Lumped with prior knowledge
	Diversity	1	13	1	Y-11	- Overt characteristics observable
	Social group	5	7	2	Y-4	- Need additional explanation
	Learning styles	4	11		Y-7	
	Respect for others and the setting	2	11	3	Y-9	How this is evaluated

Component #4: Program Implementation

Sub-component	Item	Check One			Yes	Issues
		Too Big	Just Right	Too Small	Observable	
Timing	Advance orientation to the schedule	1	11		Y-11	- What is this is exactly?
	Stated/posted schedule		14	1	Y-14	
Prepared	Volunteers	3	11		Y-13	
	Have Plan B (unexpected events including weather)		14	1	Y-12	
	Pre-activity materials		15		Y-12	
	Alternative resources/programming	3	12		Y-10	-Different from Plan B?
	Emergency response (capability)		14	1	Y-12	
	Materials on-site and available	1	13	1	Y-13	
	Advance orientation to the day's events (what to wear, what to bring, what activities will be encountered)		14	1	Y-13	- Through materials developed by organizers
Communications	Plan to communicate with volunteers		13	1	Y-12	- Similar/ prepared volunteers
	Site map		14	1	Y-14	
	Lost and found		11	4	Y-11	
	Linkages with teachers/parents	5	8	1	Y-6	
	Signage (way finding)		15	1	Y-16	
Cohesion of message	Connection to the theme at each site (station)		16		Y-15	- From FD plan docs
Logistics	Volunteers (strategically engaged)		15		Y-15	-“Works” is visible discretely—
	Dignitaries (are appropriately supported)		12	3	Y-11	- Relates to “prepared”
	Water		11	5	Y-15	
	Food/Refreshments		12	4	Y-16	
	Bathrooms		12	4	Y-15	
	Presenter management (strategy)		13	2	Y-12	
	Transportation		12	3	Y-13	- Could be clearer –
	Parking (strategy)		10	6	Y-14	
	Site orientation (design)		15		Y-13	-What is intended by this item?

Component #5: **Program Evaluation**

Sub-component	Item	Check One			Yes	Issues
		Too Big	Just Right	Too Small	Observable	
Design	Plan for when evaluation is conducted		15		Y-13	
	Definition of goals	3	12		Y-11	-Via FD docs
	Identifying measurable outcomes	1	14		Y-14	- Provided to evaluators.
	Staff and leadership participation in evaluation design	1	14		Y-8	
Methods	Distance between experience and data collection	3	10	1	Y-7	
	External evaluation vs. Internal evaluation	2	8	4	Y-9	
	Qualitative and quantitative	2	8	2	Y-10	
	Front-end	3	7		Y-8	-Not always necessary
	Focus groups	1	7	4	Y-11	- Not always necessary
	Interviews	1	8	3	Y-11	- Not always necessary
	Formative (pilot testing)	2	8	1	Y-9	-For the event or learning station?
	Summative	1	10		Y-10	
	Cost effectiveness (cost/benefit)	3	8	1	Y-7	-Amount learned per student,
	Short term		10		Y-9	
	Long term	1	9		Y-8	- Not always practical
	Observational measures	2	9	1	Y-9	- May be anecdotal
	Questionnaires		10	1	Y-10	
Utilization	Analysis and reporting of results	1	12	1	Y-11	
	Integration with future and ongoing planning	2	11	1	Y-7	- Observe for future planning
Appropriate level of measurement	Cultural sensitivity	3	10	1	Y-6	

Component #6: **Setting**

Sub-component	Item	Check One			Yes	Issues
		Too Big	Just Right	Too Small	Observable	
Site Choice	Accessibility (for disabled)	1	11	5	Y-15	- Could these 3 be groups
	Can the intended audience access the program site		13	3	Y-14	
	Accessibility for cultural/ethnic preference	1	10	5	Y-8	-Ongoing challenges for planners

	Site choice related to theme or topic	1	12	2	Y-14	
	Ambiance	2	9	3	Y-6	-“Conducive to learning”
	Relevance	2	13		Y-11	-“Site choice related to theme or topic?”
	Flexibility	2	11	2	Y-7	
	Novelty	2	12		Y-9	- Vague
Resource of the setting	Alternatives/ options for presentations	1	12	2	Y-9	
	Ample facilities for number of attendants		12		Y-15	
	Learning features and opportunities of the site	1	15		Y-13	
	Proximity of resources—close? Far?		13	2	Y-11	- This is part of accessibility
Physical set up	Indoor/outdoor options		15	1	Y-14	
	Accessibility (for disabled)	1	14	1	Y-15	This has shown up 4 times
	Availability of space		15	1	Y-16	
	Distractions	3	8	4	Y-11	
Flow/ movement through the site	Space for movement among stations		16		Y-14	
	Opportunities for social (vs individual) learning	2	13	1	Y-11	Program design or instruction
	Multiple entry-points	1	11	2	Y-13	
Safety	Risk management (plan in place)	1	13	1	Y-9	Don't know how it's observed
Learning environment	Conduciveness of setting to supporting objectives and outcomes	1	15		Y-9	

Component #7: **Marketing**

Sub-component	Item	Check One			Yes	Issues
		Too Big	Just Right	Too Small	Observable	
Media	Public awareness of environmental issues	8	5		Y-6	- Not sure what this means.
	Time and money	2	11		Y-7	
	Skill of staff	2	7	1	Y-5	- Unsure what is meant
	Testimonials		9	2	Y-8	Whose?
	Number of times exposed		10	2	Y-10	-“Multiple exposure opportunities
	Mode of delivery (formats, language)	2	12		Y-14	
	Money raised	3	7	3	Y-8	- Go with the other time/money question
	Design/strategy/ timeline	4	8		Y-10	- Present/absent?

Exposure in the community /visibility	Organization networks	2	10		Y-4	
	Connection to decision makers	5	11	1	Y-7	
	Word of mouth	4	10	1	Y-5	
	Money raised	4	6	3	Y-9	-Measure of exposure?
	Collaboration with program leaders	4	9		Y-7	- Not sure what this is
	Public awareness of the program	4	10		Y-7	- Substitute "public/ community outreach"
Target specific audiences	Educate agencies	6	8		Y-5	
	Educate organizations	7	8		Y-5	
	Connect to decision makers	5	10	1	Y-7	
	Marketing to funders	1	14		Y-9	
	Communicating with teachers		14		Y-8	
	Increasing attendance (track attendance numbers ?)		9	1	Y-9	- Outcome not method
	Number of volunteers	1	12		Y-13	- Outcome not method
Promotion	Time and money required	2	12		Y-8	-Not clear
	Skill of staff	1	11	1	Y-6	
	Mode of delivery (formats, design)	2	12		Y-11	
Market research	Understanding the potential audience(s)	3	12		Y-6	- Learner characteristics
	Audience(s) identified		15		Y-9	

Results from Round 3 identified both the strength of the items and if those items were observable. The list of items for each sub-component was fairly extensive but often not measurable though observation. In essence this list of items reflects the broad components of "best practices" for field days. In addition, Round 3 exposed a number of challenges with the clarity of an item and its measurability. There were a number of items that were found in different sub-components. Developing resolution for each item would need to be done in a face-to-face meeting with a sub-group of the experts.

Expert Team Reviews Delphi

Armed with a summary from the Delphi Round 3, a sub-group of 10 experts/practitioners came together with the BPFDF leadership team for two days in March of 2007 to build consensus on each of the sub-components and items that measured it (construct validity). Critical to the process was clarity of the item and if the item were an observable measure. In addition, observation instruments for studies in informal settings were discussed and evaluated for usability, accuracy, consistency, and replicability. The goal was to develop a tool that would address the overall program structure and organization, student preparation, classroom teacher preparation, presenter's teaching skills, student engagement, follow-up experiences (does the teacher have a plan to conduct an activity back in the classroom?), thematic delivery, hands-on activities and connections with standards in science and technology. The tool would use a rubric-type assessment on a five point scale anchored at one, three and five. The tool would attempt to capture the "good, better, best" framework developed by Fedler (2001).

Result from Experts

Based on the above premises, many of the items that made it through Round 3 of the Delphi as observable items were dropped from the list when items were better defined or clarified. In **Program Design**, needs assessment, novelty, goals and objectives, resource allocation, design of role and responsibility and responsibility to agency needs were not observable at a Field Day event. What was observable was thematic focus and response to school/learner needs. In **Instruction** almost everything was observable except conceptual density. **Audience Engagement** included observable behaviors in student excitement, time on task, level of activity and levels of comfort. **Program Implementation** had observable items such as orientation to the site orientation to the day's schedule, and a cohesive message throughout the site. Program logistic and preparation were not observable unless something went wrong through timing of the schedule that could be observed. **Program Evaluation** was not observable but could be asked of the program coordinator. The **Setting** is observable from accessibility, flow, space, safety bathrooms, water, indoor and outdoor accessibility, and fitting the theme but not observable was novelty. **Marketing**, while critical to getting people to the event, was not observable during the event.

The outcome of the meeting was the development of two tools: an individual learning station tool and a holistic tool that would measure the overall field day event. The next step was developing scales for each item and pilot testing the scales at field day events in the spring of 2007.

Discussion

Building consensus was not an easy task and coming to agreements on terminology was also challenging. In the end, we were able to bring together a wide range of perspectives to build consensus on major components of field day programs. This data laid the foundation for developing the items that ended up in the final observation tool for field days.

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