CORN Front-end Evaluation

Final Report

for the Indiana State Museum
Serrell & Associates
13 April 2007

The new exhibition is going to be about corn.
It's about how corn got to be everywhere
and in everything we use, from food to fuel.

INTRODUCTION AND METHODS

To help the Indiana State Museum (ISM) plan an exhibition about corn, a front-end evaluation was conducted by Serrell & Associates to find out what people knew about corn--the plant, its history, how it has changed, products made from corn, and its impact on us.

Potential visitors to the new exhibit were interviewed at ISM and at The Children's Museum (TCM) in Indianapolis. Adults and teenagers were the target audience for the study. Teens were targeted because of their possible involvement in Future Farmers of America and the possibility that they would choose careers in the various corn industries.

The interviewer collected data on individual demographics (gender, age, group type) and interests in agriculture. The interviewer then asked people to look at some images and statements about corn and discuss the ideas. A copy of the interview form is in the Appendix.

Eighty-two samples were collected: 40 people at ISM, mostly adults; 42 people at The Children's Museum, half of whom were teens. We were successful in getting a good balance of genders represented in the sample: 57% were female and 43% were male.

FINDINGS: BACKGROUND INTEREST AND KNOWLEDGE

Interviewees at ISM were asked if it was their first visit. At TCM, they were asked if they had ever visited ISM. Results showed that 51% of the people at ISM were first-time visitors; 49% had been there before. At The Children's Museum, 39% said they had been to ISM. The data from TCM was interesting because it indicated that many visitors go to both places; the institutions share an audience instead of the audiences being exclusive.

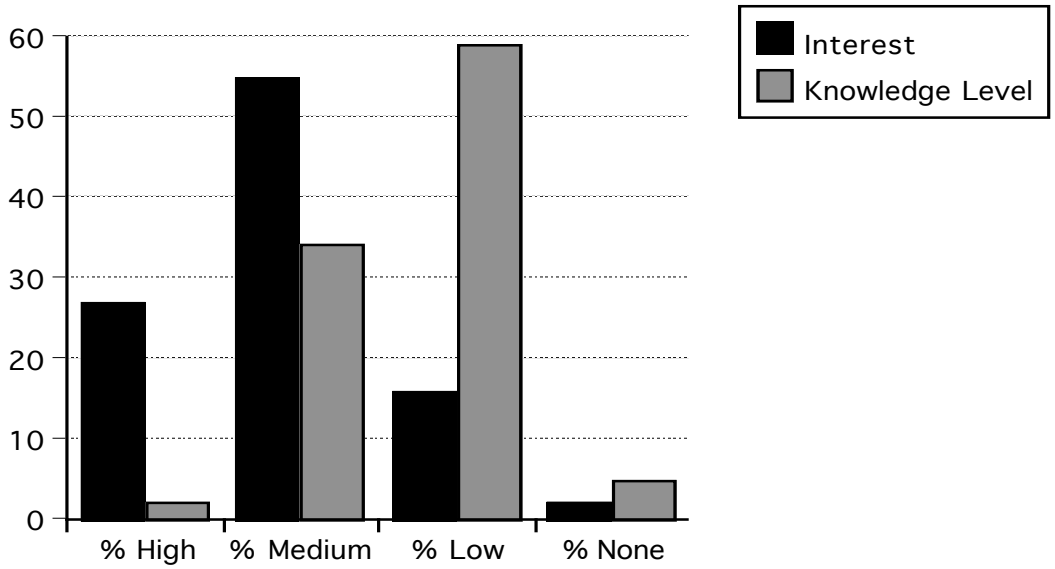
The interviewer asked if people had any "special interest, knowledge, or training about agriculture." Twenty-two percent said yes, such as

I grew up on farm, family member was/is a farmer
Have a job related to farming
Education, 4-H member
General interest, gardener

The ISM should assume that the majority of the audience will probably not have any special interest, knowledge, or training in agriculture or corn, and if they do, their prior relationships to the subject are diverse. It is typical for a museum audience to consist largely of people who are not specialists in the exhibition topic.

After recording the interviewee's demographic background information, the data collector showed the person a page with many images of corn products and read them the statement, "The new exhibition is going to be about CORN. It's about how corn got to be everywhere and in everything we use, from food to fuel." The interviewees then responded to specific questions about their interest in and knowledge levels about corn. People rated their interest higher than their knowledge. It was the data collector's opinion that the ratings for high interest were prompted largely by the information about "fuel."

Interest in Corn		*Knowledge about Corn*	
High	27%	High	2%
Medium	55%	Medium	34%
Low	16%	Low	59%
None	2%	None	5%



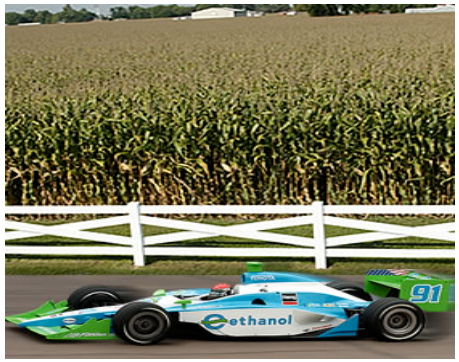
This pattern of higher interest than knowledge in a special topic is not uncommon. Adults are likely to underestimate their knowledge in the interview, because they don't know what the next question will be, and they don't want to appear ignorant.

FINDINGS: INTEREST AND QUESTIONS ABOUT PARTICULAR TOPICS

Visitors were then shown four sheets with images and content statements about corn (copies in Appendix). The statements were:

1) Although its origins are a mystery, corn was domesticated more than 8,000 years ago.
2) Artificial selection and genetic modification of corn plant DNA have led to higher yields.
3) The corn plant has a central stalk, leaves, and male (tassels) and female (silk) parts that contain the DNA that will be passed to the next generation.
4) An abundance of hybrid corn in the United States has led to interest in making corn into fuel, as ethanol.

Respondents were then asked, "Of these four ideas, which one are you most curious about? What would you like to know more about?" After they'd talked about one of them, the data collector probed for what they might know about the other three and what else they might be curious about. The data transcription in the Appendix shows a compilation of all the answers related to each of the four topics.



ETHANOL: About 100 Comments

In their responses, visitors were most curious about ethanol. This topic prompted far more interest and questions than the others. Many respondents asked how ethanol is made from corn. The interviewees used a broad vocabulary and raised many issues regarding ethanol. This subject seemed to have the most relevance to people's lives--economically, environmentally, ethically, and politically.

These are some examples of what they said about ethanol (numbers after each statement refer to the data sheet code, and TC indicates a teen's comment):

Not convinced that it is all it's cracked up to be. 1-10
Environmental impact. How the use of ethanol impacts emissions from vehicles if any. Is it an attainable goal? 2-33
Hybrid corn turned into fuel fascinates me. Like to quit buying Arab oil. Families who are farmers will benefit. Since Indiana has 20 plants, will effect the state a lot. C-6
Seems more recent. More now. Something that will affect us more now. TC8

The new exhibit should answer visitors' questions. Because this is such a current topic, there needs to be a built-in format for changing information on the graphic panels and labels. Some of the answers and questions will become out of date during the lifetime of this exhibition, especially while it is traveling.

ORIGINS: About 78 Comments

Many interviewees expressed an interest in the history of corn. They were curious about ancient cultures and how they used corn. Visitors liked the idea of comparing the past to the present and using historical artifacts in the exhibition.

Ways to address visitors' interest in history, origins, and distribution of corn include dioramas, artifacts, art, graphics, and charts.

Examples of their comments about the origins of corn are:

> *How corn was used - was it the same as we do? Why do the corn gods look so grim? An interesting presentation of facts around context of corn. Where did corn come from? Did it start as a weed that was domesticated? If corn was so great, what happened to those people?* 1-3
>
> *How did we get to where we are?* C-16
>
> *So it's really old and corn has been around for so long. See how much corn has been documented for how many years.* TC5

ARTIFICIAL SELECTION: About 40 Comments

People had questions and concerns about genetic modification, but they seemed to realize that corn breeding has led to different strains and higher yields of corn.

I see the signs in fields all the time. 2-19
What is high-yield corn doing to us and animals using modified corn. Is it really corn? Using chemicals and how it is being used as livestock feed and how it is affecting kids. 2-31
How we change plants to make them work better or help us more and changing genetic makeup is really interesting. 2-16
How they do gene modification, examples of what has been done to make better corn. Before and after, natural vs. what we have bred it to look like. TC3

PARTS OF CORN: The Fewest Comments

People knew the least and had the fewest questions about the parts of corn. Some people said they didn't know about this or knew a little but would like to know more, or were curious about "how it works." Aside from "de-tasseling," visitors used few specialized vocabulary words to describe corn parts.

I didn't know corn had different parts like male and female, just seems like a plant or vegetable. 1-9

De-tasselled corn as a teenager. Didn't know what I was doing other than making money. Did not know about male and female parts, why was I doing that? 2-30

Actual parts of corn plant and how it grows, purpose of the silk. Kids always ask about it when shucking corn and what it is for. Good to have an answer. C-19

They have DNA they pass, I did not know this. TC14

The interviewer asked, finally, if the survey participants had any other suggestions or comments about the new exhibition. Many of the suggestions related to making the exhibits interesting, interactive, and easy to understand.

Need to have hands-on stuff for kids to learn from. I can watch a film clip, but my kids want to do stuff. 2-15

People also thought that this was an important topic and a good idea for an exhibition at ISM.

Sounds like a good exhibit, one I don't know much about, even though I live in the middle of a major farming area. 2-12
It will be good for the Indiana State Museum 2-13
Keep the good job up 2-18

BRIEF SUMMARY OF FINDINGS

What do people know about corn?

People know a little about the history of corn in the Americas and its many uses. They've heard about ethanol and are curious about it. They've heard of artificial selection and genetic modification but do not have much knowledge about it.

How do they feel about corn (the plant, the products, the issues)?

They are mildly to very interested. For most people, their interest exceeds their knowledge. A few are not interested.

What do they know about breeding corn?

Very little. Even men who worked de-tasseling corn did not know what they were doing or why they were doing it.

What do they think they would do and learn about in an exhibit about corn?

They want lots of hands-on experiences and real artifacts. They'd like an explanation of how corn plants are made into ethanol.

What parts of the exhibit would attract them most?

The ethanol story and issues are of greatest interest, followed by the history and diversity of corn.

IMPLICATIONS AND RECOMMENDATIONS FOR THE CORN EXHIBITION

The comments in this section are largely the opinion of the evaluator, based on the data from this study and other front-end evaluation studies for different topics. They are meant as suggestions, for ISM to take or leave, or to use as discussion points during the development of CORN.

The biggest challenge is getting visitors' attention.

Corn is not a topic that visitors automatically think they will find fascinating. But, as we have seen, once you start to learn a little bit about it, it becomes quite fascinating. The exhibit experiences should strive to provide multiple moments for visitors to say to themselves or their companions, "I never knew that..." "I didn't realize that..." "This reminds me that..." and they will go home and recommend the exhibit to their families, friends, and neighbors.

Capitalize on interest, but don't assume prior knowledge.

Data from this front-end evaluation suggest that visitors will have an interest in the topics and issues of CORN, but that they do not have a lot of prior knowledge about the subject. They are curious about many points, but the exhibition cannot assume that they have the background to engage with too many new ideas.

It is easy to be overwhelmed.

The second biggest challenge of this exhibit is keeping it from being overwhelming. CORN is a very comprehensive exhibition, and it will be easy to tell visitors much more than they ever cared about. Even visitors with high interest levels can become overwhelmed in exhibitions that present a large amount of unfamiliar or complex new concepts. Exhibit developers should not assume visitors can sustain an interest in the topic if it is too demanding, that is, if it contains too much information.

Build generalizations from the bottom up.

Start by communicating clearly to visitors what the exhibition is about: great moments in corn history (genetics and breeding remains an thread that links it all together). It is a comprehensive look at how corn got to be the way it is today. The exhibition is not about car racing, tractors, pioneers, or Mayan civilization--although it will touch on these subjects.

The "great moments" are generalizations about the historical story of corn breeding, and every generalization needs to be interpreted by presenting at least three specific examples that relate to the generalization. The concepts of breeding and genetics need to be told through very concrete explanations and examples. Thus, the six major areas of the exhibition should be titled by general themes, and the exhibit elements within each area should specifically support and demonstrate that area's theme.

Ways to satisfy everyone:

Make the topic clear and focused. Keep it elegantly simple. This does not mean making it juvenile, simplistic, or shallow. Go for breadth not depth.

Present information (concepts, ideas, stories) in a variety of modalities (objects, text, photos, audio, video, interactives) to appeal to different learning styles--but aim the vast majority of exhibit elements at a level of understanding that does not assume prior knowledge or specialized vocabulary. Assume a motivated, interested visitor who knows how to read but has very limited knowledge of agriculture, botany, or genetics. This way you can appeal to visitors across the broadest possible spectrum of abilities.

Provide in-depth experiences with lots of links on the CORN web site.

In terms of time, if you gear the number of exhibit elements and the amount of time required to absorb all of them to a maximum of 60 minutes, most visitors will be able to sample enough of the components to feel like they've covered the choices thoroughly and not missed too many things in a satisfying 20-minute visit.

By putting more exhibit development time and formative evaluation efforts into fewer exhibit elements, the quality of the experiences and visitors' use of them will provide both the developers and the users with the most bang for the buck.

Don't try to satisfy everyone.

If satisfying everyone includes fulfilling donor's wishes and amazing your academic and agricultural industry colleagues instead of focusing on creating comfortable, engaging, reinforcing, meaningful visitor-centered experiences for nonspecialists, you'll have a problem.

Make the most of the controversial issues.

The origins of corn have been argued by scientists, predictions about corn agriculture have not all come to pass, and the value of using ethanol from corn plants in the United States is hardly a unanimous agreement. Visitors are prepared to be challenged by issues that don't have easy answers as long as the information is presented clearly.

Answer visitors' questions.

How was corn originated, where did it come from? How was corn used in ancient cultures? Where was it first cultivated? How did it spread throughout the hemisphere? DNA and higher yields are interesting: How is it done? Is genetically modified corn healthy? Why does corn need to be de-tasselled? How is DNA passed? How can they turn corn into fuel? Will ethanol cut down on emissions? Will it really cut down on dependence on foreign oil? If you can answer specific questions like these with interesting graphics, objects, and interactives, visitors will stay engaged longer.

Make interactives for adults and kids.

Visitors typically perceive interactive devices as meant for children because often the interaction is gratuitous. To make interactive elements appealing to adults, games should involve more than guessing; interactions should mimic or embody the content; intergenerational group participation should be encouraged; and interactive experiences should be reinforcing reiterations of content elsewhere in the exhibition. Interactive elements must go through formative evaluation during design development to guarantee their effectiveness (comprehensibility, durability, meaningfulness).

And good luck!

Thanks to John Scott Foster for collecting all the data.
Thanks to The Children's Museum for allowing us to use their site,
and thanks to all the visitors who shared their time and thoughts.