

# ASK DR. DISCOVERY

## Enabling museum evaluation and encouraging engagement with museum content

Dr. Discovery addresses the immediate and pressing need for affordable, ongoing, large-scale museum evaluation while encouraging visitors to engage deeply with museum content. The app features a front-end scientist astronaut for use by museum visitors that doubles as an unobtrusive data-gatherer as well as a back-end analytics portal for museum staff, evaluators, and researchers.

## RESEARCH QUESTIONS

How does the use of the Dr. Discovery analytics portal by museum staff impact museum evaluation and visitor experience?

How does the “Game” mode of Dr. Discovery impact level of visitor use vs. the “Ask” mode?

## PROJECT GOALS

Ask Dr. Discovery enables museum evaluation by mining, analyzing, and interpreting in real-time data produced by visitor interactions with the app. It supports museum visitor engagement with exhibits and content by answering visitors’ questions and involving them in simple games in museum exhibit spaces. The app provides up-to-date visitor data to museum staff to help them tweak exhibit content, modify exhibit pathways to reflect user preferences or facilitate learning, and change flexible materials and resources as current events or visitors’ needs and interests change.

## AUDIENCE: VISITORS

### LEARN MORE

Dr. Discovery can accompany museum visitors throughout their visit, allowing them to dig deeper into topics they love.

### SAFE AND RELIABLE

Dr. Discovery content comes directly from university and scientific resources, such as NASA, USGS, the NSF, and many more.

## AUDIENCE: MUSEUMS

### UPDATING CONTENT

Ask Dr. Discovery’s easy-to-edit database of questions and answers lets museums keep up with current events without making costly exhibit additions. The information can be used to make just-in-time tweaks to exhibit content during formative periods, modify exhibit pathways, reflect user preferences, facilitate learning, or change materials and resources.

### ENGAGING WITH VISITORS

Docents and guides can use the app to facilitate interactions with visitors, looking up questions on topics unfamiliar to them and then using those questions and responses as a jumping-off point for further interaction.

### EVALUATION

The Dr. Discovery analytics portal allows museums to make evidence-based improvements. Thousands of questions that visitors ask are collected as raw data, automatically analyzed by the system, and presented in a comprehensive manner.

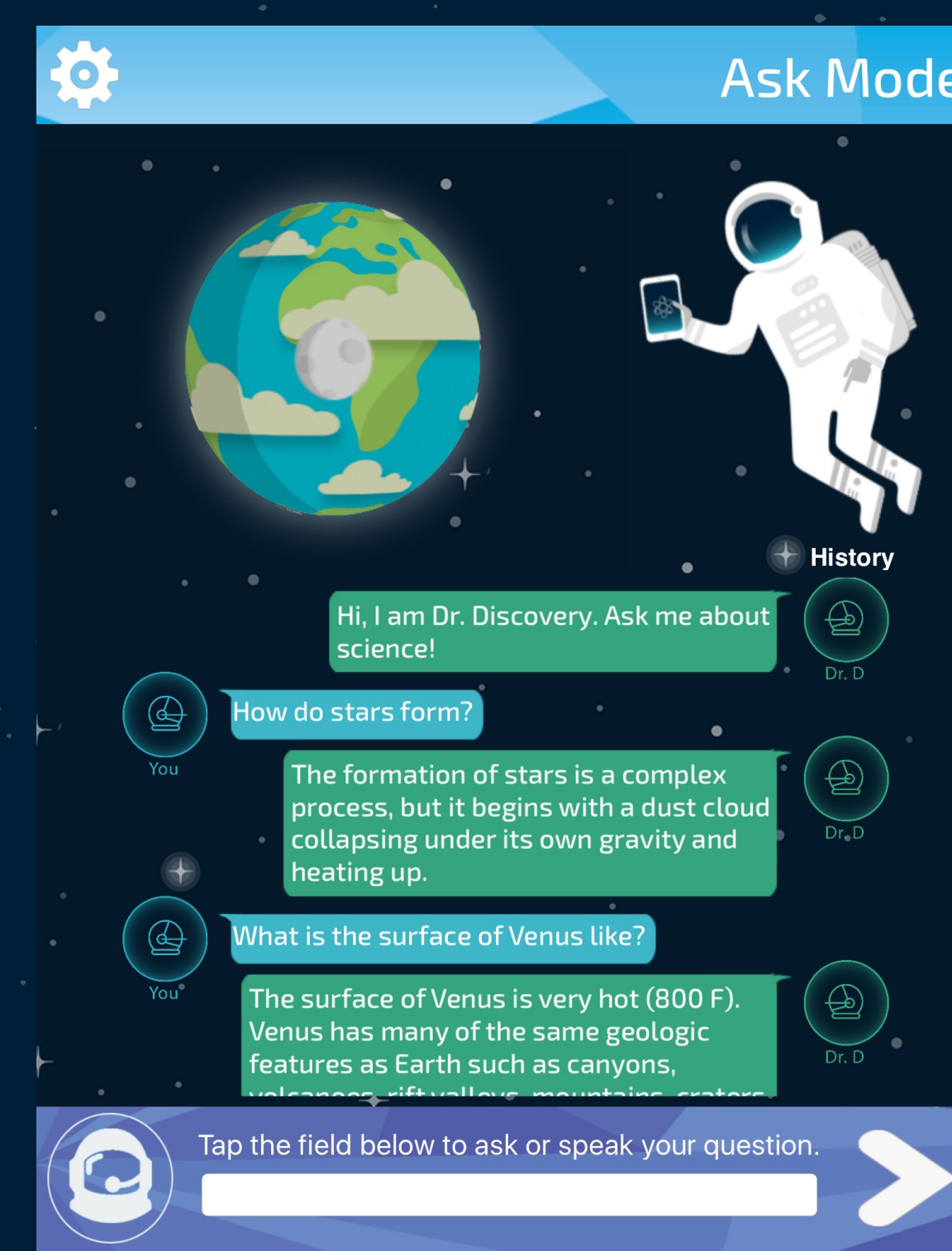
## MUSEUM PARTNERS

Kathy Eastman  
Curator of Education  
Arizona Museum of Natural History

Sari Custer  
Director of Educational Events and Integration  
Arizona Science Center



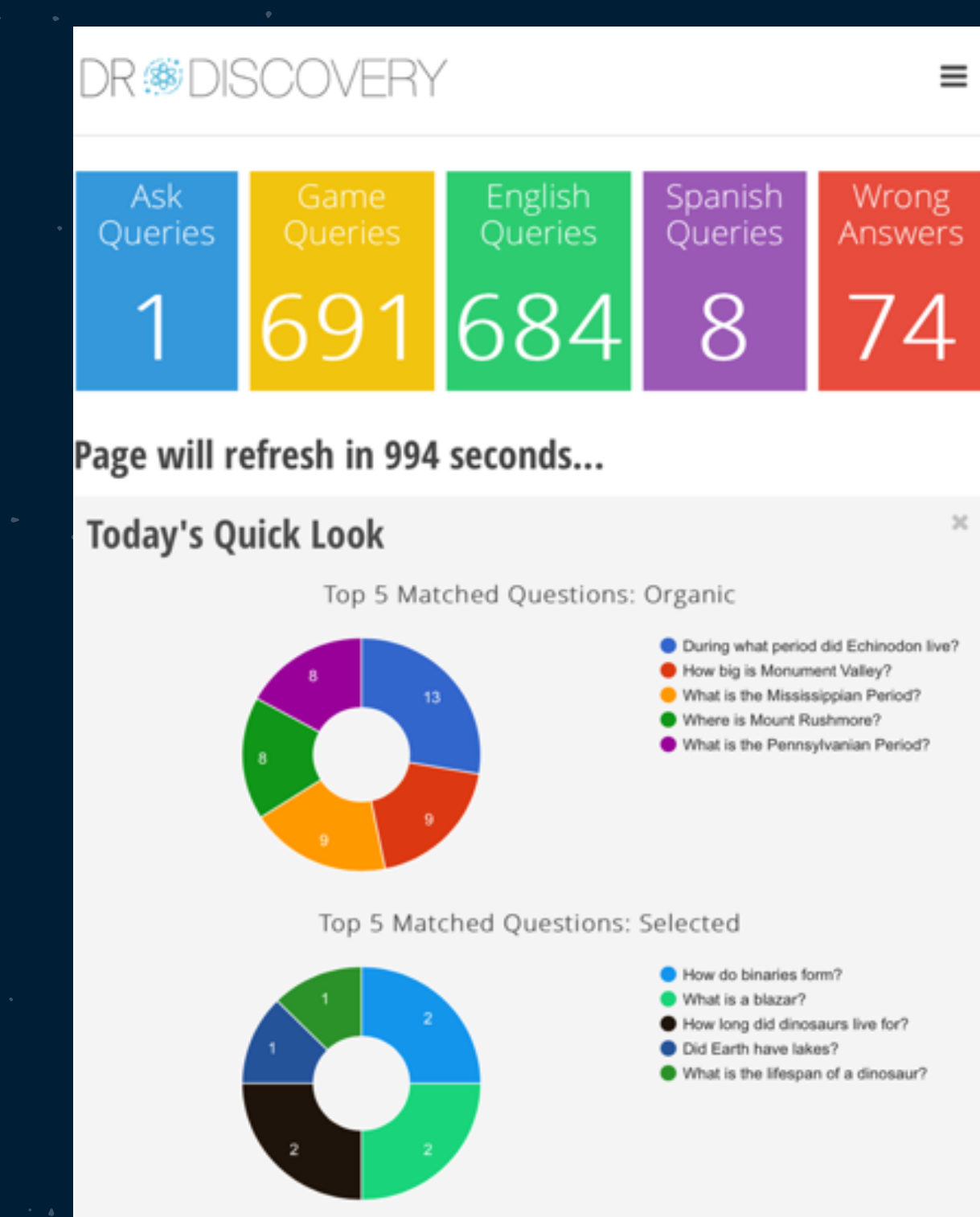
## ASK MODE



## GAME MODE



## ANALYTICS PORTAL



## IMPLEMENTATIONS

### DATA SOURCES/TARGET AUDIENCE

In four public usability studies at the partner museums, a total of 62 user groups borrowed devices and an adult in each group completed the usability survey.

### PROCEDURES

At each test 10 iPad minis were available to participants on a rotating basis. The research team explained the overall purpose of Dr. D and indicated the relevant exhibit(s). Participants explored the exhibits at their own pace and their Dr. D interactions were recorded in the log files. They completed a device- and time-stamped usability survey at the end. The research team took observational notes of participants’ behavior and interactions with Dr. D and debriefed with participants at the end.

### RESULTS

Overall 1,152 questions were asked, an average of 18.5 questions per user, over an average of 36.5 minutes of app access per user. This suggests the volume of questions likely to be asked during full tests will be sufficient for robust analytics to be produced.

In the most recent two usability tests conducted with the finalized “Ask” mode (n=36), 424 substantive user questions were asked. Of these, the system matched 83 (20%) with a perfect match, 21 (5%) with a >80% match of the algorithmic metric, and 170 (40%) with a 50-80% match of the algorithmic metric (offering the user two clickable questions deemed the closest matches). There were 150 (35%) questions for which the system did not provide an answer (<50% match to the algorithmic metric) and told the user Dr. D had not yet learned that information and was offered

another fact from the database.

On surveys, 33% of users found Dr. D “somewhat” helpful, 31% found it “very” helpful, and 3% found it “extremely” helpful. When asked how much they liked interacting with Dr. D, 44% said “very” helpful, and 3% found it “extremely” helpful. When asked how much they liked interacting with Dr. D, 44% said “very much” and 14% said “extremely.” A high priority is to continue to extend the database content and refine the matching algorithm. Data shown in the quick-look evaluation plots for museum professionals showed the top 10 questions asked by visitors and the top 10 questions selected when offered up by the system, as well as the top content area matches (based on question tags in the database). Additional analytics are in development.

## INSIGHTS & CHALLENGES

### CONTENT

The existing questions and answers are written in compliance with federal guidelines for public audience materials, including plainlanguage.gov, as well as being written to an 8th grade reading level. However, the staff reported it was still higher-level than their museum’s typical demographic and asked that answers be simplified. They also suggested anticipating bad grammar in the questions, making sure that all vocabulary in an answer has another question associated with it, and adding more “how” and “why” questions. Those who work directly with visitors requested that logistical information (such as bathroom location, gift shop hours, etc.) be added.

## APP

Museum staff suggested the graphics (Dr. D floating in space by Earth) take up less space on the screen so users can see more of their question history. They felt the size of the iPad Mini was appropriate for adults and children.

## ANALYTICS

During the tests the analytics web page required constant manual refreshing to see updated information on visitor questions, so an automatic refresh feature was requested, as well as the ability to select date and time ranges.

## ASU TEAM

PI Judd Bowman

CO-PI Cassie Bowman

CO-PI Brian Nelson

EDUCATIONAL COORDINATOR Meg Hufford

LEAD DEVELOPER Jared Korinko

EVALUATOR Jodie Lu Hoffman

## ASU STUDENTS

Abigail Weibel

Ankita Kak

Caitlin Chmaj

Candace Choi

Ivan Fernandez

Jeff Danas

Kyle Rogers

Rohit Iyengar

## ASKDRDISCOVERY.ORG

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