



IMPACT PLANNING • EVALUATION • AUDIENCE RESEARCH



## SUMMATIVE EVALUATION

### GRAINGER SCIENCE HUB & DISCOVERY SQUAD CARTS

*Prepared for the*  
Field Museum  
Chicago, IL

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## SUMMARY AND RECOMMENDATIONS

The Field Museum contracted RK&A, Inc. to conduct a summative evaluation of the Grainger Science Hub and the Discovery Squad Carts. The goals of the study are to explore the extent to which visitors interact with programming in the Science Hub and at Discovery Squad Carts and the nature of those interactions, as well as visitor motivations and takeaways.

What follows is a summary of key findings and recommendations. Please see the findings sections for a complete reporting of all results.

	SCIENCE HUB	DISCOVERY SQUAD CARTS
<b>Visitor Characteristics</b>	<b>Group composition:</b> 50% Adults with children, 39% Adult only, 11% Solo adult	<b>Group composition:</b> 65% Adults with children, 23% Adult only, 12% Solo adult
<b>Visit Experience</b>	<b>Median time spent:</b> 2 minutes 58 seconds	<b>Median time spent:</b> 3 minutes 15 seconds
	<b>Max time spent:</b> 20 minutes 8 seconds	<b>Max time spent:</b> 12 minutes 25 seconds
	<b>Conversation:</b> 62% of groups engaged in conversation with a staff member in the Hub	<b>Conversation:</b> 98% of groups engaged in conversation with a volunteer at the Cart
	<b>Asked a question about content:</b> 38% of groups overall	<b>Asked a question about content:</b> 51% of visitors overall
	<b>Touch an object or specimen:</b> 81% of groups overall	<b>Touch an object or specimen:</b> 77% of groups overall
	<b>Other groups interacting with facilitator:</b> 64% Yes, 36% No	<b>Other groups interacting with facilitator:</b> 28% Yes, 72% No
<b>Visitor Takeaways</b>	<b>Most enjoyable aspects:</b> Hands-on experience followed by conversations with staff	<b>Most enjoyable aspects:</b> Conversations with staff followed by hands-on experience
	<b>Messages:</b> Museum collection	<b>Messages:</b> Accessibility and museum collections

In the RFP for this study, the Field Museum describes the Grainger Science Hub and Discovery Squad as complementary programs: “The Grainger Science Hub and the Discovery Squad function as a **tiered suite or continuum of educational programs**. At the briefest end of the continuum, Discovery Squad volunteers use a single object to engage visitors in a short conversation and welcome them to the museum. At the Discovery Squad carts visitors can see multiple objects related to a theme, ask questions of the volunteers, and even touch real specimens. Visiting the Science Hub allows people to deepen their experience by participating in hands-on activities with museum educators, viewing small and frequently changing exhibits, and examining real artifacts and specimens up close.”

This evaluation confirmed that the Grainger Science Hub and Discovery Squad are indeed complementary programs that are operating in close alignment with their intentions. In the following summary, we have discussed the Science Hub and Discovery Squad separately, drawing comparisons between the two to help the Field Museum interpret the findings. We have not made these comparisons to indicate how one program is better than another since, as the Field Museum makes clear, visitor experience expectations for each program are distinct.

**GRAINGER SCIENCE HUB**

Overall, the Field Museum is succeeding in achieving its sensory and affective goals for the space, which are listed below. The Hub is indeed a quieter environment off the main hall. During observations, crowding in the space was generally moderate, and one out of three visitors had the space entirely to themselves. Facilitators in the space were always welcoming and enthusiastic with visitors. While it may be surprising that 38 percent of visitor groups to the Science Hub did not converse with a staff member while there, this is not for lack of friendliness in staff, but attributed to a combination of staff being engaged in conversation with other visitors and some visitor groups seeming to choose to move through the Hub quickly.

<p><b>Sensory goals.</b> Visitors will sense...</p> <ul style="list-style-type: none"> <li>◆ a change in textures and finishes compared to Stanley Field Hall</li> <li>◆ a variety of intriguing objects on display</li> <li>◆ objects that they can walk up and touch</li> <li>◆ facilitators who are ready to engage</li> <li>◆ a quieter environment than Stanley Field Hall</li> <li>◆ activity happening throughout the space</li> </ul>	<p><b>Affective goals.</b> Visitors will feel...</p> <ul style="list-style-type: none"> <li>◆ comfortable to explore and interact in the space on their own</li> <li>◆ unintimidated</li> <li>◆ welcomed by the facilitators</li> <li>◆ energized by having a personal, authentic experience at such a big museum</li> </ul>
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Notably though, while the Field Museum is largely achieving their sensory and affective goals for those who make it into the Hub, there do seem to be a few deterrents to entering the Hub. Findings show that the majority of visitors to the Hub were just passing by and decided to enter, indicating a visitor’s first impression of the space is important. However, interviews with visitors who passed by the Hub without entering, indicate that one-quarter named an issue related to lack of awareness about the Hub, such as they did not notice the Science Hub as they walked by, they did not know what it was, or they did not know they could go into the Hub. The Field Museum might consider ways to improve awareness of the space with additional messaging or visuals around the Hub, such as those on the side of the Hub viewed when exiting Ancient Americas. It will help make the space appear more welcoming (although also potentially less quiet as well).

In terms of cognitive goals and learning outcomes, this study prioritized exploration of how visitors’ curiosity was triggered by the content and their experience in the Hub. It is very encouraging that 62 percent of visitors who engaged with staff in the Hub asked questions of staff about the content. While about half of these questions were simplistic, identification questions (What is this?), the other half of these questions were more complex, probing questions about specimens and sometimes about scientific processes, such as how collections are stored or how scientists know what they know. Furthermore, the majority of interviewed visitors named a curiosity they had as a result of their experience in the Hub. While these curiosities were sometimes lacking specificity (i.e., generally desiring more information about a specimen), the Field Museum should consider these findings in the context of how the Hub visitor experience fits into the larger museum experience. That is, visitors often experience the Hub toward the beginning of their time at the museum and the median time spent is just shy of 3 minutes. So, while visitors to the Hub might not achieve all the cognitive goals outlined, it certainly is priming visitors with curiosity and practice asking questions—experiences they hopefully carry with them and apply throughout the rest of their visit to the museum.

<b>Cognitive goals.</b> Visitors will understand...	<b>Learning Outcomes</b>
<ul style="list-style-type: none"> <li>◆ the Field Museum has a huge collection of objects</li> <li>◆ these objects hold information about the natural world</li> <li>◆ scientists explore these objects</li> <li>◆ they can explore these objects too</li> </ul>	<ul style="list-style-type: none"> <li>◆ Awareness: the visitor’s curiosity is triggered by the content/ experience they encounter</li> <li>◆ Relevance: the visitor makes a connection between their experience and their own life/point of view</li> <li>◆ Asking Questions: the visitor poses questions about their experience overall or about a new aspect of the experience they just had</li> <li>◆ Conversation: the visitor engages in conversation about their experience that involves listening and sharing ideas</li> </ul>

## DISCOVERY SQUAD CARTS

The Discovery Squad Carts, which are each facilitated by two volunteers, are designed to be an experience akin to that of the Science Hub, but smaller in scope. Observations indicate many parallels between visitors' experiences at the Discovery Squad Carts and the Science Hub. First, the median time spent at the Discovery Squad Carts is 3 minutes 15 seconds—slightly longer than the median time spent at the Science Hub. However, the max time spent at the Discovery Squad Carts is nearly half the time of the max time spent at the Science Hub, suggesting the more limited scope of the carts. Furthermore, many of the visitors to the Discovery Squad Carts touch objects or specimens.

Experiences at the Discovery Squad Carts differ from the Science Hub in a few ways. First, the Discovery Squad Carts experience a larger proportion of visitor groups with children than the Hub, suggesting the look and experience of the Carts is more kid-friendly than the Hub. Second, visitor groups to the Discovery Squad Carts often experience the Cart without other groups being present. This is likely the result of the Carts being more self-contained both in physical size and scope than the Hub. Third, visitors to the Discovery Squad Carts ask more questions about the content at the Carts than those who visit the Hub. From this study, there is no clear indication why this might be the case, but perhaps it is owing to the fact that visitors who approach the Carts are well aware that the Carts provide opportunities for staff interaction and have self-selected this experience for themselves (by comparison, the Hub is both an exhibition and programming space so visitors to this space may be less prepared to engage in conversation).

Interestingly, despite differences in programming, visitors' takeaways from the Carts are very similar to that of the Hub. For instance, visitors most enjoyed the Carts for the opportunity to ask questions of and receive answers from someone knowledgeable, closely followed by enjoyment for the opportunity to touch specimens or objects. Additionally, visitors to the Carts perceived the Carts as promoting access to and opportunities to learn from the museum's collections. Therefore, we conclude that Discovery Squad Carts are welcoming and, similar to the Science Hub, are successful in priming visitors to be curious and ask questions. For this reason, we think the Discovery Squad Carts and the Science Hub are potentially tremendously valuable orienting experiences to share their museum visit.

### Interpretive Cart Facilitation Goals

- ◆ Visitors will be visually intrigued by the cart and feel welcome to approach it.
- ◆ Visitors will be engaged in learning about the items on the cart through an inquiry-based interaction including questioning, scaffolding and comparison.
- ◆ Visitors will walk away curious to learn more and/or see the collections and exhibits that directly relate to the carts
- ◆ Visitors will have the opportunity to touch and explore the touchable objects

## RECOMMENDATIONS

### FROM RK&A

Our recommendations are grounded in our experiences working with museums across the country and the findings detailed in this report. This section serves as a guide for thinking about the future of the Grainger Science Hub and the Discovery Squad Carts.

- ◆ **Make evident the purpose of the Science Hub:** Because some visitors pass by the Science Hub owing to lack of awareness of its purpose and openness, include additional messaging or visuals around the Hub, such as those on the side of the Hub viewed when exiting Ancient Americas, to help visitors quickly identify it as a space to explore their curiosities.
- ◆ **Consider adding a second facilitator in the Science Hub:** While the Hub seems to offer visitors more opportunities to dig deeper into conversations about objects than the Discovery Carts do, proportionally fewer visitors to the Hub than the Discovery Squad Carts have a conversation with staff members. By adding a second facilitator to the Hub, such as is assigned to the Discovery Squad Carts, there is greater opportunity for visitors to engage with staff. Also, this might create a more dynamic vibe to the space through increased conversation and co-facilitation.
- ◆ **Consider additional training for Discovery Squad volunteers:** Visitors responded positively to their experiences at the Discovery Squad Carts and being able to ask questions of someone more knowledgeable than themselves. However, two visitor groups perceived the volunteers as nervous. Consider ways to help volunteers boost their confidence in public speaking, such as by sharing findings from this study that show how much visitors value their knowledge.

### FROM FIELD MUSEUM STAFF

The following recommendations were generated by museum staff before and during a presentation of findings by RK&A:

- ◆ **Better communicate the Science Hub as an orienting space for the museum experience,** both internally for other Field Museum staff (particularly frontline staff), as well as externally, for visitors. One staff made the analogy that the Science Hub is to the museum what a visitor center is to a park—essential orienting space for navigating trails (museum). This may include:
  - Changing the name and/or signs for Science Hub to make it immediately evident what this space is. For example, one participant said the name “PlayLab” immediately communicates the purpose of that space whereas as “Science Hub” does not. Using phrasing, such as “Gateway to Scientific Thinking” may help.



- Creating a banner for the Science Hub to hang along the Radiator Alley, as is done for other spaces.
- Emphasizing the Science Hub in visitor guides for families.
- Using signage to indicate “Start Your Visit Here.”
- Not relying on guest relations, as they already have a long pitch.
- ♦ **Consider tactics to draw visitors to the Science Hub.** For example:
  - Using decals on the floor that may be particularly attractive to children.
  - Redirecting visitors who arrive at temporary exhibitions without a ticket to Science Hub.
  - Programming the other counter in the Science Hub.
  - Adding sound to the video to serve as an attractor to the space. However, make sure staff in the space can control the volume so they can reduce sound or mute sound as necessary so as not to interfere with conversations.
  - Make the space look a little “messier,” such as by adding more items on the counters or white boards and post-its.
- ♦ **Encourage Science Hub staff to use inquiry more.**
- ♦ **Modify onboarding for volunteers to help them appear less nervous.**

## STUDY BACKGROUND

The Field Museum contracted RK&A, Inc. to conduct a summative evaluation of the Grainger Science Hub and the Discovery Squad Carts. The goals of the study are to explore the extent to which visitors interact with programming in the Science Hub and at Discovery Squad Carts and the nature of those interactions, as well as visitor motivations and takeaways from interactions with programming.

### ABOUT THE PROGRAMS

#### GRAINGER SCIENCE HUB



The Grainger Science Hub is a multi-function space that includes small exhibits, touchable elements, and educator facilitated hands-on activities. During specified hours, the space hosts a “meet a scientist” program where visitors can talk to museum scientists about their work. The Science Hub fosters critical thinking and the ability to explore like a scientist by using real objects as their starting point.

#### DISCOVERY SQUAD CARTS



Unlike the Science Hub, which is staffed by museum educators, the Discovery Squad programming is facilitated by volunteers. The Discovery Squad carts are large mobile displays that stand 8 feet tall in the vast main hall. The carts provide visitors the opportunity to explore like a scientist and to learn about the natural world and Field Museum research and collections. Each cart has a specific theme that the volunteers use as a guide to walk visitors through the items on the carts while allowing people to touch the specimens and ask questions throughout the interaction.

## EVALUATION OBJECTIVES

The overall purpose of the summative evaluation is to explore the successes and challenges of the current Grainger Science Hub and Discovery Squad Carts, as well as inform future programming for these areas. More specifically, the Field Museum defined similar objectives for both programming areas, and specific objectives for each individual programming area:

### OBJECTIVES FOR BOTH THE GRAINGER SCIENCE HUB AND DISCOVERY SQUAD CARTS

- ◆ How do the demographics of visitors engaging with this programming compare to our overall visitor statistics?
- ◆ Does this programming add value to a visit? If so, how much? What kind of value?
- ◆ How long do people spend interacting with staff? How conversational is the interaction?

### OBJECTIVES FOR THE GRAINGER SCIENCE HUB

- ◆ What motivates people to enter/not enter the space?
- ◆ How long do visitors spend with each part of the space? Does interacting with an educator change how long visitors spend with other content? Are some types of facilitated experiences more engaging or successful?

### OBJECTIVES FOR THE DISCOVERY SQUAD CARTS

- ◆ What motivates people to engage with the carts?

## METHODOLOGY

RK&A employed interviews to learn how visitors understood and experienced the Grainger Science Hub and Discovery Squad Carts and conducted timing and tracking observations at both programming areas to record objective context for visitors' experience.

### EXIT INTERVIEWS

RK&A data collectors conducted interviews with visitors in September and October of 2018; individuals and small groups were invited to participate. Data collectors followed a continuous random selection method to identify and then invite participants to take part in the study. In accordance with this method, RK&A data collectors chose an imaginary line outside the Hub and the perimeter around the Carts and intercepted the first eligible visitor group to cross that line. All groups were recruited as they were exiting the Science Hub or walking away from a Discovery Squad Cart. Eligible visitors included English-speaking, adult visitors leaving the exhibition; children were invited to participate in the interview with an accompanying adult, however they were not directly recruited. If a visitor declined to participate in the interview, RK&A logged the visitor's gender, estimated age, and reason for refusal. Upon securing

agreement, RK&A conducted the interview, asking probing or clarifying questions to better understand visitors' experiences. RK&A took detailed notes to capture participants' responses. Exit interviews are open-ended and encourage interviewees to express their opinions, understandings, and the meaning they construct. RK&A data collectors interviewed visitors individually or in small groups of two to three.

## **TIMING AND TRACKING**

Timing and tracking observations were collected in September, October, and November of 2018. Observations are unobtrusive, so visitors were not asked to participate but selected randomly upon entering the Science Hub or approaching a Discovery Squad Cart. To select visitors, RK&A data collectors chose an imaginary line outside the Hub and the perimeter around the Carts and selected the first visitor age 18 years and older to cross this imaginary line. Once the visitor crossed the line, the observer started a stopwatch and unobtrusively observed the selected visitor, recording the components used, time spent, and some behaviors. When the visitor exited the exhibition, the observer returned to the entrance to await the next eligible visitor to cross the imaginary line.

## **DATA ANALYSIS AND REPORTING**

### **EXIT INTERVIEWS**

Interview data are qualitative, meaning that results are descriptive. In analyzing the data, the evaluator studied the transcripts and notes for meaningful patterns and grouped similar responses as patterns and trends emerged. The objectives of the study, as well as our professional experience, informed the analysis. Findings are reported in narrative, supplemented with exemplary quotations from participants. Trends and themes in the data are presented from most- to least-frequently occurring. Verbatim quotations from interviews (edited for clarity) illustrate participants' thoughts and ideas as fully as possible. The interviewer's questions appear in parentheses.

Qualitative methods typically produce a wealth of data from a smaller number of people. In thinking about qualitative data, one should consider trends relative to one another. That is, more weight should be given to comments made by many visitors versus those made by a few visitors; however, the reader could consider the comments made by a few visitors when thinking about findings, as one person might offer valuable insight. When describing the findings, this report uses qualitative data terms such as "most" and "several," as is appropriate for the sample size and the type of data collected. Proportions, such as one-half or one-third are used where appropriate. Such descriptive language is intended to provide readers with a sense of the general trends. Readers should regard the trends as general categories rather than rigid numerical counts.

## TIMING AND TRACKING

Timing and tracking data are quantitative and were analyzed using IBM SPSS Statistics Version 20. Analyses conducted include:

- ◆ Frequency distributions (e.g., number of visitors to stop at an exhibit)
- ◆ Summary statistics (e.g., median time spent at an exhibit)
- ◆ Inferential statistics<sup>1</sup> to examine the relationship among variables, including:
  - Cross-tabulations to show the joint frequency distribution of the variables, and the chi-square statistic ( $X^2$ ) to test the significance of the relationship (e.g., “stop” [yes or no] was tested against “gender” to determine whether components were attractive to a particular gender).
  - The Kruskal-Wallis (K-W) test, which is a nonparametric test for differences in the medians of two or more groups<sup>2</sup> (e.g., “total time in the exhibition” was compared by “gender” to determine whether time spent in the exhibition differed by gender).

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<sup>1</sup> A 0.05 level of significance ( $p$ ) was employed to preclude findings of little practical significance. When the level of significance is set to  $p = 0.05$ , any finding that exists at a probability ( $p$ -value)  $\leq 0.05$  is “significant.” When a finding (such as a relationship between two variables) has a  $p$ -value of 0.05, there is a 95 percent probability that the finding exists; that is, in 95 out of 100 cases, the finding is correct. Conversely, there is a 5 percent probability that the finding would not exist; in other words, in 5 out of 100 cases, the finding appears by chance.

<sup>2</sup> The Kruskal-Wallis (K-W) test is a nonparametric statistical method for testing the equality of population medians of two or more groups. Nonparametric statistical methods do not assume that the underlying distribution of a variable is “normal” with a symmetric bell-shape, so they are appropriate for testing variables with asymmetric distributions such as “total time in the exhibition.” The K-W test is analogous to a One-way Analysis of Variance, with the scores replaced by their ranks. The K-W test statistic  $H$  has approximately a chi-square distribution.

## FINDINGS: SCIENCE HUB OBSERVATIONS

RK&A conducted 104 unobtrusive observations of visitors in the Grainger Science Hub between September and November. The two exhibitions in the space were *Meet the Pterosaurs* and *Why Isn't Everything in the Field Museum Real?*

### DATA COLLECTION CONTEXT

Observations were collected over various conditions. For instance, many of the observations took place when a museum educator was present in the Hub (79 percent), while some were conducted during the *Meet a Scientist* program (21 percent). Also, many were collected on weekend days (64 percent), while some were conducted on weekdays (36 percent). Crowding in the space was often moderate (72 percent) versus light (22 percent) or crowded (6 percent). Many observations were conducted while a visitor group other than the one being observed interacted with staff (64 percent), although one in three observed visitor groups experienced the Hub without another visitor group interacting with the facilitator (36 percent).

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#### Data Collection Context

<b>Staff Facilitation Experience Available</b>	<b>% of Visitor Groups (n = 104)</b>
Museum educator facilitation	79
<i>Meet a Scientist</i> program	21

<b>Day</b>	<b>% of Visitor Groups (n = 104)</b>
Weekend	64
Weekdays	36

<b>Crowding</b>	<b>% of Visitor Groups (n = 104)</b>
Light	22
Moderate	72
Crowded	6

<b>Other Groups Interacting with Staff</b>	<b>% of Visitor Groups (n = 104)</b>
Yes	64
No	36

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## DESCRIPTION OF VISITOR GROUPS

Most visitors are visiting the Science Hub in social groups—50 percent are in groups of adults and children, while 39 percent are visiting in adult-only groups. Another 11 percent are visiting alone. Visitors in groups were largely in small groups of 2 to 4 visitors (mean group size = 2.8).

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### Description of Visitor Groups

<b>Group Composition</b>	<b>% of Visitor Groups (n = 104)</b>
Groups with adults and children	50
Groups with adults only	39
Solo adult	11

<b>Group Size</b>	<b>% of Visitor Groups (n = 104)</b>
1	11
2	39
3	21
4	19
5	8
6	2

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## DESCRIPTION OF INDIVIDUAL VISITORS

Data collectors estimated the age of each individual within the observed visitor group. Nearly half of visitors to the Science Hub are between 25 and 44 years old (47 percent). The greatest percent of children visiting the Hub are under the age of 10 years old (18 percent of all visitors), versus 10 to 17 years (12 percent of all visitors). About one-half of all visitors in the Science Hub are female, and one-half are male (53 percent female versus 47 percent male).

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### Description of Individual Visitors

<b>Age of Visitors</b>	<b>% of Adult Visitors (n = 291)</b>
< 10	18
10-13	11
14-17	1
18-24	8
25-34	27
35-44	20
45-54	8
55-64	5
65-74	2
75+	1

<b>Gender of Visitors</b>	<b>% of Visitors (n = 289)</b>
Female	53
Male	47

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## VISITOR ENTRY TO SCIENCE HUB

There are two doors from which visitors can enter or exit the Science Hub. When facing the Hub from outside, the door on the left is closer to the entrance to the *Antarctic Dinosaurs* temporary exhibition, while the door on the right is closer to the end of the Robert R. McCormick Halls of the Ancient Americas.

Slightly more visitor groups entered the Science Hub through the right door (56 percent) as compared the left door (44 percent). It should be noted that visitors entering through the right door usually walk past a large wall of windows looking into the Science Hub from the hallway leading out of the Robert R. McCormick Halls of the Ancient Americas. On the following page are two images of this hallway for further context.

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### Entrance to Science Hub

Exhibit Entrance	% of Visitor Groups (n = 104)
Enter left door	44
Enter right door	56

### Image of Left and Right Doors



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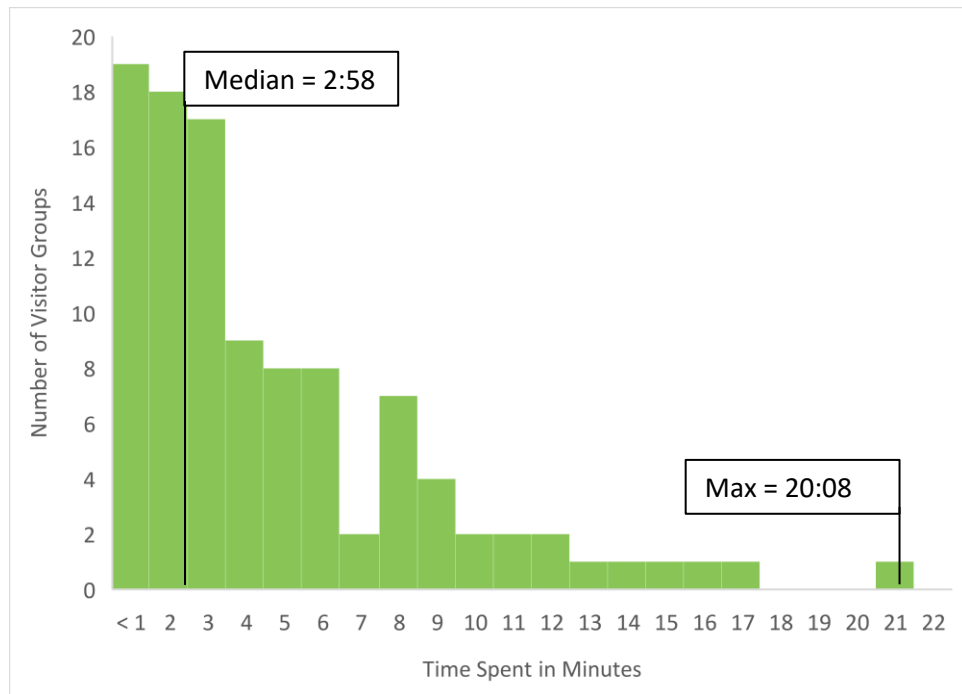
Images of Hallway from the Robert R. McCormick Halls of the Ancient Americas



## TIME SPENT IN THE SCIENCE HUB

Observed groups spent between 12 seconds (0:12) and 20 minutes 8 seconds (20:08) in the Science Hub. Time spent in the Hub does not follow a normal distribution, as is typical for exhibition visitation time data. As seen in the histogram below, many visitor groups spent a short amount of time in the Hub (e.g., 68 percent of visitors spent less than 5 minutes in the exhibition). The median time spent in the Science Hub was 2 minutes 58 seconds (2:58).<sup>3</sup>

**Histogram of Time Spent in the Science Hub**



<sup>3</sup> Medians (versus means) are reported because, as is typical, the time spent by visitors are distributed unevenly across the range. When the distribution of scores is extremely asymmetrical (i.e., “lopsided”), the mean is affected, and consequently, falls further away from the distribution’s central area. In such cases, the median is a better indicator of the distribution’s central area because it is not sensitive to the values of scores above and below it.

Time spent in the Hub is affected by two variables:

- ◆ Visitor who converse with staff in the Hub spent three times as much time as those who did not (5 minutes 5 seconds versus 1 minute 34 seconds).
- ◆ Visitors spent twice as much time in the Hub during the *Meet a Scientist* program than when a museum educator was present (5 minutes 5 seconds versus 2 minutes 36 seconds).<sup>4</sup>

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### Statistical Difference in Time Spent by Conversation with Staff

	% of Visitor Groups		Total
	Converse with staff	Do not converse with staff	
Time Spent	5:05	1:34	2:58

### Statistical Difference in Time Spent by Staff Facilitator

	% of Visitor Groups		Total
	<i>Meet a Scientist</i> program	Museum Educator	
Time Spent	5:05	2:36	2:58

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<sup>4</sup> Note that during the *Meet a Scientist* program, a museum educator or volunteer often recruited visitors from outside the Hub to visit for this program.

## VISITATION TO SECTIONS OF THE SCIENCE HUB

For the purpose of the observation, the Science Hub was divided into three distinct sections: the left side (*Meet the Pterosaurs*), the central counter area, and the right side (*Why Isn't Everything in the Field Museum Real?*). During the data collection period, the left side (*Meet the Pterosaurs*) featured cases with specimens related to pterosaurs and a large touchable, fossilized dinosaur bone, while the right side (*Why Isn't Everything in the Field Museum Real?*) featured cases comparing real and reproduction specimens and a large model of the museum showing the various collection storage areas housed inside. The content and specimens at the central counter area changed throughout each day depending on the preference of the staff member or scientist facilitating the experience.

Data collectors recorded whether the visitor group stopped at each of the three sections in the Science Hub. Most visitor groups stopped at the central counter in the Science Hub (76 percent) and the left side of the Hub (*Pterosaurs*, 74 percent). Fewer, but still the majority of visitors, stopped at the right side of the exhibition (*Real?*, 59 percent).

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### Visitation to Science Hub Sections

Visitation to Science Hub Sections	% of Visitor Groups (n = 104)
Central counter	76
Left side ( <i>Pterosaurs</i> )	74
Right side ( <i>Real?</i> )	59

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Notably, the entrance visitors used does not have a statistical relationship to the sections of the Hub visited. However, the presence of other visitor groups has a statistical relationship to whether a group stopped at the center counter:

- ◆ Visitor groups were more likely to stop at the center counter if there were no other visitor groups in the Science Hub.

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### Statistical Differences in Stops at the Counter by Presence of Other Groups

	% of Visitor Groups		Total
	Other Groups Present	No Other Groups Present	
Stopped at the Counter	70	87	76

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## VISITOR BEHAVIORS IN THE SCIENCE HUB

Data collectors noted when visitors demonstrated certain behaviors in each section of the Hub, such as touching an object or specimen<sup>5</sup> and reading a label. The table below shows visitor behaviors overall, while the table on the next page shows visitor behaviors by section of the Hub. Behaviors, listed from most- to least-observed, are:

- ◆ **Look at object or specimen** – Overall, 98 percent of groups looked at an object or specimen in the Hub. The percent of visitors to look at an object by section parallels the percent of visitors to stop by sections. That is, the counter was most visited section and the greatest percent of visitors looked at an object there (72 percent looked at an object on the counter and 29 percent looked at an object in the case below the counter). Comparatively, 70 percent looked at an object on the left side (*Pterosaurs*), and 56 percent looked at an object on the right side (*Real?*).
- ◆ **Touch objects** – Overall, 81 percent of groups touched an object or specimen in the Hub. Again, the percent of visitors to touch an object by section parallels the percent of visitors to stop by section. A total of 53 percent touched an object or specimen on the central counter; 50 percent touched the dinosaur fossil on the left side (*Pterosaurs*); and 12 percent touched the model of the museum on the right side (*Real?*).
- ◆ **Read label** – 81 percent of visitors read at least one label during their visit to the Science Hub. On the left side (*Pterosaurs*), 64 percent of visitor groups read a label, while on the right side (*Real?*), 46 percent read a label.
- ◆ **Take photo** – 15 percent of visitors took photos while visiting the Hub. Ten percent of visitors took a photo on the left side (*Pterosaurs*), while 7 percent took a photo at the central counter, and only 3 percent took a photo on the right side (*Real?*).
- ◆ **View video** – 14 percent of visitors were observed watching the one available video, which was projected on a large screen behind the counter.

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### Overall Visitor Behaviors in the Science Hub

Visitor Behaviors Overall	% of Groups Who Stopped (n = 104)
Look at object or specimen	98
Touch object or specimen	81
Read label	81
Take a photo	15

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<sup>5</sup> Visitors could touch the dinosaur fossil, museum model, or an assortment of objects and specimens available at the central counter, which changed frequently, sometimes within the same day.

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### Visitor Behaviors by Sections of the Science Hub

<b>Visitor Behaviors on Left Side</b>	<b>% of Groups Who Stopped (n = 77)</b>	<b>% of All Groups (n = 104)</b>
Look at object or specimen	95	70
Touch object or specimen (dinosaur fossil)	67	50
Read label	86	64
Read label out loud	18	14
Take a photo	13	10

<b>Visitor Behaviors at Central Counter</b>	<b>% of Groups Who Stopped (n = 79)</b>	<b>% of All Groups (n = 104)</b>
Look at object or specimen on counter	95	72
Touch objects or specimen on counter <sup>6</sup>	70	53
Look at objects or specimen in case	38	29
Watch video	18	14
Take a photo	9	7

<b>Visitor Behaviors on Right Side</b>	<b>% of Groups Who Stopped (n = 61)</b>	<b>% of All Groups (n = 104)</b>
Look at object or specimen	95	56
Touch object or specimen (museum model)	21	12
Read label	79	46
Read label out loud	18	11
Take a photo	5	3

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<sup>6</sup> A handful of visitors were reluctant to touch specimens.

## VISITOR CONVERSATIONS IN THE SCIENCE HUB

Data collectors also recorded whether visitors had conversations in the Science Hub. Data collectors distinguished between visitors having conversations with other visitors (normally another visitor in their same visiting group) and conversations with the staff member facilitating the Hub. Potentially surprising, 62 percent of visitor groups conversed with a staff member while in the Hub, while 32 percent converse with another visitor.

### Conversation in the Science Hub

<b>Conversation Overall</b>	<b>% of Visitor Groups (n = 104)</b>
Converse with staff member	62
Converse with another visitor	32

Notably, two variables, group composition and the presence of another visitor group in the Hub, have a statistical relationship to whether visitor groups converse with staff:

- ◆ Visitor groups with children are more likely to converse with staff than those groups without children.
- ◆ Visitor groups are more likely to converse with staff when no other group is present in the Hub.

### Statistical Differences in Conversation with Staff by Group Composition

	<b>% of Visitor Groups</b>			<b>Total</b>
	<b>Solo Adult</b>	<b>Adult-only Group</b>	<b>Group with Adults &amp; Children</b>	
Converse with staff member	46	44	79	62

### Statistical Differences in Conversation with Staff by Presence of Other Groups

	<b>% of Visitor Groups</b>		<b>Total</b>
	<b>Other Groups Present</b>	<b>No Other Groups Present</b>	
Converse with staff member	47	87	62



Conversation was most frequent at the central counter with 49 percent of visitor groups conversing with a staff member there, and 18 percent conversing with fellow visitors. Groups conversed less on each side of the Science Hub, almost at the same rates for both conversations with staff members and between visitors (on the left side [*Pterosaurs*], 10 percent conversed with another visitor and 12 percent conversed with a staff member, while on the right side [*Real?*], 9 percent conversed with another visitor and 14 percent conversed with a staff member).

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**Conversation by Section of the Science Hub**

<b>Conversation on Left Side</b>	<b>% of Groups Who Stopped (n = 77)</b>	<b>% of All Groups (n = 104)</b>
Converse with another visitor	13	10
Converse with staff member	15	12

<b>Conversation at Central Counter</b>	<b>% of Groups Who Stopped (n = 79)</b>	<b>% of All Groups (n = 104)</b>
Converse with another visitor	24	18
Converse with staff member	68	54

<b>Conversation on Right Side</b>	<b>% of Groups Who Stopped (n = 61)</b>	<b>% of All Groups (n = 104)</b>
Converse with another visitor	15	9
Converse with staff member	23	14

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**LISTENING IN ON CONVERSATIONS**

Keep in mind that we defined conversation as a back and forth verbal exchange. From the open-ended observation notes, we know that some visitors never had a back and forth conversation with a staff member but did listen in on their conversations with other visitors. It was not possible to accurately observe “listening in behaviors,” so we did not run statistics on this behavior although we can affirm it was happening.

## INITIATING CONVERSATIONS

The data collectors noted who initiated a conversation between staff members and visitors. Staff initiation is defined by staff making verbal and/or physical engagement with a visitor before they make any noticeable movement towards or engagement with a staff member. By comparison, visitor initiation is defined by a visitor making noticeable movement towards or verbal engagement with a staff member. For instance, visitor initiation includes a visitor deliberately approaching the counter and making eye contact with staff even if staff is first to speak. Overall, 64 percent of conversations with staff were initiated by the staff member, while 36 percent were initiated by the visitor.

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### Conversation Initiation in the Science Hub

Conversation Initiator	% of Visitor Groups Who Had Conversations with Staff (n = 64)
Staff	64
Visitor	36

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The presence of other groups has a statistical relationship to conversation initiation:

- ◆ Staff members are more likely to initiate conversations with visitor groups when no other group is present in the Hub. By comparison, visitors are more likely to initiate conversation with staff if other groups are present.

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### Statistical Difference in Conversation Initiation by Presence of Other Groups

	% of Visitor Groups		Total
	Other Groups Present	No Other Groups Present	
Staff Initiated Conversation	48	79	64
Visitor Initiated Conversation	52	21	36

---

Often, when staff would initiate the interaction, they would beckon visitors to approach the central counter to look at and touch specimens or other objects on display in a light-hearted and enthusiastic manner. In fact, visitors were statistically more likely to look at or touch specimens and objects at the counter when staff initiated the conversation.

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**Staff beckon visitors to the counter**

“There are some more fossils here for you to look at too!”

“We're comparing birds, bats, and pterosaurs here. You can touch anything you like.”

---

Sometimes the staff is engaged in conversation with another visitor when another group enters the space. Staff do not interrupt their conversation with their already engaged visitor group to greet another visitor. Rather, they attempt to greet visitor groups if there is a break in conversation and the new visitor group is nearby, if the new visitor group approaches the counter too, or as soon as the previously engaged visitor group departs. For this reason, some visitors never engage with staff member when in the Hub.

**STAFF USE OF INQUIRY IN CONVERSATIONS**

Data collectors noted whether staff members used inquiry or posed questions to visitors during the conversation. In 33 percent of conversations, staff used inquiry to engage visitors. In 67 percent of conversations, staff did not use inquiry; these conversations were more explanatory or solely responsive to visitor questions.

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**Staff Using Inquiry**

<b>Staff Used Inquiry</b>	<b>% of Visitor Groups Who Had Conversations with Staff (n = 64)</b>
No	67
Yes	33

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There is a statistical relationship between staff use of inquiry and time spent in the Hub:

- ◆ Visitors spent twice as much time in the Hub when staff used inquiry (6 minutes 19 seconds versus 3 minutes 5 seconds).

Keep in mind that this does not show causation. That is, this finding does not mean that inquiry will double visitors time in the Hub—just that there is a relationship between the variables. In fact, observation notes show that staff often suspend use of inquiry until a little further into the conversation, which may explain the relationship to time spent. Below are some examples of inquiry as well as conversations that did not include inquiry.

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### **Examples of Inquiry**

Staff member: "What dinosaur do you think this is from?"

Visitors look.

Staff member: "That's a longneck, scientifically known as a titanosaur! Can you guess where that bone goes?"

Visitor says "Leg?"

Staff member: "That's right! It's the tibia, which is located in the leg. It's the shinbone. Can you find yours?"

The visitors (children) look at their legs, and one feels their shins.

Staff member: "Look how much bigger this shinbone is than yours!"

Staff member: "In this display, we have some real and fake exhibits that we use for science."

Visitor looks at a fish in alcohol.

Staff member: "Where do you think the fins went?"

Visitor points to the replica fish and says "Here?"

Staff member: "Yeah! That fish is part real, part fake."

Visitor asks "Are those real?" about another exhibit or two in the case.

### **Other Non-inquiry-based Conversation**

Staff member: "The fossils here were found in South Germany. This one is a fake cast. The real one is from the collection."

Visitor: "What's that?" about the number sticker.

Staff member: "It's like a library, we use the numbers to keep track of things in the collection." She points them to the video which is showing more of the behind the scenes collection.

---

## MAKING RECOMMENDATIONS TO VISIT OTHER AREAS OF THE MUSEUM

In 6 percent of conversations, staff recommended the visitors see another area of the museum based on their interest in a certain specimen or object. Often, staff recommended a part of the permanent collections but also the carts.

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### Staff Making Recommendations

Staff Make Recommendations	% of Visitor Groups Who Had Conversations with Staff (n = 64)
No	94
Yes	6

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## VISITOR QUESTIONS

Additionally, data collectors recorded whether visitors asked questions during these conversations. In 62 percent of conversations, the visitor asked a question of the staff. For the purpose of analysis, questions were divided into two categories – simple and complex. Simple questions from visitors included questions such as, “What is this?” and “Can I touch this?” Complex questions involved specific topics, such as questions about specimens or the museum’s collections. Questions asked were evenly split but simple and complex questions.

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### Visitors Asking Questions

Visitor Asked a Question	% of Visitor Groups Who Had Conversations with Staff (n = 64)
No	38
Yes, simple question about content	31
Yes, complex question about content	31
Yes, question about logistics of museum visit	2

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Examples of complex questions can be read below.

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### **Complex questions asked by visitors**

In reference to the dinosaur bone on display in the Science Hub: "Is this the smallest bone from this dinosaur?"

In reference to plaster casts of fossils: "Do they need to be kept at a certain temperature?"

In reference to a diagram of a dinosaur: "How do they know how far the T-rex could see?"

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## **TOPICS OF CONVERSATION**

Most conversations focused on the specimens being presented in the Science Hub, such as fossils, bones, and pelts. Occasionally, visitors spoke with staff members about the broader collection or preservation of specimens at the museum or about other exhibitions at the museum. Below is a typical interaction between a staff member and visitor group.

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### **Conversation about specimens**

Staff member says, "These worms have muscles similar to a slinky. Here, let me show you." The staff member demonstrates by moving the head of the slinky, and letting go of the back so it catches up to the front. "Try it!" Visitor #4 takes the slinky and imitates this.

Visitor #2 handles one of the plastic worm toys and asks, "What's this thing?" [regarding a part of the model].

Staff member says, "That's a cocoon, where the newborn worms will come from."

Visitor #4 looks at one of the display jars and also asks, "What's this?"

Staff member identifies it as a giant tube worm and says, "There are about three worms in here. We preserve them using alcohol." The staff member goes on to describe more of their living conditions while the group watches.

Visitor #1 thanks the staff member and they leave the Hub.

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## PASSERS-BY

Given the somewhat obscured location and the unique staff facilitation of the Hub, the museum was interested to know more about why visitors chose not to enter the Science Hub. To explore these motivations, RK&A intercepted some of the passers-by (61 visitors) to ask why they chose not to visit the exhibition.<sup>7</sup> Visitors were shown a list of options to select from with the option to provide a different response than those listed.

The majority of visitors named a time constraint issue, such as they were on their way to do something else (26 percent) or am short on time and leaving the museum soon (23 percent). Another one-quarter named an issue related to lack of awareness, such as they did not notice the Science Hub as they walked by (16 percent), they did not know what it was (7 percent), or they did not know they could go into the Hub (3 percent). Another 15 percent gave other responses which did not fit into any of these categories, such as “waiting for someone else.” Notably, just 3 percent said they visited the Hub earlier that day.

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<b>Reasons for Not Visiting the Science Hub</b>	<b>% of Passers-by</b>
On my way to something else	26
I am short on time and need to leave the museum soon	23
I did not notice the Hub	16
Other	15
I did not know what it was	7
It did not look interesting to me	5
I did not know I could go into the Hub	3
Visited the Hub earlier today	3
Visited the Hub last time I was here	2

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<sup>7</sup> From the evaluators’ observations, approximately 2 out of 3 visitor groups in the vicinity of the Hub pass it by. This calculation is based on a small sample of 20 observed visitor groups during a weekday.

## FINDINGS: DISCOVERY SQUAD OBSERVATIONS

RK&A conducted 65 unobtrusive observations of visitors at the Discovery Squad Carts between September and November.

### DATA COLLECTION CONTEXT

As with the Science Hub observations, observations of the Discovery Squad Carts were collected over various conditions. Many were collected on weekend days (63 percent), while some were conducted on weekdays (37 percent). Crowding in the space was often moderate (74 percent) versus light (20 percent) or crowded (6 percent).

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#### Data Collection Context

<b>Day</b>	<b>% of Observations (n = 65)</b>
Weekend	63
Weekdays	37

<b>Crowding</b>	<b>% of Observations (n = 65)</b>
Light	20
Moderate	74
Crowded	6

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Four different cart programs were observed. The Wild Chicago cart was most observed (48 percent of observations), followed by Creature Features (32 percent), and Earth’s Past (19 percent); Ins and Outs was observed once (2 percent of observations). Carts were located in various locations around the main hall of the museum; during 65 percent of observations, the carts were placed on the north side of the main hall.

**Cart Topics and Locations**

<b>Cart Topics</b>	<b>% of Observations (n = 65)</b>
Wild Chicago	48
Creature Features	32
Earth’s Past	19
Ins and Outs	2

<b>Location</b>	<b>% of Observations (n = 65)</b>
North	65
South	35

<b>Location</b>	<b>% of Wild Chicago Observations (n = 31)</b>	<b>% of Creature Features Observations (n = 21)</b>	<b>% of Earth’s Past Observations (n = 12)</b>	<b>% of Ins and Outs Observations (n = 1)</b>
North	45	76	100	0
South	55	24	0	100

## DESCRIPTION OF INDIVIDUAL VISITORS

Data collectors estimated the age of each individual within the observed visitor group. Nearly half of visitors to the Discovery Squad Carts are between 25 and 44 years old (42 percent). The greatest percent of children visiting the Hub are under the age of 10 years old (32 percent of all visitors), versus 10 to 17 years (8 percent of all visitors). About one-half of all visitors in the Science Hub are female, and one-half are male (55 percent female versus 45 percent male).

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### Description of Individual Visitors

<b>Age of Visitors</b>	<b>% of Visitors (n = 189)</b>
< 10	32
10-13	8
14-17	0
18-24	3
25-34	28
35-44	14
45-54	10
55-64	4
65+	1

<b>Gender of Visitors</b>	<b>% of Visitors (n = 189)</b>
Female	55
Male	45

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## DESCRIPTION OF VISITOR GROUPS

Most visitors are visiting the Discovery Squad Carts in social groups—65 percent are in groups of adults and children, while 23 percent are visiting in adult-only groups. Another 12 percent are visiting alone. Visitors in groups were largely in small groups of 2 to 4 visitors (mean group size = 2.9). During most observations (72 percent), the visitor group observed was the only group interacting with the Discovery Squad.

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<b>Group Composition</b>	<b>% of Visitor Groups (n = 65)</b>
Groups with adults and children	65
Groups with adults only	23
Solo adults	12

<b>Group Size</b>	<b>% of Visitor Groups (n = 65)</b>
1	12
2	34
3	20
4	23
5	6
6	5

<b>Other Groups Present</b>	<b>% of Visitor Groups (n = 65)</b>
No	72
Yes	28

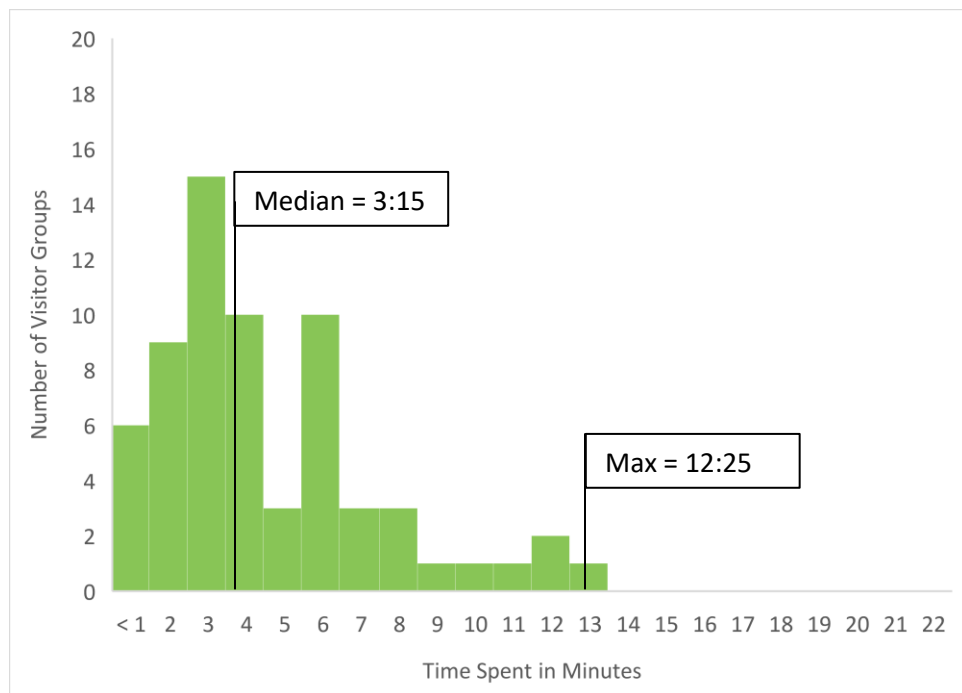
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## TIME SPENT AT THE DISCOVERY SQUAD CARTS

Observed groups spent between 9 seconds (0:09) and 12 minutes 25 seconds (12:25) at a Discovery Squad Cart. The median time spent at a Discovery Squad Cart was 3 minutes 15 seconds (3:15).<sup>8</sup>

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### Histogram of Time Spent at Discovery Squad Carts



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There is no statistical difference in time spent by cart topic, cart location, group compositions, and presence of other groups.

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<sup>8</sup> Medians (versus means) are reported because.

## VISITOR BEHAVIORS AT DISCOVERY SQUAD CARTS

Notes on visitor behaviors were coded based on emergent trends. Many visitor groups touched an object or specimen at the Carts (77 percent). Notably, there were a handful of children who expressed reluctance to touch skulls or pelts although, in each case, someone else in the visitor group did touch the specimens. Also, 5 percent of visitors took a photo at the carts.

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### Overall Visitor Behaviors at the Discovery Squad Carts

Visitor Behaviors Overall	% of Visitor Groups (n = 65)
Touch object or specimen	77
Take a photo	5

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## VISITOR CONVERSATIONS AT DISCOVERY SQUAD CARTS

Data collectors also recorded whether visitors had conversations at the Discovery Squad Carts. Not surprisingly, all but one visitor group conversed with a volunteer while at the Discovery Squad Carts (which we defined as a back and forth verbal exchange, no matter how limited). Often two volunteers engaged in the conversation with a single visitor group, alternating showing objects, talking, and asking and answering questions (66 percent). The second facilitator also greeted new groups that approached the Cart, and sometimes the volunteers took on facilitation for separate groups at the cart simultaneously.

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### Conversation at Discovery Squad Carts

Conversation Overall	% of Visitor Groups (n = 65)
Converse with volunteer	98

Number of Volunteers Participating in Conversation	% of Visitor Groups (n = 65)
2 volunteers	66
1 volunteer	34

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## INITIATING CONVERSATIONS

The data collectors noted who initiated a conversation between volunteers and visitors. Staff initiation is defined by a volunteer making verbal and/or physical engagement with a visitor before they make any noticeable movement towards or engagement with a volunteer. By comparison, visitor initiation is defined by a visitor making noticeable movement towards or verbal engagement with a volunteer. For instance, visitor initiation includes a visitor deliberately approaching the cart and making eye contact with a volunteer even if the volunteer is first to speak. Overall, 73 percent of conversations with volunteers were initiated by the visitor, while 27 percent were initiated by a volunteer. This is different from findings at the Science Hub.<sup>9</sup>

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### Conversation Initiation at the Discovery Squad Carts

Conversation Initiator	% of Visitor Groups Who Had Conversations with Volunteers (n = 64)
Visitor	73
Volunteer	27

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Often, visitors approach the cart to look at or touch specimens and a volunteer quickly engages them in conversations. Sometimes, visitors approach the cart and ask a variation of the question, “What is that?” When volunteers engage in conversations with visitors, they most often start by identifying and providing information about a specimen or object, such as skull or stone. Particularly for the Creature Features cart, volunteers normally invite visitors to touch the specimen or object first.

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<sup>9</sup> Notably, Discovery Squad volunteers often move around with specimens or objects, such as pelts and skulls that serve as attractors, but this was not counted as a staff initiation unless there was verbal initiation or observable eye contact initiated by the volunteer.

## **VOLUNTEER USE OF INQUIRY IN CONVERSATIONS**

Data collectors noted whether volunteers used inquiry or posed questions to visitors during the conversation. In 51 percent of conversations, volunteers used inquiry to engage visitors. In 49 percent of conversations, volunteers did not use inquiry; these conversations were more explanatory in nature or extremely short in duration (i.e., visitor asks what is this and then leaves).

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### **Volunteers Using Inquiry**

<b>Volunteers Used Inquiry</b>	<b>% of Visitor Groups Who Had Conversations with Volunteers (n = 64)</b>
Yes	51
No	49

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Notably, there is no difference in time spent by whether volunteers use inquiry, unlike at the Science Hub.

## **VOLUNTEERS MAKE RECOMMENDATIONS TO SEE OTHER AREAS OF THE MUSEUM**

In 11 percent of conversations, volunteers recommended the visitors see another area of the museum based on their interest in a certain specimen or object. Often, volunteers recommended a part of the permanent collections but also the Hub.

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### **Volunteers Make Recommendations**

<b>Volunteers Make Recommendations</b>	<b>% of Visitor Groups Who Had Conversations with Volunteers (n = 64)</b>
Yes	11
No	89

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## VISITOR QUESTIONS

In 51 percent of conversations, the visitor asked a question of a volunteer about the cart content. For the purpose of analysis, questions were divided into two categories – simple and complex. Simple questions from visitors included questions such as, “What is this?” and “Can I touch this?” Complex questions involved specific topics, such as questions about specimens or the museum’s collections. Additionally, 17 percent made comments but asked no questions, and 2 percent asked a logistical question about the museum visit.

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### Visitors Asking Questions

Visitor Asked a Question	% of Visitor Groups Who Had Conversations with Volunteers (n = 64)
No	31
Yes, simple question	31
Yes, complex question	20
No questions but comments	17
Yes, logistical questions related to museum visit	2

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Examples of complex questions can be read below.

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### Complex questions asked by visitors

In reference to the specimens in jars: “Do they have to replace the alcohol regularly?”

In reference to coyote tagging: “How do they get the collar on the coyotes?”

In reference to river otter pelt: “Do you [at the museum] kill them?”

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## FINDINGS: EXIT INTERVIEWS

RK&A conducted 61 interviews with visitors between Wednesday, September 26<sup>th</sup> and Sunday, October 28<sup>th</sup>. Of those 61 interviews, 31 were conducted with visitors to the Grainger Science Hub, and 30 were conducted with visitors to a Discovery Squad Cart. A total of 97 visitor groups were recruited and 61 agreed to participate, for a 63 percent participation rate. A total of 81 individuals participated in the 61 interviews.<sup>10</sup> Of those interviews:

	Science Hub	Discovery Squad Carts
<b>Gender</b>	Over 1/2 female; less than 1/2 male	Over 1/2 female; less than 1/2 male
<b>Group composition</b>	More than 1/2 with children Less than 1/2 adult-only Very few visiting alone	More than 3/4 with children Less than 1/4 adult-only Very few visiting alone
<b>Age of children</b>	2/3 are 6-13 A few are under age 5 A few are 14-17 years old	Less than 2/3 are 6-13 Less than 1/3 are under age 5 A few are 14-17 years old
<b>Previous visitation to the museum</b>	1/2 have visited 1/2 are first-time visitors	More than 1/4 have visited Less than 3/4 are first-time visitors
<b>Median age and range</b>	Median age of adult visitors is 35 Participants range in age from 19-59	Median age of adult visitors is 43 Participants range in age from 26-70
<b>Crowding</b>	More than 1/2 moderate crowding Less than 1/2 low crowding Very few during heavy crowding	Almost 1/2 moderate crowding Almost 1/2 low crowding Very few during heavy crowding
<b>Time during overall museum visit</b>	2/3 at the beginning Less than 1/3 in the middle A few at the end	2/3 at the beginning Less than 1/3 in the middle A few at the end

<sup>10</sup> Interviews were conducted with one individual visitor or pairs from the same visiting group (i.e., a husband and wife, a mother and son, two friends, etc.).

## MOTIVATIONS FOR VISITING

To begin the interview, RK&A data collectors asked visitors what made them decide to visit either the Grainger Science Hub or a Discovery Squad Cart.

### GRAINGER SCIENCE HUB

- ◆ **Saw it during the visit:** More than one-third of respondents said they glimpsed the Science Hub while walking through the museum and decided to visit.
- ◆ **Exhibit exterior sign:** One-fourth were drawn in by the signage outside of the Science Hub. A few specifically said they were intrigued by the question on the sign, while a few others said they noticed the bright neon sign.
- ◆ **Saw other visitors inside:** A few said they decided to enter because they saw other visitors inside the Hub through the large windows and doors.
- ◆ **Visiting everything:** A few said they wanted to see everything at the Field Museum during their visit that day.
- ◆ **Recommendation from volunteer or staff:** Two respondents said they were told to visit the Grainger Science Hub. Specifically, one said a volunteer at a Discovery Squad Cart suggested they visit the Hub.

### DISCOVERY SQUAD CART

- ◆ **Saw it during the visit:** More than two-thirds of respondents said they noticed a Discovery Squad Cart with specimens as they were walking around Stanley Field Hall and decided to visit.
- ◆ **Volunteer engaged the visitor:** Almost one-third said they were engaged or beckoned by a Field Museum volunteer which prompted them to visit a Cart.

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#### **Saw it during the visit**

“We just noticed it walking by. We saw the skulls out, and our kids like bones.”

#### **Volunteer engaged the visitor**

“We were looking at Maximo when someone with a skull came up to us and told us about the Carts. We went to that one and we liked it so much we checked out another.”

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## WHAT VISITORS LIKE MOST ABOUT THE EXPERIENCE

Respondents were asked what they enjoyed most about their experience with either the Grainger Science Hub or the Discovery Squad Cart.

### GRAINGER SCIENCE HUB

- ◆ **Hands-on experience:** One-third of respondents most enjoyed the hands-on experience in the Science Hub. Most said they liked being able to handle specimens because it was interactive, particularly compared to the typical experiences at a museum. A few said having an interactive experience was good for their child because it held their attention longer.
- ◆ **Conversation with a staff member:** One-third said they liked having a staff member in the Science Hub, mostly because they could ask questions of an “expert” and have a more personal experience.
- ◆ **General learning:** One-third said they enjoyed learning about something during their time in the Science Hub. These responses were more general in nature. A few specifically said they enjoyed learning more about the specimens in the Hub, such as bats or dinosaurs.

### DISCOVERY SQUAD CARTS

- ◆ **Conversation with a volunteer:** More than one-third of respondents most enjoyed having a conversation with a volunteer because they could ask questions and receive answers from a knowledgeable museum volunteer.
- ◆ **Hands-on experience:** One-third said they liked the hands-on, interactive experience of touching specimens at a Cart.
- ◆ **A specific specimen:** Almost one-fourth enjoyed learning new information about a specific specimen they saw at a Cart.

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#### Hands-on experience

“They had a good variety of species to look at, and they let kids touch the species. We actually learned something! Not just my kids, but I learned something too.”

#### Talking with a staff member or volunteer

“The one-on-one conversation with my kids. I liked seeing my kids engaged personally with the scientific content.”

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## CHALLENGES TO THE EXPERIENCE

Data collectors asked respondents what did not work so well for them about their experience at either the Grainger Science Hub or the Discovery Squad Cart. Overall, the majority of respondents said there was nothing specific about the experience that did not work well.

### GRAINGER SCIENCE HUB

- ◆ **More specimens:** A few wanted to see more specimens in the Science Hub.
- ◆ **Experiences for range of ages:** Two respondents suggested providing more experiences for specific age ranges of children in the Hub, specifically pre-school aged, Kindergarten through 5<sup>th</sup> grade, and 6<sup>th</sup> through 12<sup>th</sup> grade.
- ◆ **Signage:** Two respondents said the Hub could benefit from improved signage to better indicate the purpose and location of the Science Hub.
- ◆ **Questions about a specific specimen:** Two respondents had lingering questions about specimens they saw in the Hub. Specifically, one asked why a bird was missing a wing, while another wondered why there were both reproductions and real specimens in the Hub. Both of these respondents spoke with staff facilitators, not scientists.

### DISCOVERY SQUAD CART

- ◆ **Cart logistics:** A few spoke about the logistics of the Carts. Specifically, one wanted additional Carts in the Hall while another suggested a more aesthetically pleasing look to the Cart to encourage visitors to approach.
- ◆ **Volunteers:** Two respondents said the volunteers at the Cart were young and somewhat nervous to engage with visitors.
- ◆ **Different specimens:** Two suggested different specimens to display at the Carts. One respondent, coming from the Ins and Outs of Specimens Cart, said the Carts should have more plants, while another, leaving the Earth's Past Cart, said the Carts should feature more impressive specimens to draw in visitors, especially children.

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#### More specimens

"It's kind of empty. I like to see a lot of things in one place when I come to a museum, but the room just has a lot of empty space."

#### Volunteers

"[The volunteers] are young kids, and they were nervous and a bit worried about my grandkids touching everything. But after a couple of minutes they relaxed a little bit and realized they wouldn't break anything."

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## FURTHER QUESTIONS OR CURIOSITIES

RK&A data collectors asked respondents what questions or curiosities came to mind as they visited the Grainger Science Hub or the Discovery Squad Cart.

### GRAINGER SCIENCE HUB

- ◆ **About a specific specimen:** More than one-third of respondents were curious about the specific specimens they saw in the Science Hub. For example, one respondent wanted to know more about pterosaurs, while another wondered about the general bone structure of animals and how they fit together.
- ◆ **About the museum collection:** A few had questions about how the museum chooses to display certain specimens, how often the exhibit displays in the museum are changed, and what other specimens are at the Field Museum but not on display.
- ◆ **Real versus fake:** A few spoke about the difference between real specimens and reproductions in the Hub. Specifically, two respondents wondered whether certain specimens were real or reproductions, while one questioned why the museum would display real and “fake” objects together.
- ◆ **About the preservation process:** Two respondents were curious about how the museum preserves specimen for scientific purposes.

### DISCOVERY SQUAD CART

- ◆ **About a specific specimen:** Almost one-half of respondents had additional questions about certain specimens they saw at a Cart, such as where local animals live and the age of certain fossils.
- ◆ **About the preservation process:** Several had questions about how the Field Museum preserves specimens. A few specifically spoke about beetles used to clean specimens. Most of these respondents had just visited the Ins and Out of Specimens Carts.
- ◆ **About the museum collection:** A few were curious about how and why the museum chooses to display certain specimens rather than others.
- ◆ **Real versus fake:** A few questioned whether certain specimens were real or reproductions. One respondent in particular noted that visitors are usually not allowed to touch museum objects, and therefore wondered whether the specimens at the Cart were reproductions since visitors were invited to touch them.

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#### About a specific specimen

“If the bats were different than they are in Ireland. And I didn’t know there were so many species of bats, like over 1,000. \*\*Sometimes you don’t know what questions you have until you start talking about stuff.”

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## MAIN MESSAGE OF THE SCIENCE HUB AND DISCOVERY SQUAD CARTS

Respondents were asked what they thought the Field Museum was trying to communicate to visitors through the Grainger Science Hub or the Discovery Squad Carts. It should be noted that a single response may contain ideas which are coded into multiple categories.

### GRAINGER SCIENCE HUB

- ◆ **About the museum collection:** Almost one-half of respondents said the Science Hub communicated the scope of the collection at the Field Museum, beyond what is usually on display. For example, a few spoke about the process of preserving specimens, while a few others spoke about creating exhibition displays highlighting scientific research.
- ◆ **Accessibility to specimens:** More than one-third said the Science Hub helped the Field Museum communicate a sense of accessibility to natural history through the ability to touch specimens in a hands-on, interactive way.
- ◆ **Provide personal engagement in science:** One-third said the goal of the Science Hub was to encourage visitors to ask more questions about science and become more involved in their learning at the Field Museum through discussion with a staff member.
- ◆ **New knowledge:** One-fourth said the main goal of the Science Hub was to communicate new knowledge to visitors. These responses were somewhat general, although some said the Hub communicated a connection between the past and present.

### DISCOVERY SQUAD CART

- ◆ **Accessibility to specimens:** One-third of respondents said the experience at the Cart communicated a sense of accessibility to science and the scientific process because visitors are able to touch specimens.
- ◆ **About the museum collection:** One-third said the experience at the Cart helped them understand the “behind-the-scenes” work at museums, such as preserving specimens and maintaining a large collection beyond what is displayed. Many of these respondents had just visited the Ins and Outs of Specimens Cart.
- ◆ **New knowledge:** One-third gave general responses about the Carts’ purpose of conveying new information to visitors.
- ◆ **Provide personal engagement in science:** One-fourth said the Cart communicated the museum’s desire to connect with visitors on a more personal level through discussion and questions with volunteers.

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#### About the museum collection

“I think they want to communicate that there's lots of work that goes into preserving exhibits. It takes a lot of science and hard work to put stuff on display and share that knowledge with visitors.”

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## CONNECTIONS BETWEEN SPECIMENS AND VISITORS

Data collectors asked respondents if they saw any connections between what they saw or read at the Science Hub or the Discovery Squad Cart and their personal life.

### GRAINGER SCIENCE HUB

- ◆ **It does not connect:** One-third of respondents said the content in the Science Hub did not connect to their personal life.
- ◆ **Local specimens:** A few recognized specimens, such as bats and badgers, which they see in their neighborhood or when they go camping.
- ◆ **Personal interest in topic:** A few said the specimens in the Science Hub, for example fossils and dinosaur bones, are of personal interest to them or their children.
- ◆ **Teaching and learning:** A few connected the experience at the Science Hub to their life through teaching or learning. For example, two respondents homeschool their children and said “hands-on” learning, similar to the Hub, is part of their teaching.
- ◆ **Preservation and conservation:** Two respondents spoke about the importance of maintaining a scientific collection in order to compare specimens from the past to those in the present, which could help better conserve animals and the planet in general.

### DISCOVERY SQUAD CART

- ◆ **Local specimens:** One-third of respondents identified specimens from the Carts as the same as local animals they see in their neighborhood, such as chipmunks and coyotes.
- ◆ **It does not connect:** Almost one-third said the content at the Cart did not connect to their personal life.
- ◆ **Personal interest in topic:** A few had a personal interest in the content of the Cart. For example, one respondent drew a connection between a pet fish and fish specimens.
- ◆ **Teaching and learning:** A few said the experience at the Cart was connected to their personal experience with teaching or learning. For example, one respondent is a biology teacher and a grandfather who said he wanted to share what he saw at the Carts with his students and family.
- ◆ **Preservation and conservation:** Two respondents said the content at the Carts related to their life through efforts to learn about how to preserve specimens for research to better understand current conservation efforts.

## VISITOR EXPERIENCE WITH STAFF OR VOLUNTEERS

Data collectors asked respondents if they spoke with a Field Museum staff member or volunteer during their experience. Data collectors asked respondents to describe the experience if they had indeed spoken to a staff member or volunteer or asked if there was a particular reason why they chose not to engage during their visit to the Science Hub or Discovery Squad Cart.

### GRAINGER SCIENCE HUB

Three-fourths of respondents said they spoke with a staff member during their visit to the Science Hub. All respondents who spoke with a staff member said they had a positive experience and described two reasons for this:

- ◆ **Personalized and friendly experience:** About one-half of respondents said they enjoyed the experience because the staff member was friendly and engaged in a discussion about a topic that interested the respondent and/or their family members. Some respondents also specified that the staff member was enthusiastic and encouraged the respondent and/or their family members to ask questions.
- ◆ **Speaking with an expert:** About one-quarter said the experience was positive because they received new information from an expert at the Field Museum.

The other one-fourth of respondents said the reason they did not speak with a staff member was because 1) the staff member was already speaking with another group, 2) they did not have time to ask questions, or 3) they were not interested in asking any questions.

### DISCOVERY SQUAD CARTS

All respondents said they spoke with a volunteer during their experience at the Discovery Squad Cart, and indicated that the experience was positive. When asked to describe why the experience was positive, respondents gave two reasons:

- ◆ **Personalized and friendly experience:** About one-half of respondents said they enjoyed the experience because the volunteer was friendly and inviting. In particular, some said the volunteer encouraged the respondent and/or their family member to ask questions and engage in dialogue about a topic of interest to them.
- ◆ **Speaking with an expert:** About one-third said the experience was positive because the volunteers shared knowledgeable information with them or their family member.

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#### **Personalized and friendly experience**

“Oh my god, [the staff member] was so enthused! It was fun. She was enthusiastic and connected things really well for us.”

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## BENEFITS TO THE EXPERIENCE THROUGH CONVERSATION WITH STAFF

Data collectors explained to respondents who had visited the Grainger Science Hub that having the opportunity to speak with a staff member in the Hub is a new experience for visitors at the Field Museum. Data collectors then asked what the respondent thought about this experience more broadly.

Almost all respondents said speaking with a staff member in the Science Hub enhanced their experience. In fact, a few said they would like to see more opportunities for speaking with staff members at the Field Museum. Only one respondent was unsure whether this new opportunity was a benefit saying, “People don’t want to ask questions. Maybe it’s better just to read the information so they don’t have to talk to people.”

Those respondents who said speaking with a staff member enhanced their experience gave a few reasons for this:

- ◆ **Speaking with an expert:** One-half of respondents said the opportunity to speak with a staff member or scientist with scientific expertise enhanced their experience because they were able to receive detailed and accurate information.
- ◆ **Personalized and friendly experience:** A few said speaking with a staff member personalized the experience at the Science Hub because respondents and/or their family members were able to ask questions about topics they wanted to learn more about. One respondent said this made the experience “more engaging” for her and her children because she was able to talk about the science rather than read a text label.
- ◆ **Enhanced memory:** A few said speaking with a staff member about a topic helped them better remember the information as opposed to reading a text label.
- ◆ **Refreshed content:** One respondent said speaking with a staff member helped the Science Hub content feel refreshed for each visit because the discussion created a new experience each time.

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### Speaking with an expert

“I think it's really great. It's important that people see that these are scientists - these are real people who do real work and are relatable. I teach junior high, and a lot of those kids just think "Science? Barf!" But once they talk to someone who's relatable and passionate, they might realize just how interesting it can be. This can really be a bridge for them.”

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## VISITING MULTIPLE DISCOVERY SQUAD CARTS

As described in the Study Background of this report, RK&A data collectors intercepted visitors as they moved away from an experience at the Discovery Squad Cart to invite them to participate in an interview. To understand the extent to which visitors use the Carts, data collectors asked respondents if they had visited other Discovery Squad Carts during their time at the Field Museum.

- ◆ **No other Carts:** More than two-thirds said they had not visited another Discovery Squad Cart.
- ◆ **Not yet:** A few said they had not yet visited another Cart but were interested in doing so.
- ◆ **Yes:** A few said they had visited other Carts during their time at the museum. One respondent said his family visited all of the Carts in the hall that day.
- ◆ **Science Hub:** One respondent said she and her family visited the Science Hub prior to stopping at the Cart.