

## USING MONTHLY WORKSHOPS TO DRIVE ENGAGEMENT AND REPEAT VISITS AT THE MCAULIFFE-SHEPARD DISCOVERY CENTER

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### Abstract

The McAuliffe-Shepard Discovery Center (MSDC) in Concord, NH, USA has recently begun a program of monthly workshops organized around a program of astronomy and space science. The workshops are targeted at 9–14-year-old learners, and designed to provide a curated, hands-on educational experience. Examples of topics covered include the size and scale of our solar system, and how telescopes work. In addition to learning about the topic, participants also construct an artifact (in one case, a working telescope) to take home. In addition to the obvious educational mission, these workshops also serve to drive repeat visits to the MSDC, both from members and non-members of the organization. In this poster, we present examples of the workshop content, along with participant demographics and satisfaction gleaned from post-workshop surveys. We conclude that these workshops serve the mission of the MSDC by driving community engagement with astronomy and space science, through continuing patronage of the institution.

**Keywords:** *Science and technology education, educational projects, ubiquitous and lifelong learning.*

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### 1. Introduction

Science literacy and an understanding of the scientific process are widely viewed as essential elements for participation in twenty-first century life. Though it is assumed that science education takes place largely in the structured school environment, a substantial amount of learning about science takes place in informal contexts, ranging from everyday experiences, to hobby activities, to engagement with science museums and science centers (Osborn & Dillon 2007). Informal science education can complement science learned in more formal environments, provide a platform for continued engagement in STEM topics, and can promote integrated learning across these fields (Anand & Dogan 2021).

Science museums play an integral role in the informal science learning ecosystem in that they provide a curated space for individual and group exploration, moderated and guided by science-literate professionals (Fenichel & Schweingruber 2010). The McAuliffe-Shepard Discovery Center is one such space in Concord, New Hampshire, USA. The Discovery Center's mission is “to inspire every generation to reach for the stars, through engaging, artful and entertaining activities that explore astronomy, aviation, earth and space science.” In 2024 the Discovery Center served more than 30,000 visitors at its 20,000 square foot science and engineering facility and 100-seat digital planetarium. In addition, the Discovery Center provides outreach opportunities for schools and community organizations throughout northern New England (McAuliffe-Shepard Discovery Center, 2024).

Central to the Discovery Center's mission is a commitment to provide staff-led programming, particularly for school-aged populations. Off-site outreach programs reach young learners in school, libraries, and civic organizations with programming that includes a pop-up planetarium and educator-led activities such as comet-making and rocketry. Programs at the Discovery Center site include a bi-weekly structured curriculum for homeschooled students, and planetarium shows for visiting school groups.

### 2. “Universe Unplugged” workshops

Beginning in the fall of 2024, the Discovery Center added a new programming element – The Universe Unplugged --a monthly Saturday morning workshop for self-motivated young learners between the ages of 9 and 14. Each hour-long session focuses on a different astronomical topic as a standalone activity. While learners are encouraged to sign up for multiple sessions, there is no expectation that they will do so, and each session is pedagogically independent. The workshops are small (typically 12-15

people) and contain significant hands-on components, including kinesthetic learning activities and the construction of scientifically-accurate artifacts for participants to take home. The overall goal is to provide a positive learning experience for the participants, one that will motivate them to engage further in astronomy and space science subjects, both informally at the MSDC and other science-centered institutions, and formally through their continued education.

The table below shows several examples of the workshop activities, along with descriptions of the kinesthetic and hands-on components.

*Table 1. Descriptions of Workshop Contents and Active Learning Components.*

<b>Description of Activity Content</b>	<b>Kinesthetic Component</b>	<b>Hands-on Component (to take home)</b>
Exploration of the relative sizes of the Solar System's contents, and the distances between them	Participants created a "planet walk," a 100m scale model of the Solar System	Participants built a scaled "planet stack" of the inner planets, each represented by an appropriately sized Styrofoam sphere
Exploration of lenses and telescopes	Participants investigated the capabilities of a single convex lens, and made images using it	Participants built a two-lens telescope and practiced using it to view faraway objects
Exploration of light, colors, and spectra from glowing objects	Participants examined the spectra from everyday lights and laboratory sources using a diffraction grating	Participants built a spectrometer for further investigation at home
Exploration of the planet Jupiter, and its associated moons	Participants used a weather balloon and small spheres to construct a scale model of Jupiter and its largest moons	Participants constructed a Jupiter mobile with astronomical images of Jupiter and its four largest moons

Each workshop is designed for active participation, guided by an expert educator. The active learning components center on exploration of an astronomical object or instrument, with an emphasis on experiential learning. For example, participants construct and explore scale models of an astronomical geometries, or use simple instrumentation to view otherwise unobservable phenomena. The workshops culminate with the construction of an artifact that participants can use at home after the workshop. Participants leave with a working telescope, for example, or a craft that illuminates and extends the workshop content. We focus on these experiential, hands-on activities because they have been shown in other contexts to drive engagement with the science content and help participants to be more deeply invested in their own learning (Hussim et al. 2024).

*Figure 1. Participants construct a "planet stack" depicting scale models of the Earth, Venus, Mars, and Mercury.*



Participants must pay a nominal fee to attend, heavily discounted for McAuliffe-Shepard Discovery Center members. Part of the motivation for this program is a desire to provide members with more value for their memberships, and to drive repeat visits to the Discovery Center for our most loyal patrons. As the workshops program has only just recently been implemented, participant feedback is sparse. However, this feedback indicates anecdotally that participants are more likely to consider returning to the Discovery Center as a result of their workshop participation.

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