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Valuing free-choice learning in national parks

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Introduction

Few would argue that the national parks provide significant value to both the nation and the world. The question remains though, What is that value and how to measure it? Increasingly, a key indicator of this value is the learning that parks support. However, as we will discuss, even defining what is meant by educational value is challenging, let alone coming up with a park-specific set of metrics to measure this dimension of value of national parks.

Broadening the definition of educational value

The 419 US national parks attract more than 300,000,000 visitors each year, including about 7,000,000 children who attend educational programs on issues ranging from ecology, geology, and conservation to history or heritage. Large-scale studies across the National Park Service (NPS) sites are currently underway to better understand what students in these programs learn and how they shape the children's sense of self and their connection to history, nature, or society (Powell, Stern, and Frensley 2020). These studies complement a host of smaller-scale studies and projects at specific sites that measure learning outcomes from educational programs in select national parks (Bose et al. 2020; Bourque and Houseal 2020; Davis and Thompson 2020; Houseal 2020). Collectively, these studies document and describe visits to parks not merely as isolated events of supplemental instruction and enrichment, but as an integral element of a child's learning trajectory.

Focusing mostly on learning outcomes from programmed activities for youth may considerably underestimate the full contribution that national parks make to the learning ecosystem of the United States (and, given the large number of foreign visitors, that of the world). People continue to learn about science or the environment long after they leave school (NRC 2009; Falk and Dierking 2010). Sometimes this learning happens within the walls of brick-and-mortar settings such as science

centers, natural history museums, zoos, aquariums, or planetariums. This type of learning also includes playing video games, attending public lectures, watching documentaries, reading books, participating in clubs or citizen science projects, or visiting historic and natural places. The lifelong learning trajectory, which is largely guided by personal, social, and professional interests, is intrinsically motivated, perceived as enjoyable, and for the most part under the control of the "learner." This form of engagement with issues and ideas is referred to as *informal* or *free-choice* learning (FCL). Free-choice learning can either be highly situational and in-the-moment, or more structured and closely connected to the learner's station in life (Falk and Dierking 2002; NRC 2009, 2015).

Education and learning during the years preceding early adulthood are formative in nature, shaping to a large degree attitudes, knowledge, skills, and identity, and launching young adults into their lifelong trajectory (e.g., Tai et al. 2006; Maltese and Tai 2010, 2011; Venville et al. 2013; Crowley et al. 2015; Stets et al. 2017). Schooling provides an important initiation and a foundation for a person's ability and disposition toward ongoing, lifelong learning (NRC 2012). That said, evidence suggests that children, during the schooling years, are developing their learning trajectory as they learn about the world. They are actively developing their motivations, sense of self-worth, and identity through learning experiences outside of their elementary or secondary classrooms (NRC 2014, 2015; Eccles and Wang 2015; Maltese and Cooper 2017).

National parks as places for free-choice learning

We do not yet fully understand the complexity of the multifaceted phenomenon of FCL during a visit to a national park. In a sense, FCL in a park is more complex than in many of the places it has traditionally been studied (e.g., visits to a science center, zoo, or museum). In part this is because the range of what can be experienced and learned can be larger in parks, and perhaps most importantly, the other settings just mentioned are specifically curated to encourage learning while the totally open and experiential nature of parks is usually not designed in these ways. We do know that, analogous to museum visits (Falk and Dierking 2014, 2018), what visitors learn about while in the park depends upon why they come, who they are with, and what they see. For example, most park visitors come as part of a leisure experience, whose goals can vary widely, which in turn influences the nature of the learning experience (Packer 2006; Falk 2009, 2018). Park experiences are usually a mixture of designed experiences, such as those delivered by visitor centers, guided tours, or interpretive signs, combined with activities that are fully under the control of the visitor, such as conversations about biology, geology, or history while hiking or camping. This learning process is strongly influenced by a host of other idiosyncratic factors, such as the degree to which individuals perceive they have choice and control over their visit, by their prior knowledge and interest, by whether they experience joy and satisfaction, and by the degree to which a visit is aligned with their sense of self-related needs, or situated identities (Falk and Storksdieck 2005; Falk 2009; Bond and Falk 2012).

Sociocultural variables are also important. The 300,000,000 or so individuals who visit national parks represent diverse cultural and ethnic backgrounds, and this diversity is typically reinforced by the social group they visit with. Most park visitors arrive as part of a social group, either with family, friends, or on a tour—and these social realities strongly influence learning outcomes (Falk and Dierking 2019).

Collectively, these complex interactions are often not directly tied to the specific content of a national park, although they are experienced within the context of the park visit. For example, a learner could be motivated by prior knowledge, interest and experience, social interactions, or bonding and identity formation. This range of motivations make the task of measuring "learning outcomes" from a park visit complex and often unique for each particular visitor (Dierking, Storksdieck, and Falk 2013). Outcomes, though, are invariably supported by the unique attributes and affordances of the site, e.g., a civil war battlefield or a unique and picturesque canyon (Falk 2009, 2017). The bottom line is that the specifics of any particular park learning experience are difficult to extract from the greater whole of a visitor's total learning experience—an experience that extends days and years beyond the visit (Falk 2004; Falk and Dierking 2014).

A two-part personal vignette is used to illustrate these ideas. One of the authors (Storksdieck) first visited a national park in the early summer of 1988 at the end of a graduate exchange year in Boston. During a five week tour-de-force of more than twelve national parks, the author learned about the vastness of the American West. As a German exchange student on the East Coast, he only knew the New England area. On his summer adventure he learned about the rich natural and cultural histories of the various parks he visited, all the while manifesting a unique friendship with his travel companion during strenuous physical activities. The tour of the 12 national parks was not planned, but emerged almost accidentally as part of a coast-to-coast road trip to visit friends in California; it changed both young men's lives in profound ways.

They visited the parks as what Falk (2009) categorized as *Experience Seekers*[1] and *Explorers*,[2] seeking the new, learning about it, and accumulating visits, like badges. At the time Storksdieck was also a

First author at Grand Canyon National Park in 1988. (left) On the South Rim. (above) At the bottom, overlooking the Colorado River. | COURTESY MARTIN STORKSDIECK

graduate student in botany and ecology, so he also experienced the parks as what Falk calls a *Professional/Hobbyist*,[3] in part visiting places he had seen on slides during an introductory lecture to botany. Sometimes Storksdieck slipped into the role of a *Facilitator*,[4] as when he explained to his travel companion, during a nine-mile hike to the grove of tall trees in Redwood National Park, the biophysics of maximum tree heights. On other occasions, the travel companion would explain the geology of the Grand Canyon to Storksdieck, or both would jointly engage staff at visitor centers in discussions about the natural history of a particular place. And more often than expected, both experienced parks as *Rechargers*,[5] marveling at the beauty and serenity of the settings and experiencing deeply a sense of just "being here." Both men enacted all these situated visitor identities at some time during a visit, often by blending them together into an amalgam that shaped the men's journey that summer and for the rest of their lives.

Almost 20 years and many national park visits later, Storksdieck went on a visit with extended family to Crater Lake National Park in his new home state, Oregon. During this visit, almost all visit-related situated identities paled against that of the *Facilitator* for his seven-year old son and nine-year old nephew. At the same time, being together as a family and creating family memories was just as

First author and son at Crater Lake National Park, 2017.
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First author's son at South Rim of the Grand Canyon, 2019. | COURTESY MARTIN STORKSDIECK

important as learning about volcanoes, geology, and conservation. But as is common for other family visits to free-choice settings, identities can, at times, be in conflict with one another. Even though the author was eager to assume more of an *Explorer* role, that desire was continually balanced with the needs of his young relatives and his desire to put the perceived interests of his family group first.

These vignettes represent the FCL benefits that national park visits provide. Some of the benefits are tied directly to the visit, while others are more general and could occur anywhere. The former category includes all aspects directly connected to experiences that are unique to the national park being visited. Visitors can learn through direct experiences, by reading relevant materials (e.g., maps handed to each park visitor at the entrance), interacting with visitor center exhibits, engaging with park rangers and with each other or other visitors, and attending programs about the particular story of the park and its natural, cultural, and historic significance. Beyond the specific content knowledge of the park, visitors may connect to nature, culture, or history more generally. In this broader category, visitors experience the social benefits associated with being around others who appreciate parks as significant and valuable places to visit. They may also help to enshrine those values in others who, due to age or experience, may not yet share them. Additionally, visitors may have authentic experiences in fascinating settings, be active (often outdoors), or perceive a larger purpose and have a philosophical, spiritual, restorative, or religious experience. As suggested above, these broader outcomes are not unique to any particular park, but are particularly well supported by the concept of a protected and preserved cultural or natural setting open to anyone with sufficient means to visit.

In other words, national parks hold the potential to provide visitors with rich FCL experiences. What and to what degree an individual learns across cognitive, affective, conative, or behavioral dimensions depends on why they visited (motivation, agenda), who they visited with, what situated identity dominated during the visit (Bond and Falk 2012), and the particular physical, social, and intellectual experiences they encounter during their visit. In fact, we would argue that a large part of the value of national parks lies in this plethora of FCL-related outcomes parks make readily and uniquely accessible to a broad public.

Placing a value on free choice learning experiences at national parks?

How much value is being created by the FCL that

occurs at national parks? This question seems odd at first, especially given the complexity of measuring all the various ways in which visitors to national parks might learn during their visits. Yet, researchers have attempted to estimate the full value that national parks provide. In some ways, these valuation studies are an opportunity to provide evidence to taxpayers that public investments create a reasonable return on investment. It is within the context of attempting to estimate the total value of the national parks that we can understand how little FCL is still appreciated in society, since benefits derived from FCL are not really captured by the sometimes complex methods used to account for the value of a park.

As one might imagine, estimating the total value of a national park is a nontrivial task, since the *total* economic value of a national park is almost impossible to determine with certainty. This is because many of the "intangible" values that visitors and non-visitors derive (such as joy, awe, or learning about the world), are not traded in markets, and are difficult to monetize (Freeman 2003). While direct economic benefits from business activities, and sometimes ecosystem services, can be modeled and estimated with relative certainty, determining intangibles poses more serious methodological and ethical challenges. Not least of these is the question of whether the very act of placing a dollar value on a public good (thereby changing it into a consumer good) may cheapen or reduce its character and fundamentally change how we value the quality of the thing we intend to measure (Kelman 1981; Pearce and Turner 1990; Storksdieck 1998). Can we really assess in dollars and cents the awe we feel when seeing the Grand Tetons or Old Faithful, the sense of history we feel when visiting 19th-century water-powered textile mills in Lowell, Massachusetts, or the appreciation we gain for the US as a country when walking down the National Mall in Washington, DC?

These fundamental concerns aside, the total economic value of a national park has been assessed at least partially by determining the total amount of money that tourists collectively are willing to pay in order to visit a park (Clawson and Knetsch 1966; Champ, Boyle, and Brown 2003). Social scientists not only measure the perceived value of a park or other places to those who visit, but also the *option value* of future visits (the amount of money people would be willing to spend to keep the option for themselves of visiting a national park). They also

Grand Tetons at sunrise, Grand Teton National Park. | ANA HOUSEAL

seek to calculate the *bequest value* or the benefit to individuals for knowing that future generations may visit the park. The *existence value*, often measured as the amount of money people would be willing to pay to sustain a park, even under the condition that they or someone they care about would never be able to visit it, is a third area of interest. Using these ideas and similar methodology, various researchers have estimated the total value of educational programs in US national parks at around $30 billion (Haefele, Loomis and Bilmes 2016; Bilmes 2020), and the total value for recreational uses of the national parks at $28.5 billion (Neher et al. 2013).

These numbers are impressive, yet they may miss almost entirely the value national parks provide through FCL. This is not because FCL does not occur or create value, but because the surveys that serve as the foundation for these estimates, an otherwise reasonable means for collecting these data, may not ask respondents about key values implicit in FCL. They do not illuminate the incidental learning that occurs by simply being there or by studying the park map and other forms of interpretive information, learning about others, and potential learning that occurs in preparation or as follow-up to the visit. These surveys also lack the ability to capture the sense of identity—regional, national, and international—that a visit can support. By not asking specifically about these aspects, the surveys may simply not capture the value individuals derive from FCL. In fact, much like museum visits, it is highly likely that many visitors themselves may not be fully aware of the FCL benefits they reap because they have not had an opportunity to deeply reflect upon the nature of their own learning (cf. Falk and Dierking 2014).

In a study on FCL at the California Science Center, visitors often denied that they had learned something during their visit, despite evidence to the contrary. This happened in part because they confounded and conflated the term "learning" with the term "education," and the term "education" with what happens in school (Falk and Storks-

First author and family at Crater Lake National Park, 2017. | COURTESY MARTIN STORKSDIECK

dieck 2005; Falk and Needham 2011, 2016). That is, visitors to the science center were not cognizant of their own FCL, despite objective measures they had provided the researchers just minutes before. Therefore, the same may be true for visitors to national parks and for researchers who try to estimate the value of the parks to society. When people lack conscious awareness of some behavior or thought, it is almost guaranteed that they will also lack a perception of the value for that behavior or thought (cf. Falk 2017). Thus, we can't accurately measure what people think they've learned if they are unaware that they were learning. Following this logic, FCL-related benefits from national park visits will likely not be captured by traditional valuation methods, just as they mostly go unnoticed as a contributor to the overall literacy of a population (Falk and Dierking 2010).

Conclusion

In museums, national parks, and society as a whole, FCL is often overlooked or undervalued, and certainly underappreciated. Yet FCL is an important component of lifelong, life-wide, and life-deep learning (NRC 2009). Free-choice learning experiences form the foundation for what individuals learn and understand about the world—more so than does formal schooling, which tends to end for most between the age of 17 and 22 (Falk and Dierking 2010; Falk and Needham 2013). Arguably, FCL might even play a strong moderating role in what children learn during their years of formal education. In this way, settings such as national parks represent key elements of the public's overall learning ecosystem (NRC 2014, 2015; Falk 2017; Falk et al. 2017).

Endnotes

1. Visitors who are motivated to visit because they perceive the place they are visiting as an important destination. Their satisfaction primarily derives from the mere fact of having "been there and done that."
2. Visitors who are curiosity-driven with a generic interest in the content of the visited place. They expect to find something that will grab their attention and fuel their learning.
3. Visitors who feel a close tie between the content of the place they visit and their professional or hobbyist passions. Their visits are typically motivated by a desire to satisfy a specific content-related objective.
4. Visitors who are socially motivated. Their visit is focused on primarily enabling the experience and learning of others in their accompanying social group.
5. Visitors who are primarily seeking to have a contemplative, spiritual, and/or restorative experience. They see the place they visit as a refuge from the workaday world or as a confirmation of their religious or spiritual beliefs.

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