**How can teachers maximize the learning potential of field trips?**

Blog Post for Larry Ferlazzo's EdWeek blog
By Kim Douillard, Steve Fulton, and Micah Lauer
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## Introduction

An opportunity for our National Writing Project (NWP) sites in Boise, Idaho, San Diego, California, and Charlotte, North Carolina to partner with local science museums created a venue for careful consideration of field trips for our three sites. Supported by a National Science Foundation (NSF) grant awarded to the NWP and the Association of Science and Technology Centers (ASTC) called Intersections, ten NWP sites partnered with local ASTC museum affiliates to explore ways to support students, science learning, and literacy. At the intersections of formal and informal learning and science and literacy, we (Micah, Kim, and Steve) along with others at our sites, considered the ways field trips--especially in their more traditional forms--supported or interfered with student learning. What could we learn through our interactions with museum educators, from watching students in action in the museum, from a careful "reading" of the museum itself?

In this post we will share our experiences and what we have learned through this inquiry, each discussing a different aspect of the field trip. Micah writes on the preparation that comes before, Kim focuses on her experiences during, and Steve shares about the role of reflection afterwards. We each come to this work from different contexts and angles, but share a similar set of values when it comes to teaching and the role of writing. We view writing an an ongoing and recursive process that works in important ways for both teachers and students. We value the funds of knowledge students bring to our classrooms. And we continually refine our practice as we write and reflect in response to our students, our experiences, and ideas of each other. This post is a collective story of different partnerships told from different parts of the country, tied strongly together by our shared values as teachers with the National Writing Project and our common goal of inviting students to do meaningful work at the intersections of science and literacy.

## Before Field Work

When we think about traditional field trip experiences, we often wonder about missed opportunities for setting up students for purposeful learning before they step outside of the classroom. Often, pre-field trip planning is a matter of (stressful) logistics - buses, permission slips, collecting money, and organizing parent volunteers. But what if we paid equal attention to instructional preparation before a trip into the field? How can we prepare students to make connections between disciplinary core ideas and real world contexts and even pursue their own learning goals? How could this pre-trip work lead to more meaningful learning during the trip and deeper reflection afterwards?

As part of a collaboration between the Boise State Writing Project and the Discovery Center of Idaho, a cohort of participating teachers were awarded field trips to the center. Some teachers expressed concerns about previous field trips, which felt more like "letting students run wild" than deep learning experiences. Through ensuing discussions, the group proposed reframing field trips as field work and sought solutions for creating purposeful learning experiences. Teachers challenged themselves to plan visits as integrated parts of larger instructional sequences.

An important shift the cohort of teachers made was emphasizing in-class instruction before bringing their students to the Discovery Center. They developed a variety of approaches. Their students acquired necessary content knowledge by engaging with a wide variety of texts. Struggling writers enthusiastically connected science with the creative writing process and prepared to integrate science from the Discovery Center into their stories. One group prototyped structures they would build during their visit to the Discovery Center. Another set of students made plans for digitally documenting their experiences. A group of middle schoolers prepared to find modern applications of Newton's laws of motion. They also contemplated how to create and share their own science center exhibits back in the classroom. Micah thought about the transfer of principles to his own practice. How might pre-trip preparation look when taking students to a different type of community space?

*Intersections teachers and Discovery Center staff discussing field work outcomes*

For several years, Micah has taken his 170 middle school life science students into the field with researchers from Boise State University during a unit of instruction on ecology. In preparation

for this year's field work, Micah arranged for the lead researcher, Zoe Tinkle, to do a classroom visit. Zoe shared her research question, hypothesis, and initial findings and then she asked students about their own curiosities. What questions did they have about the field site and the ground squirrels being studied by the university? What else did they want to know about the local ecosystem? Students generated and shared their initial questions. These questions became a catalyst for future learning and eventually made for more intentional and meaningful reflection at the end of the unit.

Over several weeks, Micah scaffolded the questioning process. Students were mentored in a process for revising and refining their questions. They critiqued examples and non-examples of research questions. They used a guide to assess their own questions. They shared with each other. Through this process, they abandoned closed-ended questions and transformed others into open-ended research questions. Then they made initial attempts at exploring and answering their questions. Most importantly, they thought about what they would look for - and who they might talk with - on their visit to the field site.

*Students sharing curiosities and potential research questions with each other.*

A last step students took before their field work was to prepare data sheets and research question planners. The planners had spaces for students to record connections, observations, and other notes related to their research questions at each work station in the field. They participated in pre-field work learning activities that previewed concepts and tools used at each station. As part of this work, they contemplated how each station might provide clues or answers for their

questions. During the field work experience, students were prepared to have conversations with researchers and make connections between the classroom, field, and their questions.

*Students recording data in the field*

This pre-trip work, prompted by lessons learned during the Intersections project, helped Micah create a more robust experience in the field. The trip was purposefully integrated into a larger sequence of learning. Through collaboration with Micah, volunteers from Boise State created field stations that demonstrated important aspects of their research and also keyed in on foundational concepts and vocabulary. While pre-trip learning can take many forms, it is important to focus on alignment with disciplinary core ideas and learning targets, activating previous experiences and background knowledge, building new knowledge, and helping students make choices and take ownership in the experience.

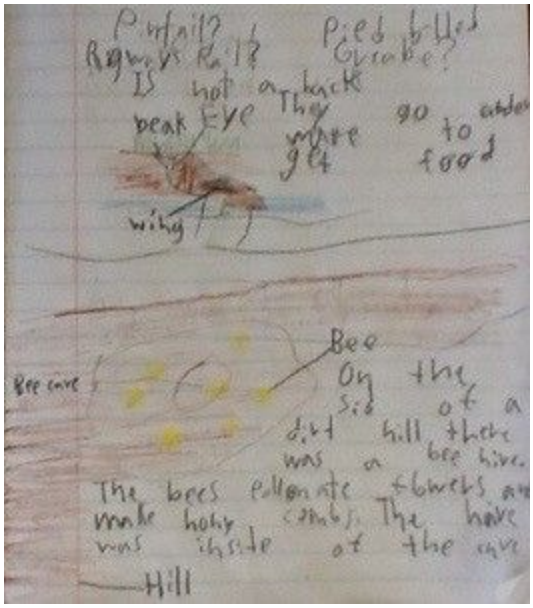
**During Field Work**

Like Micah, Kim and her teaching partner Margit recognize the importance of thoughtful planning and preparation for the field trip/field work experience. Over the course of two years work with the San Diego Natural History Museum (the NAT) and the Reuben H. Fleet Science Center (the Fleet), Kim and Margit, along with other classroom teachers and museum educators, studied field trips in action and learned about the importance of careful preparation for the work

to be done in the field (or in the museum) for students and teachers. After watching students use a variety of tools in the museum (including scavenger hunts and other guided fill-in-the-blank and open ended worksheets), they were convinced that students' notetaking and observations were best supported with a simple blank notebook. Rather than answering questions predetermined by their teachers or other adults, students were encouraged to take field notes about topics, exhibits, and information that interested them. So before a field trip to the local lagoon in May, Kim and Margit knew that in addition to the content and context they would engage students in, they needed to help their students learn how to take field notes so they would be ready to focus on their own learning once they arrived in the field.

While there isn't a singular process for taking field notes, they encouraged their young students (ages 6-9) to sketch and take notes including as much information as possible about their observations. Before the trip, Kim and Margit showed them a few examples of field notes from other naturalists, including ways these scientists used arrows, included colors and other sensory information, and used their page in ways that made sense to them as data collectors. And then, knowing that students need practice trying on an observational and note taking process in order to be able to focus on the learning during the actual field trip, they practiced taking field notes during their school garden time prior to the trip. Like Micah's students, Kim and Margit's students benefitted from the opportunity for pre field work activities that would increase their success in the field. To extend and focus their attention on the importance of field notes, upon returning from the garden, as a class they took a look at some of their field notes as a way to notice the techniques students used successfully and also to consider ways to improve their notes. In that moment Kim and Margit decided that they wanted their students to include a photo of their field notes on their eventual blog posts--an incentive to give these notes effort and attention, and an authentic purpose and multiple eventual uses, rather than scribble something just to get it done.

Here are some examples of students' field notes from the lagoon:



Because of the preparation in the classroom prior to the trip, once they arrived at the lagoon, students already knew what to do. They were to look carefully, pay attention to the possibilities around them, share their findings with their classmates and adults, and take field notes. They had an additional tool as well--one they had also tried out in the garden: binoculars!

Students immediately noticed some of the plants and animals we had studied in class and were quick to point these things out to each other. One child was particularly good at lizard spotting and hushed us as we got near each specimen so we could all get a good look.

Students were excited to squat along the side of the trail or sit on a fallen log to sketch and take notes. They eagerly shared their observations orally with classmates and parent chaperones. They reminded each other to take detailed field notes and noticed and pointed out some of the highlights observed in a classmate's notes.

In spite of a chaotic return to school too close to the dismissal bell, students were not done talking and thinking about all they had seen and noted. Kim and Margit assured them that the next day would allow time for sharing their findings, reflecting on what they had noticed and learned, and continuing their research. A chance to revisit their field notes the next morning and hear from their classmates' notes as well jumpstarted the research process. Using the highly accessible lagoon website as their primary research tool, students dug in and deepened their

learning as they searched for answers to their questions or support for their observations. They filled in missing information about the plants and animals they had focused on and prepared to write an informational blog post. Instead of feeling like a class assignment, this felt like scientists at work. They observed, noted, reflected, researched, and wrote...with an audience in mind.

**After Field Work**

There is quite a bit of work that goes into carrying out a field trip, and the experience that is planned should not end when the trip does. As John Dewey wrote, "we do not learn from experience...we learn from reflecting on experience," and in the case of the field trip the reflection that can happen back in the classroom goes a long way to make the experience not only more memorable, but also deepens learning and creates new pathways for subsequent inquiry.

There are a number of ways to invite students to enter into reflection: journaling, letter writing, class discussion are common and great ways of doing so. Steve, in collaboration with educators from Discovery Place, a science museum in Charlotte, NC, has been tinkering with additional layers in facilitating post-field trip reflection, one that is based on documentation and utilizes digital storytelling.

Discovery Place is a museum that invites people to be curious, to explore, investigate, and tinker. Making the trip overly-directive and prescriptive could negate the possibility students had to learn informally and discover a new way to connect with science. So in the case of this trip, Steve encouraged his 8th graders to engage with the exhibits and be directed by their interests, but also to be aware of how they were working as learners, noticing moments when they are engaged, curious, challenged, or even frustrated. Steve asked his students to document these moments photographically by using their phone to take a picture or short video. This was the field work of the trip, and it served to increase student self awareness and forward meaningful post-field work reflection.

*Students engaging with an exhibit at the Discovery Place*

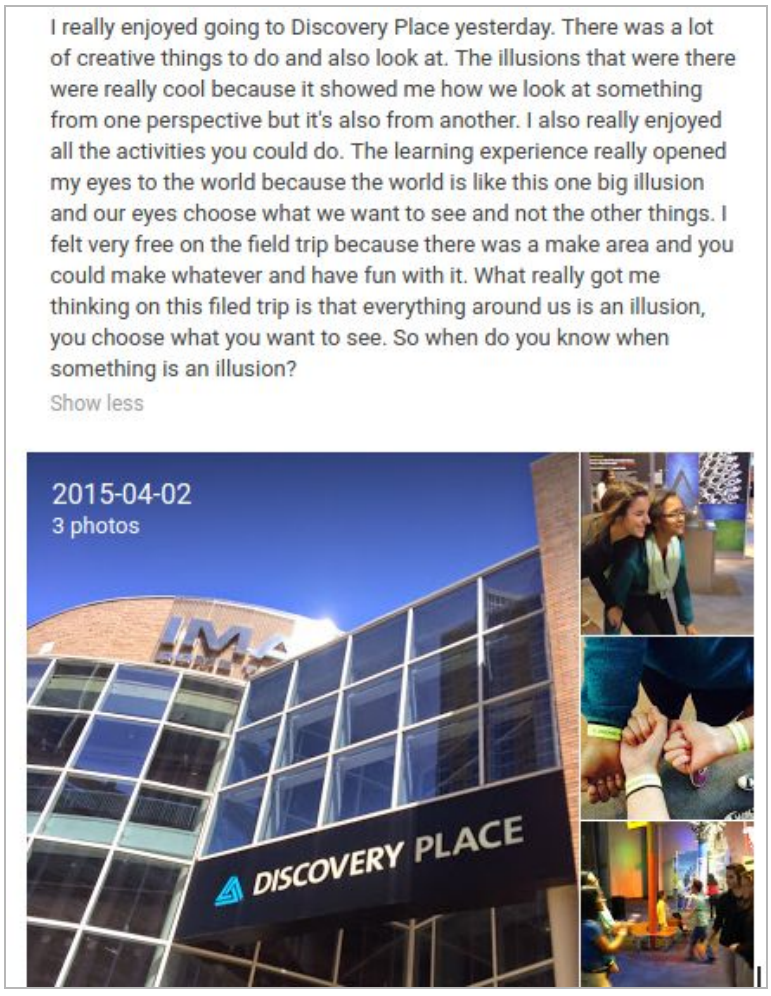
When students returned back to school, they sorted through and discussed the pictures they had taken. Many of the students chose to upload their pictures to a shared Google Drive folder, so in this part of the process students had the chance to consider both their images and those which they did not take themselves but still spoke in some way to their experience. From image-prompted discussion students moved into a short bit of individual journaling about the

moments from the trip that were of greatest significance to their learning. Then, they drew on this thinking to compose bigger digital pieces that tell and show what they took from their day at Discovery Place.

*A picture taken by a student to document a moment of learning*

Most students used their class blogs as their composing space, creating written reflections that expanded on the moments depicted in several carefully chosen images. Students also utilized other digital tools they felt would work to convey their reflection more effectively. Some edited the images by writing directly on them in Skitch (on iPads) or pixlr (Chromebooks). Others created collections of images using photo collage tools like PicMonkey and PicPlayPost. And others decided to make the images more central to their story, creating animated slideshows with Animoto or voice narrated videos with WeVideo.

What these collective posts comprised were stories of learning from the same trip told in 100 different ways. On field trips (and the same can be said about the classroom), each child brings something different, and what they take away from the experience is equally unique to them. Bringing this experience back to the class with reflective writing is important for helping students understand what they learned and how they grew. The flexibility in storytelling mediums, combined with the affordances of digital technology, enables students to craft compositions as unique as their experiences, and sharing beyond themselves affirms the importance of students' stories in a diverse community of learners.




*An example of a student reflection*

## Conclusion

Although each of our Writing Project sites delved into unique projects at the intersections of science and literacy and formal and informal learning, we all found ourselves challenging the limitations of traditional field trips and finding new opportunities for the teachers and students we work with. Through our individual efforts, we gained a deeper appreciation for collaboration, inquiry, community spaces, and applications of scientific literacy as strategies for helping students develop scientific mindsets. And in each of our instances students were empowered to make choices in their learning. We cannot emphasize enough the value of this approach!

We've come to believe that instead of seeing field trips as events--places to go for the singular experience of going--teachers should see these trips as opportunities for field work, extending learning beyond the classroom, incorporating valuable community resources, and transforming those experiences into opportunities to share that learning with others.

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Author Bios

Kim Douillard co-teaches a multiage class of first, second, and third graders in the northern part of San Diego county, where she has the privilege of teaching her students for three consecutive years. Kim is also the director of the San Diego Area Writing Project (SDAWP).

Steve Fulton is middle school teacher in Kannapolis, North Carolina where he is in his 14th year of teaching 8th grade Language Arts. Steve is Nationally Board Certified and a Teacher Consultant with the UNC Charlotte Writing Project.

Micah Lauer is a middle school life science teacher in Meridian, Idaho where his focus is helping learners explore the native sagebrush steppe ecosystem of the western U.S.. He is a Teacher Consultant with the Boise State Writing Project and works with science teachers to explore the Next Generation Science Standards.