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What College Students Learn from Teaching Others

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Abstract

This article describes what undergraduate students learned from participating in a museum docent program at a large, public university on the West Coast of the United States. The majority (93%) of students report an increase in their ability to effectively communicate specialized knowledge to museum visitors in one or more of the following ways: 1) identifying what visitors know and adjusting their explanations accordingly; 2) translating technical information to visitors; 3); communicating information in an active, hands-on manner; 4) confidently communicating their knowledge to others. Students reported personal and professional benefits as well. In addition to this focused observation approach, student reflections were analyzed for two pre-identified themes. Benefits reported by student docents can be realized by other undergraduate students teaching in contexts other than a museum, as long as students doing the teaching receive frequent feedback, fulfill an authentic need among those whom they teach, and take time to reflect on their teaching experiences. Archaeologists who want their students to achieve key learning goals such as effective communication can help students reach these goals by providing them with opportunities to teach what they have learned to others.

Undergraduate students have been involved in various teaching roles in higher education for decades (Egerton 1976) for a variety of reasons. Among them are to improve the quality of education for large numbers of students; to recruit and prepare talented students in a given major for careers in teaching (e.g., the Learning Assistant Program at the University of Colorado, Boulder), and to civically and morally engage students. Researchers have known for decades that college students benefit from teaching others. Annis (1983) found that undergraduate students who teach peers develop a better understanding of the material than those peers who do not teach, while Bargh and Schul's (1980) study confirmed that students who teach study the material more closely than those who do not. Learning by teaching others remains a recommended college study strategy (e.g., McGuire and McGuire 2015). Involving undergraduate archaeology students in teaching has the potential to enable them to attain learning goals such as effective verbal communication (AAA Anthropological Skills webpage; Bender 2000; Jones 2014). This article describes what college students in archaeology, anthropology, and the earth sciences have reported what they have learned from teaching others.

In the case described here, students teach in a museum, a setting familiar to archaeologists and earth scientists alike. But as this article concludes, students are successful in other settings where they teach and attain significant learning goals. The student docent program described here is just one means of enabling students to learn

through teaching by providing them with opportunities to: 1) share their knowledge with others in an *authentic* context where they are fulfilling a real need of other people; and 2) receive timely feedback on their efforts. This research is intended to be of special interest to readers who teach in higher education, as well as those working in museums who wish to strengthen or forge connections with institutions of higher learning and the students and educators at these institutions.

The improvement of student learning was originally not the primary goal of the student docent program at a state natural history museum connected to a large, public university on the West Coast of the United States. Initially the main reason for the program's existence was the well-documented understanding in the field of museum education that visitor learning experiences are enhanced by opportunities to have conversations with others (Allen 2002; Fenichel and Schweingruber 2009). The program is not unique; some natural history museums in the United States routinely involve college students as informal educators in anthropology and archaeology (e.g., Brown University, University of Michigan), although the practice of involving students as docents is far more common among campus art museums (e.g., Oberlin College, Northwestern University).

While docent programs can provide students with opportunities to share their knowledge and gain experience as informal educators in a museum setting, we know comparatively little about if, and exactly how, these programs benefit students. Many other studies focus on learning benefits to museum visitors, however this paper focuses on the question of how the docent experience affects the learning of student docents, or more broadly stated "What does teaching do to those who engage in it?" (Britzman, 2003:12). The article concludes with a discussion of how archaeologists teaching in higher education can enable their students to realize similar learning experiences within or outside a museum context.

Defining "Teaching"

There are many settings in which undergraduate students can learn by teaching, but to work in both higher education and museums is to bridge between differing, albeit overlapping, conceptualizations of what it means to learn, and what it means to teach. Museum exhibits and programs commonly draw upon models of informal learning in which visitors are self-directed and pursue their own interests, often in their spare time and usually outside of the classroom (Falk and Dierking 2002; Lai and Smith 2018). In higher education, learners are in more formal, academic settings where they are asked to work toward specific outcomes (Lai and Smith 2018). The kinds of teaching used in informal and formal environments traditionally differ; teaching learners in informal settings often entails assuming the role of a facilitator or instigator (e.g., Ham 2013) who encourages learners to discover information (Uzelmeier 2006). In addition to discovery, learners may also communicate with others to make meaning from their experiences

(Hard and Crowley 2002; Morrisey 2002). Thus, learner autonomy is valued and encouraged in informal settings. In contrast, teaching in a formal setting is traditionally associated with a content expert imparting knowledge that students (ideally) will remember (Ham 2013). This difference could explain in part why the term "teaching" often has negative connotations in informal settings. However, decades of research in formal educational settings show that *effective* teachers in formal settings engage in approaches used in informal contexts (and those working in informal settings may be using pedagogical structures developed in formal education [see Castle 2006]). For example, effective formal educators enable students to connect what they are learning with their individual backgrounds and experiences (Ambrose et al. 2010:13; Zull 2011:178), and often assume a role of guide or facilitator rather than content expert (Skelton 2005:24). Effective teachers appeal to and emphasize learner autonomy (Zull 2011:71), and actively involve the student in making meaning (e.g., Chickering and Gamson 1987:4; Crouch and Mazur 2001). Similarities in educational approaches in informal and formal learning environments are understandable considering that both commonly draw upon a constructivist framework (Garcia 2012; Weimer 2013:7-16).

Student Docent Program Description

The student docent program described in this study is offered throughout the academic year. Students participate by enrolling in a course during a given academic term (10 weeks). The subject focus of each course differs each term (e.g., Native American art, archaeology, paleontology, geology, mammology) but the emphasis of every course is on fostering meaningful visitor learning experiences. Each course is offered in one of two formats. In the first format, students enroll in a general education course team-taught by a curator with a faculty appointment at the university, and a member of the museum's education staff. The curator provides subject content to students. In the second format, students enrolled in a particular survey course at the university (e.g., archaeological methods) enroll concurrently in a general education course focused on museum teaching methods, which is taught by a museum staff member.

In both formats the museum staff member begins each term by leading activities designed to enable students to understand how people learn in museums. To this end, students spend time observing visitors in the museum's galleries and meet as a class to discuss their observations and the implications for their own interactions with visitors. They engage in activities designed to introduce and reinforce key features of informal learning. For example, in one activity designed to emphasize the importance of involving the learner in "enactive" modes, such as self-quizzing, students are given small, sealed boxes containing unknown objects and are asked to identify the objects without opening the box. Students engage in the activity, and then debrief their experiences, usually concluding that it is far more interesting to figure out for oneself

what is in the box, rather than be told what it contains. A few weeks into the term, the role of the staff member shifts to facilitator as students spend more class time identifying the main points of the content they think visitors will want to learn. Students then work together in class to create hands-on, interactive activities for museum visitors using objects and specimens from the museum's collections. Students often refer to these activities as "presentations." An example of such a "presentation" is the devising of a simple sorting activity where visitors can decide which objects are artifacts and which ones are not. Students introduce these activities to museum visitors on selected days and times. Each student does six two-hour gallery shifts in a term. During any given shift, students typically work with visitors of all ages and group configuration (e.g., individuals, families, K-12 school groups, or college students). Occasionally students work with hundreds of visitors attending a special one-day event emphasizing a particular theme, such as "Archaeology Day" or "Dinosaur Day." Students compile notes after each gallery session in which they briefly describe their interactions with visitors, and identify what they think were (un)successful interactions and reflect on why. Students are encouraged to include in their notes suggestions on what they and the museum could do to improve interactions with visitors. Copies of notes are collected by the museum staff member, who reads them and extracts key themes to guide in-class discussion. During the next class meeting, a group discussion takes place in which they assess the success of each activity, and make changes to their activities according to the nature of visitor response. At the end of the term students compose a two to three-page review of their work, noting what was generally successful in gallery sessions ("What went well?") and what seemed problematic or in need of improvement ("What could have gone better? What changes should be made for next time?"). In addition to describing patterns of success and areas for improvement, students are asked to explain how much and in what ways their interactions with visitors changed over the course of the term by addressing the question: "How has your teaching approach changed—if at all—over the course of the term?"

Who Are the Students?

The majority of the students who enroll in courses are seniors (37%), although the class is becoming increasingly popular among first-year students (18%). The remainder of the undergraduate students are juniors (18%), sophomores (12%), and non-matriculated students (4%). A small percent of graduate students enrolls in the course (11%), usually with a stated interest in learning more about museums as museology students or teaching in their chosen subject area (e.g., archaeology; biology). Slightly less than half of the students (48%) are majoring in the subject they are teaching, the remaining 52% are not majors, which means they are getting their subject content solely from the general education course.

Method of Collection and Analysis of Student Reflections

This study used an ethnographic approach for two reasons. First, the research question is focused on dynamic and unscripted interactions between students and visitors. An ethnographic approach offers flexibility in identifying the emerging significance of information as the study unfolds (Whitehead 2005). Second, an ethnographic approach emphasizes the meanings that people who are the focus of research (in this case, the students) assign to their experiences, thus impacting the research (Hannabuss 2002). Such an approach aligns with constructivist understandings of learning: if visitors are expected and encouraged to make meaning, students should be expected to do so as well. Both groups are humans who are trying to learn. To best understand the meanings that students attach to their docent experiences, the study focuses on students' gallery notes and end-of-term written reflections. The reflections analyzed in in this study were generated by 77 students during three consecutive academic years 2006-2009.[1]

Most students in the sample are undergraduates (74); there are also two graduate students and one post-baccalaureate student. Reflections for each student were read and themes were identified at the level of each experience or incident described by students. Themes were not defined by particular words or phrases, but rather by what the student determined to be the major meaning or "takeaway" message of each experience (Charmaz 2014:128). This analytical choice was made because in the case of this study, the focus is on student docent learning, which is a form of development. People typically explain their development in narrative form, as the following example illustrates:

> "…there were times I felt very overwhelmed or frustrated because our presentation [in this case a display of specimens and activities] was not making any connection to the visitors. This situation happened on two of my weekends in the galleries. I had to think what it was that I was doing that was contributing to a lack of interest from the visitors. When you find yourself in this situation, I found that it was best to simply change our approach…We changed our approach so that it was more spontaneous and creative."

Here, the student tells a "mini-story;" in the beginning, she alludes to specific experiences that she felt to be unsatisfactory for museum visitors, and for herself as a teacher. Upon perceiving problems, she reflects on her approach (reflection is repeatedly emphasized in the student docent courses). She ends her story by naming some changes she made to her approach as a teacher, (although she does not elaborate on what she means by becoming more "spontaneous" and "creative"). However, the main point of her story is clear: when interactions with museum visitors do

not go well, the student docent should think about how to change her approach (as opposed to becoming frustrated with visitors for "not getting it").

In this paper, most examples are direct quotes that describe the end of the story or incident. For instance: "One of the biggest things I learned was to ask questions of the visitors…It also gave me a means to gauge their interest level so that I could steer the conversation and activity toward the topics in which they seemed most interested." This direct quote is the student's conclusion of a much longer story or experience whose beginning and middle stretch across a 10-week period. Common themes were identified as they emerged. In this way, student perceptions of what was significant guided the analysis. In addition to this focused observation approach, student reflections were analyzed for two pre-identified themes that had been emphasized in the docent class throughout the term: 1) student awareness of the desire of visitors to construct their own personal meaning when interacting with students at the museum, and 2) student comfort with assuming facilitator roles, rather than feeling the need to serve as content experts.

Results: Trends Identified by Students

Overall, students reported changes in their expectations of what it meant to teach and how they approached teaching. At the beginning of each term, students frequently commented that they had trouble envisioning themselves as teachers, as one student noted: "[The course] was something that I had never thought [of] as anything I would be taking at [the university]. The real challenge for me was the presentation sessions…I was not used to teaching anybody anything at all, and doing this threw me right in there." Many students reported beginning their term with the idea that to be an effective docent, one must have command over a large amount of subject material. This attitude not only manifested in student reports, but in their behavior. During the first few gallery sessions of every term, some students brought textbooks and reviewed them frequently. Students often expressed reservations about having enough content knowledge to interact with visitors. During the course of a ten-week term, students changed their behavior in the galleries. Analysis of their written work indicates that changes in behavior can be attributed at least in part to changes in the way students approached teaching and learning.

The majority (93%) of students in the sample reported some benefit, new viewpoint, or useful skill from their experience. In many cases, students described what they learned as one or more changes in how they approached teaching museum visitors over the course of the term they served as docents. The experiences students most commonly identified and described involve four particular areas of teaching and learning: 1) knowing who learners are and adjusting task challenges accordingly; 2) becoming more adept at explaining concepts to learners; 3) recognizing that learners

desire to be active and control their own learning; and 4) becoming more confident in fully engaging learners (Figure 1).

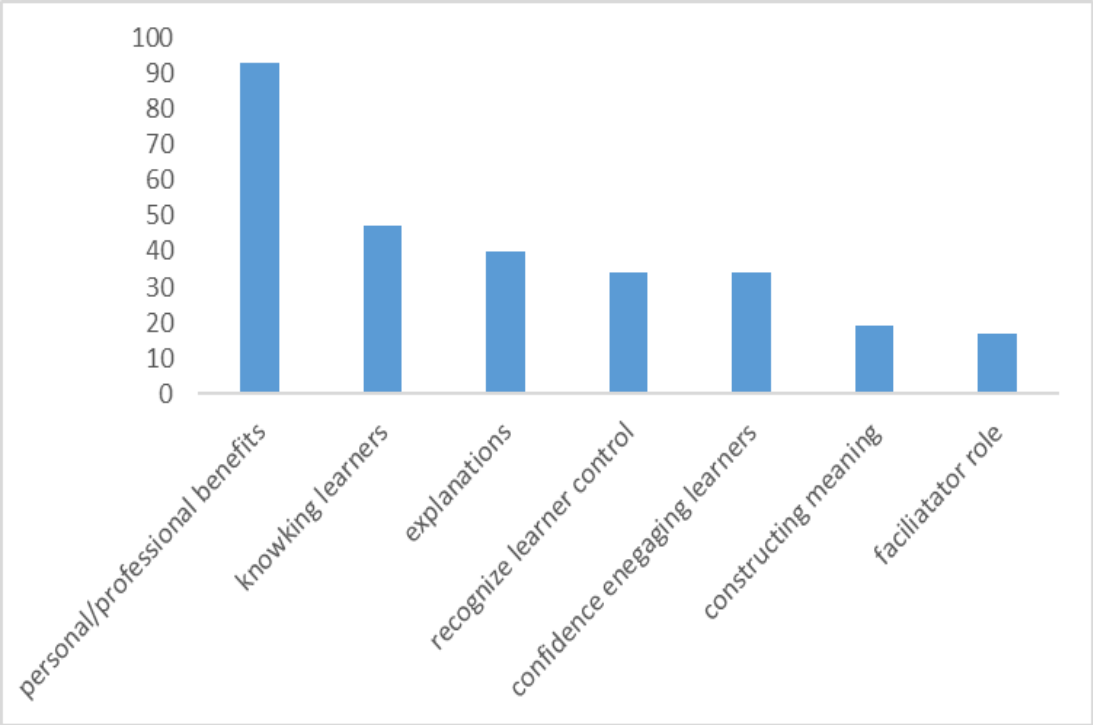

Figure 1. Histogram showing percentage of student docents reporting each kind of takeaway identified in this study.

Personal and Professional Benefits

The majority of students (93%) mentioned that they felt they derived some personal or professional benefit from being a docent. For many students, benefits related primarily to themselves, rather than their interactions with learners. In a few cases, students said being involved in the docent class enabled them to navigate student life at a large university: “As a freshman, this is only my second quarter at the [university] and [the] experience was definitely invaluable. I now feel like I can comfortably interact with upperclassmen and this quarter I finally began to feel like I was part of a community.” In some cases, students said the main value of their teaching experience was gaining professional skills. Some skills were transferable, such as public speaking, while others were specific to museums and teaching: “Over the course of the quarter I felt much more comfortable in my presentations and feel like I could do one with no problems at all. The more practice you get with public speaking, the better you get at it, and it is a skill you will use for the rest of your life.” Some skills were developmental in nature: “The lessons learned are very valuable and applicable to many life situations. For me it

was like a test. I was being tested about how to handle myself in public. I feel more mature and directed. This class provides you with the right to make your own decisions and be more independent."

For some students, the class was a means for finding out more about what they valued and what they were good at—information they felt was useful in helping them choose a career: "I didn't come into the class with high expectations, nor did I anticipate and personal positive outcomes from it. However, I have really learned a lot about myself and working/interacting with [people] and I have decided I think I want to be an elementary school teacher." Other career discoveries related specifically to museums and anthropology:

> "This was a great experience for me personally because I am thinking about going into museum studies for grad. school. I am an [Anthropology] major [with interests in archaeology] and I also love museums and I am having a hard time figuring out which way to go in higher education. I really wanted to take a museum course to see how much I would like it. This class allowed me to see partially what [it] is like to work in a museum."

Knowing Learners and Adjusting Task Challenges

In their written responses students frequently noticed that interest in the information they shared varied between individual visitors, and that the nature of visitor response to activities varied according to individual interest and ability. Out of the entire sample, 47% of students described how they became more aware who learners were in terms of age, background, and individual interests (Figure 1). Students who mentioned this theme usually described how they adjusted their teaching efforts accordingly, and they frequently stated that they increased their willingness and ability to change teaching approaches over the course of the term. One of the most common ways in which students said they made adjustments was for communicating with children of varying ages, as illustrated by the following comment:

> "As I gained experience…I was able to learn which approaches worked for different age groups of children; how to get them interested in the game [in this case a sorting activity in which visitors determined what kinds of foods carnivores eat, and what kinds are eaten by herbivores], what to expect from their likely mental abilities, how to explain it, how to provide hints, and how to relate it to themselves. I feel that as my confidence grew with how to approach and speak to the children and other visitors, I was able to help them learn more and take more away from the activity."

In some cases, students noted that people of similar age groups learned in different ways: “I learned that not every teaching technique works on everyone.” Some students noted that visitors had distinctly individual interests which could not be accounted for by their membership in a particular age group or approach to learning. These kinds of observations suggest that the students became aware that individuals have idiosyncratic pathways to learning, a characteristic used by many educators working in informal settings (Falk and Dierking 2002): “…people are all completely different with what they find interesting” and “There are so many different teaching methods and possibilities that a museum setting can offer. There is no specific approach as long as it is interesting.”

In other cases, students consciously took into account variation in visitor interests and learning approaches and changed the ways in which they presented the subject material: “One of the biggest things I learned was to ask questions of the visitors…It also gave me a means to gauge their interest level so that I could steer the conversation and activity toward the topics in which they seemed most interested.” In this example, the student describes the flexibility she perceived as necessary to connect with visitor interests:

> “…there were times I felt very overwhelmed or frustrated because our presentation [in this case a display of specimens and activities] was not making any connection to the visitors. This situation happened on two of my weekends in the galleries. I had to think what it was that I was doing that was contributing to a lack of interest from the visitors. When you find yourself in this situation, I found that it was best to simply change our approach…We changed our approach so that it was more spontaneous and creative.”

Becoming Adept at Explanation

Another skill students frequently (40%) reported at which they became more adept was creating explanations that others could easily understand (Figure 1). Students who were majoring in a given subject said they valued the opportunity to practice explaining complex information in a simple manner. Other students who were non-majors echoed this comment: “What good is all the technical information if you cannot explain to someone who is curious about the topic?”

Students noted that part of the process of becoming adept at explanations involves consciously selecting and organizing material for an explanation so that it can be readily accessed by a learner. This observation aligns with the idea that the organizing process enables the teacher to think about what concepts are most important to emphasize to learners and the connection of concepts to one another. In other words, teachers learn the material more thoroughly because in teaching they must

think about how knowledge is structured in a given field. Some of the student docents described these ideas in their reflections on their teaching experiences: “You really have to know what you are talking about…Even if you’ve learned about something throughout your four years of college…it doesn’t always mean it’s easy to teach. *I really had to think about what I was going to say* [emphasis added] in order to make it easy to understand.”

In some cases, students explicitly said that before they could craft an understandable explanation, they had to recognize that their understanding is different than that of a new learner. This recognition provides teachers insight on common difficulties of learners who are new to a particular subject (e.g., Askell-Williams et al. 2007). For example: “As a student…[you] can learn all the technical information and scientific explanations, but if you can manage to portray a simpler version of the information…I think that it reminds you of what it is like to be on the other side of just beginning to learn, rather than being [at] a college level education.”

Recognizing a Learner’s Need to be Active and In Control

In their reflections, 34% of students talked about museum visitors needing to exert control by being active in their own learning. Students commonly described a technique of asking open-ended questions of visitors and listening to visitor responses (Figure 1). They frequently noted particular incidents during which visitors often seemed to enjoy asking questions and testing their own hypotheses rather than listening to students lecture on a topic: “The open-ended questions today with the hands-on objects about what people thought they were used [for] helped open up conversation more so than just listing off information about objects…” Some students noted that teaching others involved conversational techniques, rather than lecturing:

> “One of the biggest things I learned was to ask questions of the visitors. If I began to talk to them a lot, it felt as if I was spewing information, and their eyes just glazed over. Asking open-ended questions really got the conversation going, and made it feel less like I was lecturing. It also gave me a means to gauge their interest level so that I could steer the conversation and activity toward the topics in which they seemed most interested…I also had to learn when to cut myself off. When asked a question, my tendency is to answer with all of the information I know on a topic…I realized that my answers needed to be short, because they prompt more questions. This way, the visitor feels more involved and invested in what you are saying.”

Students noted that encouraging visitors to make observations before or instead of being told about an object was often more meaningful for visitors than listening to

information about the objects: "…by letting them make discoveries on their own, I think we not only helped them gain a better understanding of the information we were presenting, but we also helped people realize how much information can be gained by just looking at and touching something." Interestingly, observation on the effectiveness of active learning techniques caused some students to reflect on their own approaches to learning: "When they have more to engage their minds in besides just listening, people, especially younger ones, get more interested. I've seen this myself in classes now, where hands on activities help me learn better than straight lectures."

Recognition of learner desire for autonomy was not universal. Many students did not mention it at all. In particular, one student did not find that visitors really wanted to actively engage: "…the best solution is to study and to know facts beyond what the signs say, because that's all they'll really look for in you."

Becoming Comfortable in Engaging Learners

About one third of students (34%) said they developed or discovered new ways to engage visitors in the gallery over the course of the term (Figure 1). When describing these approaches, students recalled how they felt about their interactions. Specifically, students reported feeling more confident in approaching people when using techniques—such as standing in front of a display table—as the term progressed:

> "In the following weeks I changed my approach to behind the table [with objects placed on it] when I was explaining something but would be out in front of it at the beginning and the end so I was more engaging. By the end of the quarter I knew how to introduce my topic and ask questions that would lead them [visitors] to the take home message of the week."

Other students became more comfortable initiating interactions with visitors:

> "I surprised myself at how much my interaction with visitors changed when I was stationed alone. At first I was scared to be…by myself, but it turned out to be my favorite part of the class…I realized that I was initiating conversations with visitors before they had made eye contact with me (a signal I had usually waited for) and that I was kneeling down often so I would be at the same level as the kids I was talking to."

Pre-Identified Trends

In addition to the themes mentioned most frequently by students, analysis included identifying two pre-determined themes: 1) student awareness of the desire of visitors to construct their own personal meaning when interacting with students at the museum; and 2) student comfort with assuming facilitator roles, rather than feeling the

need to serve as content experts. Both of these themes are emphasized in each student docent course, and museum staff were interested in learning the extent to which students absorbed them.

Constructing Meaning

Some students (19%) reported that visitors interpreted information and objects in personal, idiosyncratic ways initially unanticipated by students (Figure 1). These reports indicate that a few students recognized that learners construct their own personal meanings by drawing upon personal experiences: “When people can relate these activities to their own life experiences, I really feel that they are making a great connection to the concept.” In some cases, that personal experience was triggered by direct experience with an object: “…touching the objects allowed for the sharing of personal experiences from which I learned a lot myself.” In other cases, students noticed that visitors wished to demonstrate meaning they had previously constructed: “I don’t think all connections with our materials had to do with learning; a lot of the time people enjoyed demonstrating their knowledge of the subject to us, more than they enjoyed learning new material.”

Assuming a Facilitator Role

Even fewer students (17%) noted changes in seeing themselves as facilitators or co-learners rather than content experts (Figure 1). This student reaction was probably most typical; it casts the role of the student docent primarily as a content repository: “[A] frustrating moment is when I didn’t know the answer because it makes me look bad.” Others interpreted their inability to answer particular questions as an opportunity to connect with visitors as co-leaners: “…admit you don’t know. This does two things, first it allows you to join the person you’re speaking with on a mission to find the truth and makes them feel less intimidated about learning at the museum.” In the same vein, another student noted: “I learned new things as I worked throughout the whole quarter with the visitors, so it felt like I was the visitor sometimes.” Another remarked: “I realized I could learn from questions raised during the interaction [with visitors].”

A few students reported that by the end of the term, they felt quite comfortable with assuming a co-learner role: “All of us in the class realized it is human nature to want to share information…and to have that person to person interaction. Both the visitors and us gallery workers gained so much more out of the exhibits in having the other there.” Others took an even more philosophical view of their role as co-learners: “This course facilitated my growth as an instructor, and taught me that you know more than you think you do…and sometimes…a ten year old knows more than you. But it’s all part of the learning process and the cycle of becoming that student and teacher.”

Limitations of the Present Study

This research contributes to our understanding of how the process of teaching others helps students to learn, but it does have some key limitations. First, this study is an analysis of students' self-reports on what they have gained from their teaching experience, not a direct measure of their learning. Students are reporting on what they *perceive* as their learning gains. Second, students did not provide responses in an anonymous format. Having their names attached to their words may have influenced the particular kinds of knowledge, skills, or attitudes they reported. It is possible that students were reporting what they thought the investigator wanted to hear. Finally, students were asked to describe what changes (if any) they noticed in their approaches to teaching. The phrasing of the question may have prompted students to report changes, even if there were none.

Key Aspects of Transferability: Feedback, Authenticity, and Reflection

Interested readers might conclude that robust results can be achieved by students in only a docent program at a museum, but students can realize benefits of teaching in many contexts and at various scales. They can teach an effective lesson using a single object or a simple interactive activity. Opportunities for students to teach vary by venue and size, but useful opportunities have three key components: they provide student teachers with frequent feedback, they fulfill an authentic need among museum visitors, and they provide time for student reflection on the teaching experience.

Museum visitors (or anyone whom students may be teaching) provide feedback in a timely manner which helps student teachers make adjustments in their performance (Fink 2003). Given the primary role of feedback in the learning cycle, it makes sense that a single teaching session did not help students determine which adjustments to make as much as teaching several sessions. The fewer the sessions, the greater the number of learners with whom student teachers need to interact per session to obtain enough feedback to make changes. Since feedback is critical to the learning of student teachers, much of the labor for the instructor is locating or creating groups of learners that are spatially and temporally clustered, so that students have several opportunities to practice.

Students (and those whom they teach) will realize more benefits if the experience is authentic. In other words, students realize benefits of teaching when there is a real need for learners to learn (Conrad and Hedin 1990). In this particular study, learners were visitors who decided they wanted and needed to connect with others to enhance their visit. However, museums are not the only venues where people go to connect with others and learn informally (Falk and Dierking 2002). Archaeologists often think of outreach venues such as K-12 classrooms. While K-12 classrooms provide perfectly good opportunities for student teachers and learners, there are many kinds of teaching

contexts, such as other classes, public spaces on campus, community centers, libraries, and community events. All can provide student teachers with the opportunities to connect with learners who want and need to learn.

Most important, students learn from teaching when they reflect on it (Di Stefano et al. 2014; Ellis et al. 2014). The act of reflecting on practice enables student teachers a chance to identify shortcomings in practice, i.e., which aspects of an explanation or lesson did not work. In traditional classroom situations, students are not always able to identify when and why their performance is failing (Ambrose et al. 2010). In this particular study, student teachers were able to easily identify when they failed to connect with visitors; given the museum context, visitors were able to walk away from the interaction when it no longer served their needs. Students struggled to some extent to identify potential causes of failure, but less so when they taught with other students. Observing the successes and failures of peers provided student teachers with examples they could compare with their own efforts. A key part of the reflection process was constructing written reflections.

Originally in the docent program, heavy emphasis was placed on coaching students to develop original activities “from scratch.” A critical realization made by the docent gallery supervisors was that tasking students with developing original activities offers a learning experience that differs from one in which they are asked to concentrate on teaching an activity that is ready-made. Creating an original activity enables students to develop a plan for communication by exploring how the particular area of knowledge they are teaching is arranged. That is, they become more familiar with how knowledge is structured in archaeology (Ambrose et al. 2010). When teaching a ready-made activity, students are practicing another subset of communication skills: connecting with an audience and maintaining the connection by making small, just-in-time adjustments to the interaction. Neither emphasis is better than the other, just different. The gallery supervisors concluded that it was best to ask students to develop an original activity, but teach it for several weeks. The reasoning was that while students typically have several opportunities in college curricula to plan communication (usually through writing), they have relatively few opportunities to practice maintaining a connection with an audience. In fact, students who continued to teach the same activity for several weeks predictably became better at initiating and maintaining connections with museum visitors, and reported becoming more comfortable in teaching the activity.

Instructors who want to provide similar experiences for their students might consider structurally integrating teaching experiences into existing course offerings. For example, student teaching can be a component of courses the way laboratory exercises are. In a way, teaching is a lab experience in which students test hypotheses about what they think will help their audience learn. If the course has many students, the teaching opportunities can be offered as a companion section to a larger, lecture style course common at many institutions. For example, teaching activities can take place in

an experiential “lab” section in which students teach content associated with the lecture portion of the course. Such a section can be placed in the formal schedule of course offerings just like a weekly class meeting to supplement lecture-based instruction (various institutions refer to these scheduled class meetings as “recitation” or “quiz” sections). Recall that students frequently mentioned the professional benefits of teaching, such as acquiring skills, demonstrating what they have learned in their major, and identifying potential career paths. These benefits indicate that undergraduate teaching can be a significant impact as a capstone experience for majors. A few select student comments from this study indicate that experiences like the docent project can enable students to increase their awareness of their own learning (metacognitive awareness), which makes them better learners in subsequent study and employment. Further research is necessary to demonstrate a clear relationship between teaching archaeology and metacognitive strategies appropriate for archaeology.

Conclusions

Higher education has long involved undergraduate students in various teaching roles. There are some documented cases of undergraduate students teaching in archaeology and anthropology, but they are rare. In the case described here students identify some of the benefits of teaching experiences for students, such as better knowing and understanding learners, becoming better at providing explanations, recognizing what learners need in order to learn, and becoming more comfortable in engaging learners, as well as personal/professional benefits. Archaeologists working in higher education who want their students to realize these benefits can provide them with more chances to practice and receive timely feedback on their practice. Archaeologists have created curricula that involve students in field and lab work so that they may learn proper methods and techniques, and to experience how knowledge is generated in our field. Archaeologists who want their students to realize benefits, such as communicating their archaeological knowledge clearly to various audiences, can provide undergraduate students with authentic opportunities to teach what they have learned to others. This approach can be done in museums and in any authentic context where students can use objects and activities to create experiences to connect with learners.

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[1] Redacted copies of student written reflections are on file with the author. Data are housed in accordance with The Pennsylvania State University IRB # 38789.