

AN ABSTRACT FOR THE THESIS OF

Lauren Remenick for the degree of Master of Science in Forest Ecosystems and Society presented on May 26, 2015.

Title: HJA Day Experiences: Understanding Participant Outcomes at a Non-formal Science Education Event

Abstract approved:

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For adult learners to succeed in their educational endeavors, adult educators and event planners must meet their needs and goals (Storksdieck, Ellenbogen, & Heimlich, 2005). The learning environment affects how adults learn and what outcomes they achieve (e.g., Hamilton & Tee, 2010; Knowles, 1990; Lim, Morris, & Kupritz, 2007; Young, 2005), so we can help adults by understanding what a successful learning environment entails. To expand our understanding of how adult learner outcomes are shaped by different learning settings, we performed an exploratory study of a non-formal adult learning event. For the past several years the Long Term Ecological Research Committee of the HJ Andrews Forest has hosted HJA Day, a non-formal science education event, in an effort to educate the public about research and educational programs taking place at the HJ Andrews Forest in southern Oregon. The event has traditionally been well attended, but attendance numbers are no longer adequate to represent a successful event. Data from 76 participants was used to answer four exploratory questions about HJA Day: 1) Who are the participants at HJA Day? 2) What outcomes resulted from HJA Day? 3) What experiences and factors impacted those outcomes? and 4) How are those factors and outcomes

related? A mixed-method approach was used to determine the main outcomes and the factors that affect those outcomes. We found that HJA Day participants attended HJA Day primarily to learn, network, and spend a day in the forest. Participant outcomes were impacted by three main factors: *structural aspects*, *people and networking*, and participants' *teaching/learning style preference*. The main outcomes that resulted from HJA Day were *perceived knowledge gain*, *change in thinking*, *overall appreciation*, and *overall satisfaction*. All three factors both positively and negatively impacted the main outcomes. Most participants agreed that they learned, that HJA Day changed their thinking, that their overall appreciation increased, and that they were generally very satisfied with the event. All main outcomes positively and significantly correlated except for *overall satisfaction* and *change in thinking*. These findings have implications for the improvement of future HJA Day events, and may inform participant experiences at other adult non-formal science education events. By understanding participant experiences and outcomes, we may aid adults in their pursuits of continuing lifelong learning and help to form a scientifically literate population of responsible decision-makers (Miller, 2004).

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HJA Day Experiences:
Understanding Participant Outcomes at a Non-formal Science Education Event

by
Lauren Remenick

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

Presented May 26, 2015
Commencement June 2015

Master of Science thesis of Lauren Remenick presented on May 26, 2015

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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorized release of my thesis to any reader upon request.

Lauren Remenick, Author

ACKNOWLEDGEMENTS

I am forever grateful for those who have helped me through this journey. I would like to thank my parents, Mary Lou and Thomas Remenick, for being supportive throughout my time in graduate school, and always answering the phone when I needed them. I am also grateful to my boyfriend, Andy Maroon, who cooked many dinners when I was too busy to do anything other than schoolwork. I would like to thank my advisor, Christine Olsen, for helping me with this project, from beginning to end. I will always appreciate the help of Lissy Goralnik, who worked with me every week for almost a year to see that this project was thorough and complete. I am also grateful to my committee members and the professors and faculty who helped and informed me along the way - Michael Nelson, Hannah Gosnell, Court Smith, Lina DiGregorio, Mark Needham, Jo Tynon, and Troy Hall. We conducted this research at H.J. Andrews Experimental Forest, which is funded by the US Forest Service, Pacific Northwest Research Station. We gratefully acknowledge research support from the National Science Foundation and Long-Term Ecological Research Committee (LTER6) for award #DEB-0823380. Finally, I would like to thank my friends for getting me out of the office and forcing me to have fun every once in a while - Becca Wolf, Bill Hohenschuh, Erica Walker, Janna Loeppky, and Amanda Grisa. Thank you all.

CONTRIBUTION OF AUTHORS

This manuscript would not be the same without the help of some very appreciated people. Dr. Lissy Goralnik contributed to the organization and flow of the paper. She also guided me throughout the writing process and provoked deep thinking with the qualitative analysis. Sara Gress also contributed to the qualitative analysis by serving as a peer check for the categories and themes, and by helping me with the inter-rater reliability. Dr. Mark Needham worked with me to ensure that the quantitative analysis was correct. Creation of the questions was formed through thoughtful discussions and ideas with Dr. Michael Nelson, Lina DiGregorio, and Dr. Christine Olsen. Christine and Lissy also edited many of the final drafts.

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DEDICATION

I dedicate this thesis to my father, Thomas Remenick, who is an amazing role model, who has never stopped encouraging me, and who continues to support me in all that I do. Thank you for everything, dad.

Chapter 1: Introduction

Adult education in the United States is increasing in demand (Noel-Levitz, 2013). To ensure learner success, event planners, adult educators and higher education institutions need to understand learner experiences and outcomes in various settings (Storksdieck, Ellenbogen, & Heimlich, 2005). Continually seeking new ways to enhance the learning environment and create educational programs that “acknowledge, accommodate, and respect lifelong learners’ needs and interests” (Nesbit, Dunlop, & Gibson, 2007, p. 49) will allow us to aid adults in their pursuits of continuing lifelong learning and create a more scientifically literate population of responsible decision-makers (Miller, 2004).

Adults generally learn to solve a problem or satisfy an interest (Knowles, 1984). As adults are returning to educational programs for their own personal reasons, the difficulty is not in motivating them to care about the material, as it would be for children or younger adults (Wang & Sarbo, 2004), but in crafting a learning environment that takes care of their worries and needs, so that they may meet their learning goals. Often adults turn to non-formal learning programs that offer flexibility and allow them to meet their educational goals while still managing other responsibilities (Noel-Levitz, 2013).

For adult learners to succeed in their educational endeavors, adult educators and event planners must meet their needs and goals (Storksdieck, Ellenbogen, & Heimlich, 2005). The learning environment affects how adults learn and what outcomes they achieve (e.g., Hamilton & Tee, 2010; Knowles, 1990; Lim, Morris, & Kupritz, 2007; Young, 2005), so we can help adults by understanding what a successful learning environment entails. To expand our understanding of how adult learner outcomes are shaped by different learning settings, we performed an

exploratory study of a non-formal adult learning event. We examined an outdoor non-formal one-day science education event, HJA Day, to see what participants experienced, how the environment affected their learning, and what outcomes resulted.

Background

HJA Day is an annual event held at the headquarters of the HJ Andrews (HJA) Experimental Forest in Blue River, Oregon. The HJ Andrews Forest is one of 24 sites that are part of the Long Term Ecological Research Network, created by the National Science Foundation (LTER Network Office, 2015). The goal of the Network is to conduct research that provides information to effectively manage, protect and conserve ecosystems (LTER Network Office, 2015), and the purpose of HJA Day is to showcase the research and educational programs that take place in the HJ Andrews Forest.

Research Problem and Purpose

HJA Day is a one-day, non-formal, outdoor science education event primarily attended by adults. It has been hosted for more than 20 years, and while there is anecdotal evidence about past events, no prior research has examined who participants are and what they experience at HJA Day. For years, attendance numbers and stories have been the indicators of success at HJA Day, but these are not adequate to fully understand participant experiences and outcomes because numbers do not explain experiences. Therefore, we sought to understand who attends HJA Day, why they attend, and what they experience.

HJA Day has similarities to free-choice learning settings, such as science centers, zoos and museums because HJA Day is also attended by adults who chose to spend a day learning in a non-formal setting. Interpretation is a field that studies short-term educational interventions in

the natural world, including parks and museums. Therefore the scholarship offers useful insights into events like HJA Day. As HJA Day is somewhat similar to other non-formal adult learning programs, our findings may be useful as one case to fill in the gaps of current literature on non-formal adult learning and provide relevant information for similar events.

Understanding what contributes to the success of HJA Day is important for three reasons. First, understanding what contributes to the success of HJA Day allows for improvement in future planning. Second, it is important to understand the experiences and outcomes of participants at HJA Day for continuing support of adult learning. Third, it is important to know the factors that make for an effective science education program so we can take steps towards improvement. As the demand for non-formal learning increases (Noel-Levitz, 2013), we need to understand and address participant needs in new and varied learning settings so adult learners may achieve positive outcomes and be successful in their educational pursuits.

HJA Day has no set learning objectives, so the main research questions were exploratory in nature.

- 1) Who are the participants at HJA Day?
- 2) What outcomes resulted from HJA Day?
- 3) What experiences and factors impacted those outcomes?
- 4) How are those factors and outcomes related?

Experiences at HJA Day can be defined as any exposure, awareness or insight of physical, social or mental stimuli. Factors resulting from HJA Day are major experiences that influenced participant outcomes. Outcomes are the products of those experiences and factors at HJA Day.

Chapter 2: Literature Review

In the context of any educational program, it is important to understand at least a little bit about participants in order to meet their needs (Collins, Paisley, Sibthorp, & Gookin, 2012; Wang & Sarbo, 2004). Especially for optional programs that are not required by an academic institution, catering to the needs and goals of learners is important if educational programs want to achieve successful outcomes (Storksdieck, Ellenbogen, & Heimlich, 2005). For instance, Stern and Powell (2013) found that non-formal programs with unsatisfied participants had higher rates of attrition. Adults will simply leave the learning environment if it isn't meeting their needs. This is why it is important to understand the unique needs of adult learners.

Theoretical Background

Adult Learning and the Andragogical Model

Adult learners are adults who participate in a learning process that changes their thoughts, values, or behavior (Cranton, 1992), for personal improvement, interest, or fulfillment (Hansman & Mott, 2000). The andragogical model comprises of six assumptions, each of which have implications for practice (Knowles, 1980):

- 1) Adults need to know the reason for learning something and learn best when they come upon educational gaps on their own
- 2) Experience provides the basis for learning and is used to build and integrate new ideas
- 3) Adults need to be involved in the planning and evaluation of their learning, as they are accustomed to taking responsibility and autonomy in the decisions of their lives
- 4) Adults are most interested in learning topics that have immediate relevance to their work or personal lives

- 5) Adult learning should be problem-centered rather than content-oriented
- 6) Adults are internally motivated to learn because new information can be readily incorporated into their personal and professional lives

The sixth assumption, that adults are internally motivated to learn, implies that adults need to be satisfied with their educational experience in order to remain motivated to learn. The role of an educator is to create a learning environment that is comfortable for the learner both physically and socially (Knowles 1984).

Malcolm Knowles, the “father of andragogy,” defined andragogy as “the art and science of helping adults learn” (Knowles, 1980, p. 43). Benefits of the andragogical model include flexibility, centrality of the learner, and an ability to co-occur with other learning theories (Roberts, 2007). Andragogy is flexible in that it offers broad ideas that can be applied to an adult learning situation, yet is adaptable to a variety of contexts, such as the learning climate, learner age, and learner background. The assumptions can be applied singularly or entirely to the situation as well. DeNoyelles, Cobb and Lowe (2012) found this to be so when they used andragogical concepts to redesign a professional development course. Courses in the study that were redesigned according to Knowles’ assumptions led to greater satisfaction for a variety of adult learners because it balanced autonomy and support, emphasized active participation, acknowledged their prior experiences, shifted from an individual to community-centered approach, and focused on each learner as an active participant in the meaning-making process.

As adults are generally self-motivated and independent, it is fitting that the andragogical model places learners at the crux of the learning situation. With years of experience, adults are poised to use their background knowledge as tools in a new learning environment. Knowles

expounded this by writing, “Andragogy’s core adult learning principles take the learner seriously. They go beyond basic respect for the learner and view the adult learner as a primary source of data for making sound decisions regarding the learning process” (Knowles et al., 1998, p. 183).

Finally, the andragogical model is well suited to merge with other learning theories. Knowles’ formation of the andragogical model was inspired by “the humanistic, pragmatic, and existential frameworks” rooted in a belief of “the fundamental goodness of human beings, their right to self-determination, their almost infinite potential, their latent ability to self-actualize, and their innate ability to learn” (Knowles, 1989, p. 111-112). Taking on a humanist perspective, andragogy fits especially well with other models based on humanistic theory, such as experiential learning theory (Kolb, 1984) and transformative learning (Mezirow, 1978), but it can also merge with other theories because of its flexibility. For instance, the model can be used with pedagogy, “the art and science of helping children learn” (Knowles, 1980, p. 43). Knowles himself recommended that educators of children integrate andragogical concepts as students progress (Knowles, Holton, & Swanson, 1998).

Even dyed-in-the-wool pedagogical instructors have reported that their teaching has become more effective when they adapt some of the andragogical concepts to the pedagogical model; some ways they do this are by providing a climate in which the learners feel more respected, trusted, unthreatened, and cared about; by exposing them to the need to know before instructing them; by giving them some responsibility for choosing methods and resources; and by involving them in

shared responsibility for evaluating their learning. (Knowles, Holton, & Swanson 1998, p. 70)

Though it is used broadly, many have critiqued Knowles' model. The validity of andragogy has been called into question because of the lack of empirical research at its core (Jarvis, 1984). Others have viewed it as incomplete, criticizing it for not integrating other perspectives, for supporting the status quo (e.g. Sandlin, 2005) and lacking in consideration of other cultures, belief systems and ways of knowing (Merriam, Caffarella, & Baumgartner, 2012). Despite the critiques, andragogy remains a useful tool for adult educators and researchers alike.

While andragogy allows for a broad-scale understanding of adult learners, it does not allow examination of the adult learner in detail. The tenets of andragogy explain adult learners in general, but are not specific to certain learning settings. The 3P Model of Teaching and Learning (Biggs, 2003), however, does provide a framework from which we can examine specific aspects of the learning experience.

The 3P Model of Teaching and Learning

Biggs' (2003) 3P Model of Teaching and Learning (Figure 1) allows us to understand how the learning climate affects students' learning processes, providing a straightforward way to examine andragogy in a new, specific setting. While Biggs typically used his model to study formal indoor environments, others have used the 3P model in a variety of learning environments, such as online and collaborative learning settings, and have found it valuable (see Haverila, 2012; Reeves & Freeth, 2006).

The 3P Model of Teaching and Learning comprises of three parts: the presage, process and product (Biggs, 2003). The presage includes those factors that the student and teacher bring

to the learning situation: personal characteristics of the student and situational characteristics created by the teacher. The process is the learner's perception of the situation and, consequently, the learning style that students adopt - either surface or deep learning approaches. The product is the outcome of the learning situation, either external or internal - such as a final grade or student satisfaction.

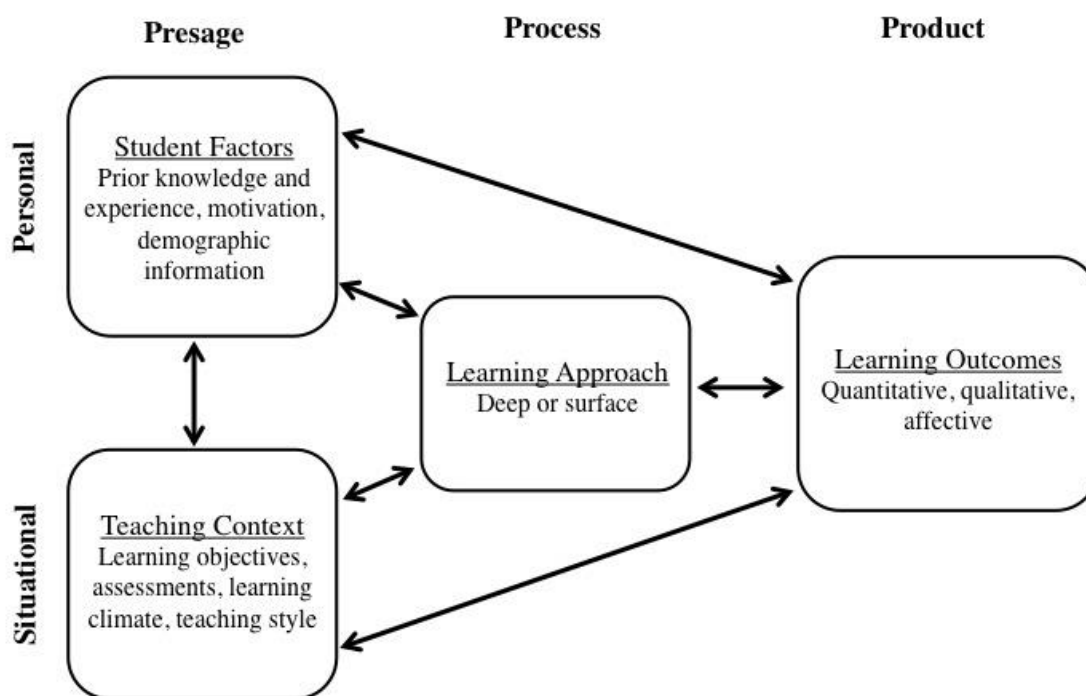


Figure 1: The 3P Model of Teaching and Learning (adapted from Biggs, 2003, p. 19)

Biggs viewed learning as a process in which students gain understanding through interactions between perceptions of their environment and the real world rather than through the steady accumulation of knowledge (Biggs, 2003). In his model, the most important element in

the learning process is not the teacher's intentions for learning but the student's perceptions of the surrounding world (Arenas, 2012). This is an important factor to consider because it dictates how we study the learner and the learning process.

As of 2015 five studies had fully examined the full 3P Model of presage, process and product interactions (Barros, Monteiro, Nejmedinne, & Moreira, 2013; Drew & Watkins, 1998; Hall, Bolen, & Gupton, 1995; Wong & Watkins, 1998; Lizzio, Wilson, & Simons, 2002). However, many studies have examined parts of the 3P model (e.g. Dart, et al., 2000; Duff, Boyle, & Dunleavy, 2004; Lucas & Meyer, 2005; Nijhuis, Segers, & Gijsselaers, 2008), as each section of the model is interrelated with the others (Hamilton & Tee, 2010).

Lizzio, Wilson and Simmons (2002) examined both the presage-process-product model and the presage-product model. By surveying university students, they found that satisfactory teaching (presage) had a positive effect on students' academic success and satisfaction (products). Students who were satisfied with their teachers' characteristics, such as teaching quality and assigned workload, were more likely to positively change their study habits, which had a positive effect on their learning outcomes. Additionally, students' perceptions of their learning environment, assessed by a course experience questionnaire, significantly predicted their overall satisfaction. Their study, later reinforced by other similar studies (e.g. Gray, Stein, Osborne, & Aitken, 2013), shows that a students' perception of his or her learning environment, even more than prior academic achievement, can have a large impact on learning outcomes (Lizzio, Wilson, & Simmons, 2002).

The Role of the Learning Environment

Studies on adults in non-formal learning settings have shown that the learning environment plays a large role in learning outcomes (e.g. Chuan & Barnett, 2012; Clarke, 2007; Singh, 2012; Towler & Dipboye, 2001). Non-formal learning often takes place at science centers, nature centers, academic conferences, and other similar educational settings. Most research on non-formal science education has been on children and college students (Falk, Storksdieck, & Dierking, 2007), however studies that have examined adults at non-formal learning sites found that visitors of sites typically value lifelong learning and leisure activities that include learning (Falk & Heimlich, 2009). These sites also play a role in the public's understanding of science (Bell, Lewenstein, Shouse, & Fedler, 2009), as many people gather science information from a variety of places and contexts for various reasons (Falk, Storksdieck, & Dierking, 2007).

Falk, Storksdieck and Dierking (2007) suggested that before attempting to communicate science, it is important to understand the learner's background - what they are interested in, where they care to learn about science, and how they remain engaged in lifelong learning. Wang (2003) suggested that educators should be as knowledgeable about adult learners as they are about their teaching material. Knowing a bit about the learner allows educators to communicate more effectively, as most of the learning that takes place in adulthood is because of a need, motivation or personal interest (Falk, Storksdieck, & Dierking, 2007; Knowles, 1980). To solve this problem or satisfy their interest, many adults turn to non-formal learning settings (Falk, Storksdieck, & Dierking, 2007). Because of this, non-formal has been cited as influential in not only lifelong learning (Singh, 2012) but also human development (Ololube & Egbezor, 2012).

Research on the importance of the physical environment, specifically in adult learning and satisfaction, largely comes from disciplines such as interpretation studies at nature centers and tourism studies at museums and science centers. In a meta-analysis, Skibins, Powell and Stern (2013) found that the top studied outcome of interpretation programs is knowledge gain. In the non-formal setting, it may be more pertinent to examine *perceived* knowledge gain, as the public's understanding of science comes from a multitude of information sources that overlap and are built on throughout one's lifetime (Falk, Storksdieck, & Dierking, 2007). It is hard to assess if what the learner knows after a nonformal learning intervention can be directly attributed to that event or to a compilation of that learning plus other learning activities. Knowles (1980) acknowledged this by saying that adults come from different backgrounds and learn best when they integrate new information with prior knowledge. He also asserted that adult learners are most motivated to learn based on internal motivations, including perceived learning and personal satisfaction (Knowles, 1980). Therefore, understanding how perceptions of learning relate to satisfaction is an important component of understanding adult learning.

Satisfaction is an important aspect of a student's learning experience because students who are most satisfied with their educational experiences are most likely to succeed (Noel-Levitz, 2013). Authors of the National Adult Learners Satisfaction-Priorities Report recommended that institutions be aware of the reasons for which students attend their programs, as well as the factors that facilitate greatest student satisfaction (Noel-Levitz, 2013). Educational institutions can use this information to their benefit by using student satisfaction ratings to improve weak areas in their programs, boost student retention, and foster student success (Noel-Levitz, 2013).

Adjusting the physical environment of an educational program is one simple way to increase student satisfaction. The physical environment is common to all participants and has an effect on students' learning outcomes (Brooks, 2011; Falk, 2004; Knowles, 1980). In instances where there is no interpreter and learning is self-guided, the program structure and learning environment become a major aspect of learning. Falk (2004) found that visitor learning was strongly influenced by how successfully visitors were able to orient themselves within the space. Similar to Fulton (1991) and Stern and Powell's (2013) studies on non-formal learning environments, Falk found that a multitude of program factors rather than one single factor influenced visitor learning.

In addition to the learning environment, research has suggested that learning can be enhanced through active participation (Clark & Mayer, 2008), enjoyment, and entertainment in the learning process (Eckleberry-Hunt & Tucciarone, 2011; Svirko & Mellanby, 2008). For example, a study on morning conference reports at a medical facility (Jerardi, et al., 2013) compared the impact of an entertaining and participatory hands-on format to those with a traditional format on knowledge gain, engagement, and satisfaction. The hands-on format included multimedia, participation, and faculty facilitation while the traditional format used PowerPoint lectures. Learners of the hands-on format were more satisfied, engaged, and retained more knowledge than learners of the traditional format. While presenters of the hands-on format used a variety of creative methods to create their presentations, it did not take them more time to create or prepare their presentations than it did for the traditional format presenters (Jerardi et al., 2013). As if to reaffirm the andragogical model, this shows that the benefits of active, participatory teaching include greater learner engagement, satisfaction, and knowledge gain.

Grow's (1991) Staged Self-Directed Learning Model also examines the effect of learning styles on learner outcomes. In his model, Grow suggests that as students age, they become more self-directed in their learning. As learners advance through stages of increasing self-direction, teachers can help or hinder development. Teaching is situational and the style of teaching should be matched to the students' readiness to learn. There are four stages, in which the teacher and learner vary their methods of rigidity and dependence. In the first stage, the teacher is like a sports coach, teaching by using behavioral methods and meticulousness. Here the learner is dependent on the teacher to succeed, and needs constant affirmation. Contrast that to the fourth stage, where teachers are mentors and facilitators, simply checking in to ensure that students are following a positive path of learning. Learners here are primarily self-directed and need little guidance in the learning process (Grow, 1991).

The main point to take from the Staged Self-Directed Learning Model is that mismatches in teacher and student stages can be detrimental. A stage one teacher and a stage four student will clash and be less likely to increase learning outcomes because the student will be ready to take on self-directed tasks and feel held back by the teacher who is providing lots of structure (Grow, 1991). Therefore, it is important to gauge students' autonomy in learning before crafting a program with a certain teaching style.

Not only does the teaching style impact the learner, but other characteristics of the presenter matter too. Both verbal and nonverbal cues from the speaker can impact a learner's motivation to learn (Baylor, 2011) and learning outcomes (Chesebro, 2003; Lin, Atkinson, Chrispherson, Joseph, & Harrison, 2013; Madin & Fenton, 2004). Benton (2009) found that communication techniques such as stories, anecdotes, and imagery have a positive influence on

the learner's long-term memory. Similar to Stern and Powell (2013), Finn et al. (2009) found that speakers contribute to learner satisfaction by exhibiting organization, connection, consistency, clarity and credibility. However, Stern and Powell (2013) cautioned that not every element that related to participant satisfaction was necessary for positive outcomes (as did Fulton, 1991). Rather, presenters that used a couple of the positive elements were more likely to be favored than those that used less favored elements, such as impatience, fact-based messaging, and poor pacing. Program attrition resulted from speakers who responded poorly to the participants, were inaudible, and lacked confidence (Stern & Powell, 2013).

To understand how the learning environment and interpretation practices influenced adult learner outcomes, Stern and Powell (2013) examined the characteristics that led to positive outcomes for visitors. They found that presenters made a large impact on visitor satisfaction. Visitors were most satisfied and appreciative when they perceived interpreters to be confident, authentic and charismatic. False assumption of the audience by the interpreter inversely related to visitor satisfaction and visitor experience and appreciation. Interpreter formality was also negatively related to visitor experience and appreciation. Their study showed that visitors' perceptions of the learning environment has a large impact on multiple outcomes, including positive experience, satisfaction and appreciation. Therefore, it is important to understand the environment that adults learn best in because successful learning by adults is dependent on the learner's appreciation of the learning environment (Mala-Maung, Abdullah, & Abas, 2011). Furthermore, Mala-Maung, Abdullah and Abas (2011) found that providing a learning environment with adequate resources can enable higher-order learning skills that last through adulthood, promoting lifelong learning.

While the learning environment is an important element of learning outcomes, other elements may be equally important, such as the learning community. Crowther, Maclachlan and Tett (2010) performed a study on adults enrolled in literacy education programs. Through interviews with learners, the researchers found that students' appreciation of others and their feeling of being appreciated led adult learners to academic success, even in a difficult learning environment. Lim, Morris and Kupritz (2007) also found that a learning community, in which students shared their thoughts and emotions, allowed a sense of appreciation that led to positive student satisfaction and learner outcomes.

Chapter 3: Methods

Data Collection

This exploratory study used qualitative and quantitative analysis of a survey to understand the experiences and outcomes of participants at HJA Day. We used pre- and post-HJA Day surveys: the pre-HJA Day survey took approximately five minutes to complete and consisted of thirteen questions, most of which informed us about the participant; the post-HJA Day survey took approximately ten minutes to complete and consisted of eighteen questions. The post- survey asked participants about their learning style preference and experiences, their satisfaction with the fieldtrip presenter and structure, and about their perceived outcomes.

The major outcomes for the study were *perceived knowledge gain, overall satisfaction, overall appreciation and change in thinking*, while the factors that impacted those outcomes were satisfaction with the *fieldtrip structure* and satisfaction with the *fieldtrip presenter*. One question on the questionnaire measured satisfaction with the *fieldtrip structure*, and two questions measured satisfaction with the *fieldtrip presenter*. These questions came from a combination of survey questions from previous studies (Needham, 2010; Stern and Powell, 2013). On a five-point scale, which ranged from 1 “very dissatisfied” to 5 “very satisfied,” participants were requested: “Please rate your experience with the following elements of the afternoon field trip.” Sixteen items were listed for participants to rate. Six of the items were directly related to *fieldtrip structure* (i.e., “Time of day” and “Number of participants”), and the remaining ten items were directly related to the *fieldtrip presenter* (i.e., “Visuals or graphics used” and “Professionalism of the speakers”). The second question on the questionnaire used to measure satisfaction with the *fieldtrip presenter* was “To what extent do you agree or disagree

with each of the following statements about the afternoon field trip?” This question came from Needham (2010), and consisted of four items on a five-point scale (i.e. “The speakers’ presentations were interesting.” and “The speaker effectively explained complex issues.”), which ranged from 1 “strongly disagree” to 5 “strongly agree.”

Two questions on the survey measured *perceived knowledge gain*, which came from Stern and Powell (2013) and Needham (2010) respectively. The first asked, “To what extent did HJA Day influence any of the following for you?” of which two items referred to *perceived knowledge gain* (“Increased my knowledge about programs at the Andrews Forest” and “Increased my knowledge of specific scientific topics”) on a five-point scale ranging from 1 “not at all” to 5 “a great deal”. The second question was labeled “Final thoughts:” and listed statements on a five-point scale ranging from 1 “strongly disagree” to 5 “strongly agree”. The item corresponding to *perceived knowledge gain* stated, “I learned something new at HJA Day.”

Change in thinking was measured from a 5-point scale, which ranged from 1 “strongly disagree” to 5 “strongly agree” for the statement, “HJA Day 2014 changed the way I think about:” followed by eight items (i.e., “The complexity of problem-solving” and “My field trip topic”). This question was created after examination of interpretation and environmental education literature.

Two questions measured *overall appreciation*, at the request of those funding the study. The first question asked, “To what extent did HJA influence any of the following for you?” followed by four items on a five-point scale ranging from 1 “not at all” to 5 “a great deal”. Two of those items gauged participants’ appreciation (“Enhanced my appreciation of the Andrews Forest” and “Enhanced my appreciation for the Long-Term Ecological Research program”). The

second question stated, “As a result of participating in HJA Day 2014, I gained an appreciation of:” followed by six items (i.e. “HJ Andrews Forest” and “Researchers”) on a five-point scale ranging from 1 “strongly disagree” to 5 “strongly agree”.

The final outcome, *overall satisfaction*, was measured using a single item question, “Overall, how satisfied are you with your experience at HJA Day 2014?” on a five-point scale of 1 “very dissatisfied” to 5 “very satisfied.”

All participants were asked to complete an online Qualtrics questionnaire after registration, then sent a reminder email a week before the event and invited to complete the survey in-person before vans departed the day of the event. We implemented post-HJA Day surveys at the networking activity at the end of the event and gave a LTER lapel pin to in-person participants for completing the survey. Participants could also take the survey on the van ride back or online after the event. We sent links to the survey via email a few days after the event, then again one week after the event.

One hundred and thirty six people attended the event, and 76 pre- and 76 post- surveys were gathered for a response rate of 56% for each survey. Most participants took the pre- survey online (63%) and the post- survey on paper (65%). Presenters made up 16% of pre- survey respondents and 13% of post- survey respondents, while participants made up 84% of pre- survey respondents and 87% of post- survey respondents.

Though we used all surveys for frequency analysis, we removed presenter responses for subsequent analysis. A Mann-Whitney U test determined that presenter experiences at the event differed from participant experiences. The analysis showed that one of the main outcomes, *change in thinking*, significantly differed ($U = 137.00$, $p = .02$, $r = .25$, standardized test statistic

= -2.42) between presenters ($n = 9$, $M = 3.75$, $SD = .36$) and participants ($n = 61$, $M = 3.30$, $SD = .60$). Because of the significant difference in responses between presenters and participants for a main outcome, we concluded that it was necessary to remove presenters from subsequent analyses. We also removed one survey of a participant under 18.

A Mann-Whitney U test also compared answers between participants who filled out both the pre- and post- survey and those who only filled out the post- survey. We wanted to determine whether we had primed respondents to think differently about the post- survey by giving them a pre- survey before the start of the event (Parkin, 2008). For instance, the pre-survey may have made participants more aware of certain learning styles or their connection to the HJ Andrews Forest. However, no major variables statistically differed between the pre- and post- survey takers ($n = 33$) and the post- survey takers ($n = 43$). Furthermore, responses were statistically similar enough to conclude that pre- survey responders did not differ statistically from post-survey responders. We then decided that pre- survey responses could be used in conjunction with post- survey responses to inform our study in a way that furthers our knowledge of participants at HJA Day. For instance, we could use demographic information gathered from the pre- survey to inform participant outcomes gathered from the post- survey.

Finally, we checked for differences in the pre-survey between those participants who had previously attended HJA Day ($n = 28$) and those who had not ($n = 46$). Out of 14 variables, only two were significantly different. Age ($U = 948.00$, $p = .001$, $r = .37$, standardized test statistic = 3.39) and a preference for hands-on learning ($U = 465.00$, $p = .043$, $r = .22$, standardized test statistic = -2.03) varied between the groups. New participants ($M = 36$, $SD = 15.30$) were

statistically younger than returners ($M = 48$, $SD = 13.95$) and new participants ($M = 3.96$, $SD = .96$) indicated that hands-on learning was more helpful than did returners ($M = 4.38$, $SD = .86$).

This study was approved by the Oregon State University Institutional Review Board (#6313). A unique identifier was created for each participant. Only the main researcher and principal investigators had access to the completed surveys. A public report was created after removing identifiers in comments and surveys were safely stored.

Data Analysis

Analysis used qualitative and quantitative techniques. Qualitative data was collected from eleven open-ended questions from the post-survey (Table 1). We determined themes in the data by using summative and conventional content analysis (Hsieh & Shannon, 2005) using NVivo as an initial aid to full immersion into the content of the data. Summative content analysis is the use of word repetition counts to determine key words within the data (Hsieh & Shannon, 2005).

Table 1: Open-ended questions used in qualitative analysis

Open-ended Questions

What sections of HJA Day did you attend? Comments?

Why did you join that specific afternoon fieldtrip?

Please rate your experience with the following elements of the afternoon fieldtrip. Comments?

Do you have any comments for the speaker?

Please rate your experience with each session. Comments?

Please describe an experience of the activities listed below [e.g. self-guided reading or visual, lecture or presentation, small group discussion] that you encountered at HJA Day.

Did your experience at HJA Day spark, draw upon, or inspire any of the following [e.g. curiosity, emotional connection, past experience, personal relevance] for you?

How can we enhance your experience at HJA Day?

What other topics would you like to see covered at HJA Day?

As a result of participating in HJA Day, I gained an appreciation of:

Do you have any other thoughts about HJA Day?

Peer debriefing and co-coding with another researcher took place throughout the analysis process, and peer checks established credibility (Hsieh & Shannon, 2005). We followed Hsieh and Shannon's (2005) explanation of using conventional content analysis to find themes and create a codebook. We read participant comments multiple times, noting key words in the margins (Ryan & Bernard, 2003), then clustered key words in groups based on similarities and repetitive language. We examined each group closely to ensure that comments were in the right group, and then rearranged and condensed groups by examining similarities until the final themes emerged (factors, outcomes, and participants' backgrounds) and we achieved theoretical

saturation. We then examined the relationships between the themes using latent content analysis (Holsti, 1969) and created a representative graph (Figure 2). Finally, we created a codebook to explain each theme with a definition and a “typical” example.

Following the methods described by Kurasaki (2000), we used the codebook to determine inter-rater reliability. A peer coded 25% of the comments from each question using the codebook as a guide. The main researcher then compared her own coding with the peer researcher’s and created a percentage of inter-rater reliability by creating a ratio of similar codes to different codes. The resulting reliability was 88%. This is an acceptable reliability score, according to Neuendorf (2002), who states that a reliability of 90-100% is universally acceptable, 80-89% is generally acceptable, and 70-79% is debatable.

We analyzed quantitative data using the Statistical Package for Social Sciences (SPSS) version 20. We initially used face validity to group items into variables, then performed an analyses of reliability to ensure internal consistency with the five factors of interest before computing them from the various items of the survey instrument.

A reliability analysis performed on each of the five computed independent variables of interest (*fieldtrip structure*, *fieldtrip speaker*, *change in thinking*, *overall appreciation*, and *perceived knowledge gain*) determined they were reliable based on a .65 cut-off (Cronbach’s Alphas = *fieldtrip structure* 0.86; *fieldtrip presenter* .93; *change in thinking* .87; *overall appreciation* .88; and *perceived knowledge gain* .66). We deleted the item “The speakers were biased (one-sided) in the information provided,” from the *fieldtrip presenter* construct and deleted “HJA Day reminded me of something I had not thought about in a while,” from the

change in thinking construct because of low corrected item-total correlation values and an increase in reliability if deleted. We did not delete any other items from the other constructs.

The research questions for this study were correlational in nature. Therefore, we used a Spearman rho correlation analysis to determine the relationships between the outcomes and factors: *fieldtrip structure*, *fieldtrip presenter*, *perceived knowledge gain*, *change in thinking*, *overall appreciation* and *overall satisfaction* of attendees at HJA Day. Because of the small population size and sample number, we used non-probabilistic sampling in this study. Therefore we make no attempt to generalize the findings beyond the scope of the participants in this study.

Site Description

The HJ Andrews Experimental Forest was established in 1948, serving as a site of major research contributions to the advancement of environmental science, management, policy, and education. In 1980, the HJA became one of 26 ecosystem research sites funded through the National Science Foundation's Long-Term Ecological Research Program. The HJA Program now consists of a multifaceted, interdisciplinary group of researchers from around the world with more than 85 research projects underway in any given year. Educational programs exist for all ages including K-12, undergraduate and graduate students, and continuing education for natural resource managers and public. The HJA has a vibrant professional development program that focuses on expanding middle and high school teachers' capacity to engage their students in field investigations of the environment. HJA Day showcased this work.

Study Site

HJA Day 2014 was open to anyone interested, up to about 130 participants. Participants met at Oregon State University in the morning to load into vans for the two-hour trip to the

forest. Refreshments were provided upon arrival, and the lead principal investigator gave a welcome speech. The morning was organized into several brief sessions for participants to better understand the many research and educational programs taking place in the forest; participants signed up for one of four afternoon fieldtrips.

Participants spent 20 minutes at each of the four morning sites:

- **Fun with Long-Term Measurements (seriously!):** Large hanging posters about long-term ecological measurements were displayed in a small clearing in the woods. Two presenters spoke to participants about long-term research on snowpack. The presenters asked participants to think about the information, what it might mean for the future, and encouraged discussion among other participants.
- **Pollinators:** Using radio-frequency identification devices to measure pollinator movement in the Andrews Forest meadows: Participants were gathered around a table of flowers and instruments in an open field, where two presenters explained their hummingbird research. One presenter held a line of string attached to a hummingbird trap about fifteen feet away as a visual explanation of how the hummingbirds are caught and tagged in the study.
- **Sound, smoke, and swishing rotors:** New ways of detecting climate change in the Andrews Forest: In an open area surrounded by woods, two presenters explained the use of large technical instruments in climate change research. Participants were given time to examine each instrument and question presenters.
- **Interdisciplinary Exhibit: Art, History, Writing, Cyberforest:** The last session was an indoor poster session. Posters displayed both research and artwork that took place in

the HJ Andrews Forest. Participants were encouraged to walk around and read the posters, but some artists and researchers were present to converse with as well.

Presenter styles varied at each site and included hands-on activities, large group discussion, small group discussion, presentations and group work. At the end of the morning sessions, participants sat down to a catered lunch before being separated again for the fieldtrip.

The fieldtrip choices were:

- **Discovery Trail - The Forest as a Teacher:** Participants to heard and experienced how visitors of all ages engage and learn from the forest on a short, level walk along to the Discovery Trail through a patch of old-growth and plantation forest. An education coordinator and high school teacher led the group in discovery and experiential learning and shared examples of how Oregon high school students engage with Andrews Forest research. A veteran Andrews Forest scientist shared how students, creative writers, and other citizens encounter the forest and gather progressively deeper insights. Participants were invited to share their own insights and observations.
- **Forest Detectives:** Forest scientists have many tools and methods to evaluate forest history and productivity. Participants cored trees, and examined soil and LIDAR data to characterize the disturbance, succession and growth history of a forest, its soil characteristics and their relation to productivity, structure and phenology. New instruments were shown that can used to characterize forest structure, productivity and phenology.

- Live Streaming Ecology (without the internet) - Exploring Stream Ecology in Headwater Ecosystems at the Andrews Forest: Andrews Forest scientists and graduate students shared some of the methods used to quantify ecological processes in stream ecosystems and asked participants questions about how characteristics of the riparian forest can influence streams. Activities included brief examples of sampling methods to assessing metrics in headwater streams, such as invertebrates communities, stream light, stream nutrient demand, fish and salamander abundance, and primary production.
- Ecological Forestry - A New Paradigm: On this field trip, participants gained firsthand experience with different forest management practices and talked with leading foresters and scientists about the pros and cons of ecological forestry. Both participants and presenters discussed their values and ethics about managing Oregon's important forest resources.

Three of the four fieldtrips used a bus to go deeper into the woods than the morning sessions allowed, except for the Discovery Trail - The Forest as a Teacher group, which remained near the main headquarters. Presenters used various teaching methods including hands-on activities, large and small group discussion, presentations, and group work. After the fieldtrip, the groups returned to the headquarters for refreshments, snacks, and networking. Vans to campus departed both before and after the networking.

Chapter 4: Results

Results are organized into four sections to follow the four research questions: 1) Who are the participants at HJA Day? 2) What outcomes resulted from HJA Day? 3) What experiences and factors impacted those outcomes? and 4) How are those factors and outcomes related?

HJA Day Participant Identity

Participants of HJA Day are unique in that they are adults who are able to take a whole day during the workweek to attend this event. The pre-HJA Day survey revealed that the majority of participants are closely linked to the scientific field. When asked about their connection to the Andrews Forest, respondents indicated that they are researchers (34%), Oregon State University faculty or staff (30%), HJ Andrews field crew (20%), LTER personnel (18%), students (18% undergraduate; 12% graduate), and/or forestry personnel (12% Region 6 National Forest staff; 11% Pacific Northwest Forest Science Lab). Participant ages ranged from 19 to 81 years old, with an average age of 41. Fifty-seven percent of participants were female and 43% were male.

When asked why they registered for HJA Day, most participants (85%) answered that they attended to learn about or stay up to date on the research and education programs performed at the HJ Andrews Forest. Seventy percent of participants wanted to network with other participants or researchers, 66% wanted to spend time in the forest or enjoy a day in nature, and 27% wanted to receive free lunch and snacks. Other respondents, such as HJA Day presenters and organizers, indicated that they were attending for work purposes.

Most participants had never previously attended HJA Day (64%). However, 26% had been up to ten times, and 9% of participants had previously participated in 11 or more HJA Day

events, constituting a substantial portion of participants who are regular attendees. Though most participants had never attended HJA Day, 60% of the new HJA Day participants indicated that they had previously visited the forest. Participants' reasons for visiting was mostly to perform research in the forest (57%), visit the forest (36%), or participate in another program (34%). Therefore, many of the participants were already acquainted with the LTER program and/or HJ Andrews Forest.

We also explored participants' backgrounds qualitatively. Through open-ended questions, we discovered three categories regarding participants' backgrounds that impacted their appreciation and learning outcomes at HJA Day: *personal interest*, *work / research relevance* and *a connection to the Andrews*. Participants' comments about their personal interests generally revolved around a love of learning, usually about science and research.

Many respondents commented that the information presented at HJA Day was relevant to their work or research. When asked if HJA Day drew on past experience, personal relevance, or practical application for participants, responses included, "Relevant to my work/research," and "The Discovery Trail was relevant for any work I do in conservation education." Participants often chose a certain fieldtrip based on its usefulness and similarity to their work. Many respondents wrote about their connection to the material, and that they were looking for information to inform their work. For example, "I do primarily aquatics research so I was interested in learning about the tools that scientists use to study terrestrial environments," and "I work with elementary and middle school students during various outdoor events. So I wanted to get some new ideas."

The third category, *a connection to the Andrews*, showed a strong connection between some participants and the HJ Andrews site, which impacted their experience at HJA Day. Twenty-one percent of participants had attended HJA Day for 3 or more years, and a majority had visited the HJ Andrews Forest in the past (as noted above). In addition to this continual interaction with the Andrews Forest, we found that many participants are strongly connected to the HJA site and/or the LTER program. When asked if any of the sessions at HJA Day stirred emotion in participants, respondents answered, “Long term connection with HJA,” “Worked here a long time,” and “It definitely mined my emotional connection to the forest and the program.”

In addition to participants’ intentions for attending HJA Day, we asked participants about their intentions for choosing their specific fieldtrip. Three distinct reasons emerged: *structural aspects*, *work / research relevance*, and *people*. Comments ranged from actively seeking a specific aspect of the fieldtrip such as “Sounded like the most interesting hands-on and challenging forest terrain. I was looking forward to scrambling in the woods including challenging terrain. Loved it,” to passively choosing the fieldtrip because of a friend or family member such as, “Tagged along with a friend.”

Finally, we asked participants about their learning style preference. In the pre-HJA Day survey, participants were asked to “Indicate how helpful the following teaching styles are to you when learning new material,” with possible learning styles listed (Table 2). We had hoped that this would serve as a way to understand what participants were looking for in their learning experience. Participants reported that hands-on participation and lectures were most helpful for learning new material; large group discussion was reported as least helpful. This gathering of

information about participant’ backgrounds, preferences and personal choices allowed us to more fully understand participant experiences and outcomes.

Table 2: Helpfulness of teaching styles (in percentages)

	Extremely or Very	Moderately	Slightly or Not at all
Hands-on Participation	81	12	7
Lecture or Presentation	65	28	7
Small Group Discussion	65	23	12
Self-guided Reading or Visual	48	41	12
Group Work	41	38	22
Large Group Discussion	23	39	37

HJA Day Outcomes

We sought to determine what participant outcomes resulted from HJA Day. Outcomes for participants at HJA Day included *perceived knowledge gain, change in thinking, overall appreciation and overall satisfaction*.

Perceived Knowledge Gain

Perceived knowledge gain was one major outcome from HJA Day. Comments referred to participants’ statements about learning. Examples included, “So many facts and so much cool information! Just walking around and hearing about things from different people was awesome. I learned so much!” and “I learned a lot!” Participants often commented on how they could use the knowledge that they learned at HJA Day in some aspect of their life, often because their work

and research related to the information presented. For instance, “I will use some of what I learned to inform my work,” and “I can use many of the ideas presented.”

Three questions were used to gauge participants’ *perceived knowledge gain* (Table 3). Participants most agreed with the statement, “I learned something new at HJA Day,” (95% agreed or strongly agreed) and least with the statement “HJA Day increased my knowledge of specific scientific topics,” (68% indicated a great deal or a moderate amount). Examination of the three variables that compose knowledge gain suggests that participants learned at HJA Day ($M = 4.22$, $SD = .69$).

Table 3: Perceived knowledge gain

Item	Percent agree or strongly agree	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach’s alpha (α)
I learned something new at HJA Day. ²	95	3.87	1.00	.40	.65	
Item	Percent responded “A great deal” or “A moderate amount”	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach’s alpha (α)
HJA Day increased my knowledge about the programs at the HJ Andrews Forest. ³	89	4.42	.72	.49	.55	
HJA Day increased my knowledge of specific scientific topics. ³	68	3.90	.78	.55	.46	
Perceived Knowledge Gain		4.22	.69			.66

² Means based on a 5-point scale from 1 = “Strongly disagree” to 5 = “Strongly agree”.

³ Means based on a 5-point scale from 1 = “Not at all” to 5 = “A great deal”.

Change in Thinking

A change in participants' thinking was the second major outcome in the quantitative data that resulted from HJA Day. Only one comment was made about participants' *change in thinking*: "Am 64, so one day's experience won't much affect how I view science, etc." However, we asked multiple questions about participants' change in thinking (Table 4). Participants agreed most with the statement, "HJA Day changed the way I think about my fieldtrip topic," (61% agreed or strongly agreed) and least with the statement, "HJA Day changed the way I think about my behavior," (15% agreed or strongly agreed). Participants generally agreed that their thinking changed at HJA Day ($M = 3.36$, $SD = .59$).

Table 4: Change in thinking

Item	Percent agree or strongly agree	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach's alpha (α)
HJA Day changed the way I think about the complexity of problem-solving. ²	42	3.24	.87	.58	.85	
HJA Day changed the way I think about the connection of science with policy. ²	39	3.21	.87	.56	.86	
HJA Day changed the way I think about forest management. ²	47	3.41	.88	.67	.84	
HJA Day changed the way I think about my fieldtrip topic. ²	61	3.64	.85	.64	.85	
HJA Day changed the way I think about my behavior. ²	15	2.90	.58	.52	.86	
HJA Day changed the way I think about past knowledge. ²	39	3.21	.85	.57	.86	
HJA Day changed the way I think about research. ²	53	3.45	.88	.67	.84	
HJA Day changed the way I think about science. ²	48	3.41	.97	.75	.83	
Change in Thinking		3.36	.59			.87

² Means based on a 5-point scale from 1 = "Strongly disagree" to 5 = "Strongly agree".

Overall Appreciation

Throughout the survey, many participants wrote "Thank you," along with some reason or exclamation of a positive experience. Comments generally encompassed multiple aspects of participant enjoyment, including "Amazing food and hospitality. Thank you so much for sharing

HJA Day with us,” “I am in love with HJA. I truly enjoyed every minute of my experience there. Thank you!” and “Thank you! For a fun, educational time and a change to talk to all kinds of interesting people.” Participants also answered several questions about their appreciation of the event (Table 5), and agreed most with the statement, “As a result of participating in HJA Day, I gained an appreciation of the HJ Andrews Forest,” (96% agreed or strongly agreed). They agreed least with the statement, “As a result of participating in HJA Day, I gained an appreciation of nature” (80% agreed or strongly agreed). In general, participants felt that HJA Day increased their overall appreciation ($M = 4.27$, $SD = .63$).

Table 5: Overall appreciation

Item	Percent agree or strongly agree	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach's alpha (α)
As a result of participating in HJA Day, I gained an appreciation of the HJ Andrews Forest. ²	96	4.46	.62	.76	.86	
As a result of participating in HJA Day, I gained an appreciation of research conducted at the HJ Andrews Forest. ²	93	4.31	.65	.78	.86	
As a result of participating in HJA Day, I gained an appreciation of researchers. ²	89	4.21	.67	.64	.87	
As a result of participating in HJA Day, I gained an appreciation of research topics covered at HJA Day. ²	92	4.23	.59	.73	.87	
As a result of participating in HJA Day, I gained an appreciation of nature. ²	80	4.16	.84	.54	.89	
Item	Percent responded "a great deal" or "a moderate amount"	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach's alpha (α)
HJA Day enhanced my appreciation for the Andrews Forest site. ³	81	4.20	1.03	.67	.87	
HJA Day enhanced my appreciation for the LTER program. ³	81	4.20	1.00	.77	.86	
Overall appreciation		4.27	.63			.88

² Means based on a 5-point scale from 1 = "Strongly disagree" to 5 = "Strongly agree".

³ Means based on a 5-point scale from 1 = "Not at all" to 5 = "A great deal".

Overall Satisfaction

Many comments indicated enjoyment with the day as well, such as “Another fantastic day at the site and in the field,” “A valuable endeavor,” and “Very good experience. Super glad I came.” Overall, participants were very satisfied with their experience at HJA day, with 93% indicating that they were satisfied or very satisfied (Table 6).

Table 6: Overall satisfaction

Item	Percent satisfied or very satisfied	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach's alpha (α)
Overall satisfaction	93	4.44	.71			

¹ Means based on a 5-point scale from 1 = “Very dissatisfied” to 5 = “Very satisfied”.

HJA Day Factors

Our analysis showed that the main factors that enhanced or diminished participant outcomes clustered around three topics: *structural aspects*, *people and networking*, and a *teaching and learning style preference*.

Structural Aspects

Structural aspects of the event emerged as a major factor of the overall HJA Day experience. This factor comprised three categories: *organization*, *content*, and *food*. Positive comments in the *organization* category generally used the words *organization* and *balance* to describe the structure of the day. The organization of HJA Day has changed in recent years, from a day of many brief sessions to a day of fewer in-depth sessions. This new organization has both benefits and drawbacks, as reflected in participants' comments. Often, comments referred to *time* or *length* of an activity or session. For example, “I was in forest detectives and felt the sessions

were informative and the right length.” Comments about the van ride were also included in the *organization* category, such as “Van ride was on-time, comfortable, and reasonable length.”

The structure and timing of various parts of the event were also an issue for some participants. Negative comments about the *organization* indicated issues with timing of activities, discussion, or networking, the need for a theme, and how those with physical needs are affected by the structure of the day. For example, “Was the time after field trips specifically for networking? Somehow I never picked up on that.” Comments about the van ride also fit into this category, such as “Going down to HJA with 8 people in the van felt more comfortable than coming back with 12 people. Not only in a physical comfort way, but also in the ability to have/enjoy conversations with others in the van.”

Content was the second category within the *structural aspects* factor. The content of information presented at HJA Day was a major aspect of the event. Organizers had the task of choosing what research and programs at the HJ Andrews Forest speakers should present, and also choosing information that would be interesting and useful to participants. Depending on participants’ goals and interests, too much or too little of certain information could sway participants’ overall satisfaction of the event. Comments often referred to a topic presented at HJA Day, such as *soil pit*, *streams*, *art*, and *pollinators*. For instance, “The dye in the streams was really cool!”

Alternatively, some participants indicated dissatisfaction with the amount and type of content provided. Comments frequently referred to the desire for *more detailed information* or *broader information*. For instance, “While I enjoyed the morning sessions, I thought they were a little bit 'scaled back' in terms of density and complexity of information.” Often, requests for

more detailed information specifically stated a desire for *more discussion*, such as, “More discussion of data collected and results. Discussion of results and implications is interesting.” Requests for certain topics often centered on *social and ecological integration*. These comments focused on the desire to learn more about how ecological research is informing social issues.

The third category in the *structural aspects* factor was *food*. There were multiple times at the event when food was available. Refreshments were provided at the start of the event, lunch took place in the middle, and snacks were offered at the end of the event. Comments referred to *food, lunch, snacks* or *catering*. For example, “The lunch was very tasty.” No negative comments were made about the food at HJA Day.

In addition to the comments about the structure of the day, we asked participants about their satisfaction with certain aspects of the fieldtrip structure. We then created a new variable, *satisfaction with fieldtrip structure*, from the results of these questions. Table 7 displays the percent of participants who were very satisfied or satisfied with the fieldtrip structure, as well as results from the reliability analysis. The ability to see was the most highly rated aspect of the fieldtrip structure, with 95% of participants being satisfied or very satisfied. The number of participants in the fieldtrip group was the lowest rated item, with 77% of participants being satisfied or very satisfied. Some comments reflected this, such as participants requesting that the fieldtrip group be split in two.

Table 7: Satisfaction with fieldtrip structure

Item	Percent satisfied or very satisfied	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach's alpha (α)
Time of day ¹	89	4.44	.69	.81	.80	
Climate ¹	86	4.24	.74	.53	.86	
Length ¹	93	4.29	.69	.83	.80	
Number of participants ¹	77	4.21	.66	.61	.84	
Organization ¹	90	4.37	.79	.58	.85	
Ability to see ¹	95	4.40	.64	.57	.85	
Satisfaction with fieldtrip structure		4.32	.55			.86

¹ Means based on a 5-point scale from 1 = “Very dissatisfied” to 5 = “Very satisfied”.

People and Networking

People and networking was the second factor that resulted from the analysis. For example, “Perhaps the most important aspect was networking with past and present FS [Forest Service] employees and scientists, one on one.” Other than the allotted networking session, participants remarked that there was time for networking between sessions and at lunch. Comments referred to networking, talking with others, and meeting new people. The main words used were *networking*, *meet*, *talk*, or *interact*. Additionally, networking was the second greatest reported reason that participants attended HJA Day.

Many comments referred to satisfaction with a variety of people at HJA Day. Comments often used the words *everyone*, *staff*, *volunteers*, *people* and *presenters*. For example, “Everyone at HJA is knowledgeable in their field while maintaining a good sense of humor.” Presenters comprised a large part of this factor, as they were a significant part of the HJA Day event. The LTER principle investigator presented at the morning welcome, each morning session had one to two presenters, and each of the four fieldtrips had multiple presenters. Comments referred to

multiple aspects of presenters, such as their personality or their presentation. Often a specific presenter's name was used. A typical example was, "Our presenter is full of wonder and joy and fun to be on the trail with." However, a few participants were dissatisfied with the presenters. Often they commented that the presenters were biased or too homogeneous. For example, "Too many questions to audience, not enough experienced people speaking."

Participants also commented on their opinions of the impacts that participants themselves made at HJA Day. Participants come to HJA Day with a variety of values and worldviews. Some were dissatisfied with the activities or sessions at HJA Day because they went against participants' personal values. Specifically, comments referred to an issue with the use of a forest site or research plot. Strong negative words were frequently used, such as *dump*, *disturb*, and *trample*. For example, "I really do not think it is responsible to dump large amounts of dye in the stream, especially just for a demonstration."

We also asked participants about their satisfaction with specific aspects of the fieldtrip presenter (Table 8). Participants were most satisfied with the professionalism of the speaker (95%), and least satisfied with the visuals and graphics that the speaker used (73%) and the speaker's ability to explain complex issues (73%).

Table 8: Satisfaction with fieldtrip presenter

Item	Percent satisfied or very satisfied	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach's alpha (α)
Topics covered ¹	79	4.11	.76	.76	.92	
Visuals or graphics used ¹	73	3.95	.92	.60	.93	
Activities ¹	81	4.11	.92	.73	.92	
Professionalism of the speakers ¹	95	4.46	.64	.71	.92	
Ability to hear speakers ¹	92	4.38	.73	.50	.93	
Clarity of the speakers' presentation ¹	89	4.25	.74	.78	.92	
Enthusiasm of the speakers ¹	94	4.57	.64	.74	.92	
Information provided by the speakers ¹	91	4.30	.78	.83	.92	
Amount of time allocated to discussion or questions ¹	78	4.02	.92	.69	.92	
Speakers' response to questions ¹	90	4.27	.81	.73	.92	
Item	Percent agree or strongly agree	Mean	SD	Item total correlation	Alpha (α) if deleted	Cronbach's alpha (α)
The speakers' presentations were interesting. ²	94	4.32	.64	.72	.92	
The speakers' presentations were thought-provoking. ²	84	4.16	.75	.50	.93	
The speaker effectively explained complex issues. ²	73	3.81	.86	.59	.92	
Satisfaction with Fieldtrip Presenter		4.23	.60			.93

¹ Means based on a 5-point scale from 1 = "Very dissatisfied" to 5 = "Very satisfied".

² Means based on a 5-point scale from 1 = "Strongly disagree" to 5 = "Strongly agree".

Teaching / Learning Style Preference

A *teaching/learning style preference* was the third factor that participants experienced at HJA Day. This referred to participants' experiences with the teaching and learning styles employed at HJA Day. For example, "The presenters also had excellent visual aids and excellent discussion. My personal style is to listen more to what their areas of expertise are as opposed to them asking us for questions and hypothesis, but I know that isn't as engaging for some." *Hands-on participation* had the most positive comments, followed by *lecture or presentation*, *self-guided reading or visual*, *small group discussion*, *group work*, and *large group discussion*. Most participants simply reported enjoyment of a certain teaching / learning style employed at HJA Day, but did not give in-depth description as to why that style was favored or enjoyed.

Alternatively, some participants commented on dissatisfaction with a teaching or learning style used at HJA Day. Comments referred to the quantity, inefficient use, and disinterest in a specific teaching / learning style. For example, "Didn't have quite enough of this [hands-on participation]," and "Not fun [self-guided reading or visual]." Most comments focused on *hands-on participation*, followed by *small group discussion*, *large group discussion*, *group work*, and *self-guided reading or visual*. There were no comments about dissatisfaction with the *lecture or presentation* teaching / learning style.

We also asked participants to indicate their satisfaction and learning experiences with certain teaching/learning styles at HJA Day (Table 9). Participants indicated that they enjoyed presentations, hands-on participation and self-guided learning the most, and large group discussions the least. However, they learned best from the presentations, then hands-on participation and small group discussion, and least from large group discussions.

Table 9: Experiences with learning styles at HJA Day (in percentages)

	Enjoyed	Learned from
Lecture or presentation	70	75
Hands-on participation	67	62
Self-guided reading or visual	67	52
Small group discussion	52	56
Group work	56	47
Large group discussion	43	44

Relationships between Factors and Outcomes

Once we gained an understanding of the participants and their outcomes, we sought to understand how the outcomes and factors related to one another. A graphic representation of the themes, categories, and codes was created based on qualitative analysis of open-ended questions (Figure 2).

Perceived knowledge gain and application and *appreciation and enjoyment* were the two main qualitative outcomes. *Perceived knowledge gain and application* directly influenced *appreciation and enjoyment* because participants' main goal of the day was to learn. The three main factors that affected these outcomes were the *teaching/learning style preference* of participants, *people and networking*, and the *event structure*.

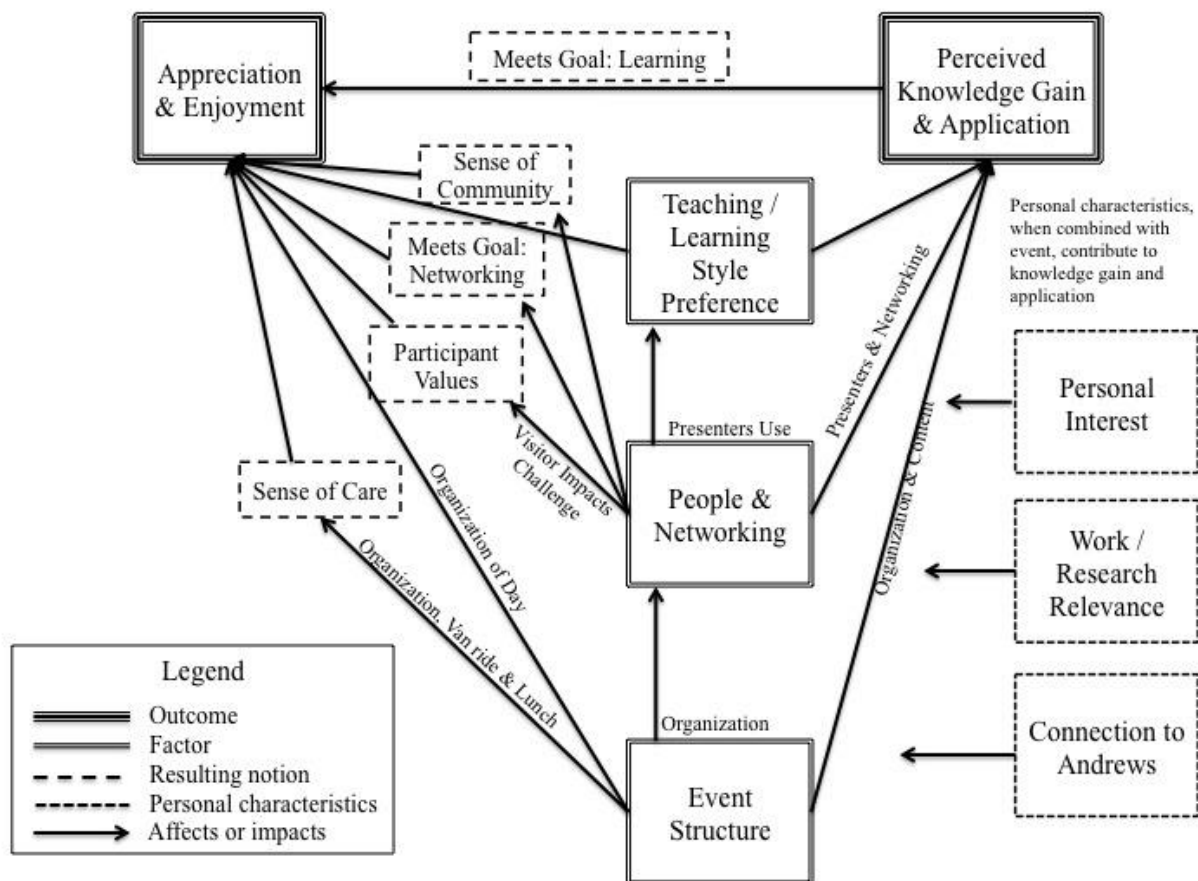


Figure 2: Relationships between the themes, categories, and codes of the qualitative data

The three factors related to each other in a nested, linear fashion: *event structure* → *people and networking* → participants' *teaching/learning style preference*. The organization of the *event structure* facilitated *networking* in that there was time between sessions and at lunch was to meet new people and network with other participants in addition to the allotted networking session at the end of the day. The *presenters*, as part of the *people and networking* factor, used various *teaching styles* during their presentation, which allowed for or held back *perceived knowledge gain and application*, and ultimately, *appreciation and enjoyment*. The factors of HJA Day also directly related to the main outcomes.

The factor *event structure* either facilitated or hindered *perceived knowledge gain and application*, and ultimately, *appreciation and enjoyment*. The structure of the event allowed some participants to move from session to session easily, without being “rushed or lost.” In this way, participants could focus on learning the content rather than figuring out where to go next. For others, the organization of the sessions and activities caused them to become bored or lose attention. One participant commented about a preference for activities in the morning rather than the afternoon to avoid fatigue. A reorganization of the day for this participant could mean that more participation and energy would go into the learning activities, which would ultimately lead to greater knowledge gain.

Because of the van rides to HJA Day, the welcome speech, the flow of the day, and the lunch and snacks, most participants highly enjoyed the day and appreciated the staff who helped organize it. These elements also allowed for a sense of care, in that participants’ needs were taken care of, allowing them to focus on the content provided and opportunities to network with other participants.

Second, *people and networking* either enhanced or diminished participants’ *perceived knowledge gain and application* and their *enjoyment and appreciation*. Networking with others allowed participants to learn more about the topics presented as well as topics related to other participants’ backgrounds. Participants enjoyed talking to presenters, as it gave them a chance to discuss the content more deeply, and relate it to their own knowledge, thus enhancing their *perceived knowledge gain and application*. However, some participants desired more diversity of presenters. One commenter wished for presenters who could give more opinionated information rather than trying to avoid bias. This decreased their *perceived knowledge gain and enjoyment*

because the participant felt that the presenters were holding back pertinent information. Finally, meeting the goal of networking led to *appreciation and enjoyment* of the day. Many participants also appreciated the diversity of participants and presenters alike.

The third factor, participants' *teaching/learning style preference*, affected participants' *perceived knowledge gain and application* and ultimately their *enjoyment and appreciation*. When asked about their experiences with various teaching/learning styles, many participants commented about their range of enjoyment with those styles, such as "Great," "Enjoyed," "Boring," and "Not fun." Therefore, we concluded that the style used affected participants' *enjoyment* of the session, if not the whole day. Many participants loved the hands-on activities and presentations and disliked the large group discussions. A few participants commented on how the teaching/learning styles affected their *perceived knowledge gain and application*. For instance, one participant said that the props helped them visualize the information presented, while another said that the large group discussion lacked good information.

Finally, when combined with this flow of organization and circumstances, personal characteristics of the participants contributed to *perceived knowledge gain and application*. For instance, participants who had a stream ecology background could network with other stream ecologists and learn from presenters about stream ecology. By integrating their own knowledge with the new knowledge, they would be able to gain a deeper understanding of stream ecology, and therefore enjoy their learning experience and appreciate others who contributed to their knowledge gain.

We then examined the relationship between the quantitative and qualitative factors and outcomes to better understand how they were similar, different or complimented each other. We

found that the qualitative outcomes were very similar to the quantitative outcomes. The qualitative outcome, *appreciation and enjoyment*, closely matched the quantitative outcomes, *overall appreciation* and *overall satisfaction*. Similarly, the qualitative outcome, *perceived knowledge gain and application*, closely matched the quantitative outcome, *perceived knowledge gain*. What makes these outcomes different is the way in which we asked about them. The qualitative outcomes came about from participants' general comments about the day. These were outcomes that participants chose to focus their comments on. The quantitative outcomes came from directed questions about these topics. The terms of the outcomes are slightly different because we created them differently, but for all intents and purposes the outcomes are the same.

A comparison of average responses between the main outcomes and factors is shown in Figure 3. Participants indicated that the main outcome they achieved the most was overall satisfaction (M=4.44), followed by overall appreciation (M=4.27), perceived knowledge gain (M=4.13), and then change in thinking (M=3.36). Most were also very satisfied with the factors, fieldtrip structure (M=4.32) and fieldtrip presenter (M=4.23).

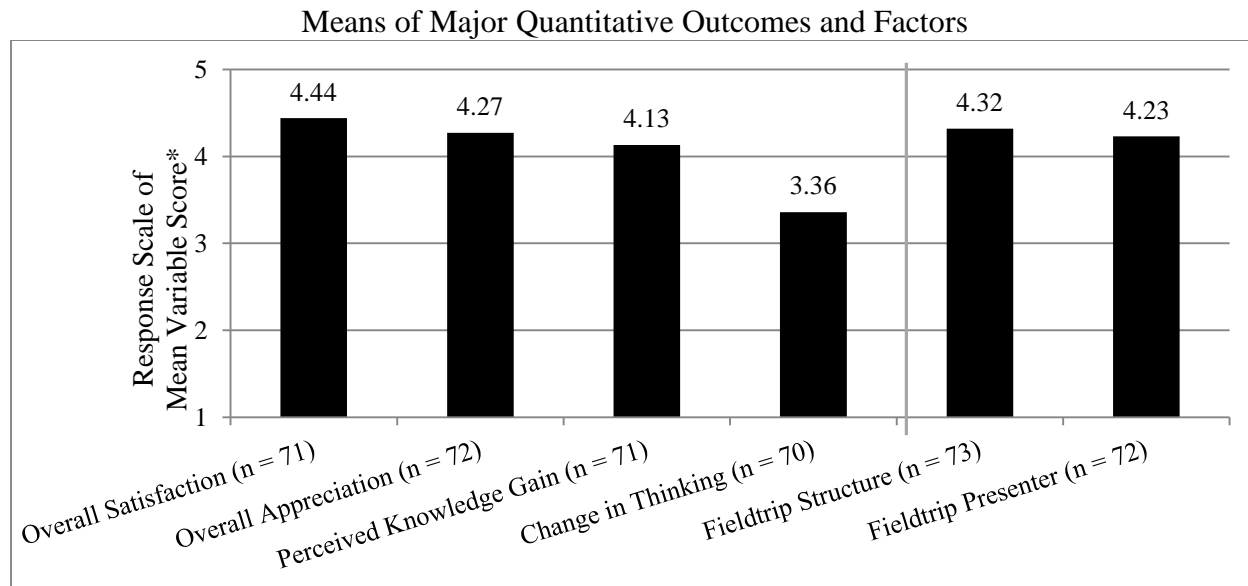


Figure 3: Means of major outcomes and factors

We examined the relationship between the major quantitative factors and outcomes using a spearman rho correlation (Table 10). The two factors positively and significantly correlated with all outcomes. *Fieldtrip structure* had a large (Cohen, 1998) or substantial (Vaske, 2008) relationship with *fieldtrip presenter*, *overall appreciation* and *overall satisfaction* ($p < .05$) and a small (Cohen, 1998) or minimal (Vaske, 2008) relationship with *perceived knowledge gain* and *change in thinking*. The *fieldtrip presenter* had a large or substantial relationship with *overall appreciation* and *overall satisfaction*, but a medium (Cohen, 1998) or typical (Vaske, 2008) relationship with *perceived knowledge gain*, and a small or minimal relationship with *change in thinking*. Other than *change in thinking* and *overall satisfaction* ($r = .213$, $p = .10$) in which no relationship occurred, all main outcomes positively and significantly correlated with a large or substantial relationship.

* Mean scores from computed items used to create new variables (see Tables 3-8).

Table 10: Spearman rho correlation matrix of main outcomes and factors

Variable	Fieldtrip Structure	Fieldtrip Presenter	Perceived Knowledge Gain	Overall Appreciation	Change in Thinking	Overall Satisfaction
Fieldtrip Structure	--	.711***	.275*	.529***	.280*	.448***
Fieldtrip Presenter		--	.400**	.507***	.250*	.513**
Perceived Knowledge Gain			--	.580***	.522***	.431***
Overall Appreciation				--	.599***	.511***
Change in Thinking					--	.213
Overall Satisfaction						--

* $p < .05$; ** $p < .01$; *** $p < .001$

Chapter 5: Discussion

From this study we discovered who participants are, what participants experienced, and what resulted from those experiences. We also had some unanticipated results. First, participant backgrounds play a large role in their experiences and outcomes of the day. Second, appreciation can help build relationships that lead to increased enjoyment, participation, and even knowledge gain. Third, we found that a sense of community and care may be useful in promoting lifelong learners by creating learners who want to return to the learning setting. Finally, we discovered the importance of recognizing what can be accomplished at a one-day event. It is important to keep in mind not only who participants are and what their goals are, but also to set realistic goals for the learning situation so that organizers and participants can have clearer objectives and expectations for the day.

We found that understanding who participants are is consequential for what they will experience, what outcomes they will achieve, and how they will achieve those outcomes. For example, we know that those new to HJA Day (the younger population) preferred hands-on learning, while returners (the older population) preferred presentations. The presenters had different experiences than the participants, as did the staff who helped organize the event. Those who came with a background in rivers or streams connected differently to the stream fieldtrip than did those with a forest ecology background, as did those with different personal interests. Andragogy says that adults learn to fulfill a personal interest or solve a problem (Knowles, 1984). Each adult learner's problem or interest is unique to that person. Therefore, their background and previous knowledge base affects their approach and perceptions of a new learning situation (Knowles, 1989). This is why it is important to understand program attendees

before crafting an educational program or being able to change course in the middle of an educational intervention to attend to the specific needs of the participants based on how they are responding or what they are interested in. This kind of flexibility is often an integral part of non-formal learning (Falk, Storksdieck, & Dierking, 2007). Organizers and educators will be better able to meet participants' educational goals if they modify programs to participants' interests and needs.

Our participants were unique in that they were adults with an average age of 41 who were able to take off a whole day of work to attend a science education event. Most of them had a previous connection to the Andrews, and most of them could relate their work to the information being presented at HJA Day. Some of them are already part of a tight-knit community that attend monthly LTER meetings hosted by Oregon State University. Others had been attending HJA Days for more than 10 years. This is all useful information because we can now tailor our approach and learning methods to the learner.

Setting and meeting learning goals is an important part of the learning process (Storksdieck, Ellenbogen, & Heimlich, 2005; West & Yassuda, 2004), and andragogy says that adults take a problem-centered approach to learning (Knowles, 1984). By understanding participants' learning goals, we can help them better meet those goals. We learned that HJA Day participants' wanted to learn about the research and programs going on in the HJ Andrews Forest, to network with other participants and presenters, and to spend a day in nature. Using this information, we might alter the day to help learners meet these goals by presenting topics that are of interest to attendees; we could use techniques that stimulate discussion and interaction among participants for those too shy to network on their own; and we could craft more alone time in the

forest to allow participants to really connect with the forest. All of these structural changes would further enhance the possibility of meeting the learner's goals, therefore increasing the effectiveness and success of the event.

We also found that appreciation was a large part of the event, as participants indicated appreciation of other participants, presenters, the staff who helped organize the event, the HJ Andrews Forest, and of the LTER program. Appreciation was fostered through multiple aspects of the day - who the participants were, the structure of the event, and by interactions and discussion among participants and presenters. We saw this in the many comments about appreciation and in the quantitative analysis, in which appreciation was strongly related to all outcomes and factors. While not examined largely in the adult education literature, appreciation is an important factor in adult relationships (Bello, Brandau-Brown, Zhang & Ragsdale, 2010), so it would stand to reason that appreciation in learning is similarly important. On the survey we asked about appreciation of multiple aspects of the event, including the program, site, HJA Forest, nature, HJA research, research topics, and researchers. However, the qualitative results showed that most participants expressed an appreciation for other people - volunteers, staff, presenters and other participants. Similarly, Mala-Maung, Abdullah and Abas (2011) also unintentionally found learners appreciative of teachers in the learning setting.

Current psychological literature on appreciation explains it as a reciprocal gesture (Bell & Daly, 1984; Richmond, Gorham, & Furio, 1987) or as a strategy for relationship maintenance (Dainton, Zelle & Langan, 2003). Knowing that many of our respondents have long participated at HJA Day and have a connection to other HJA researchers through continued interaction, this appreciation may serve to maintain or even increase that relationship. Other researchers suggest

that expressing appreciation fulfills a need for social integration (Weiss, 1974; Wiseman, 1986; Zhang & Stafford, 2009). The qualitative analysis revealed a sense of community or belonging emerged in the interactions between and among participants and presenters. Participants greatly enjoyed communicating with presenters, commented about the feeling of interacting with a scientific community, and used inclusive terms like “we,” “us,” and “the gang.” Again, a declaration of appreciation could be an attempt to fulfill social integration needs. As community and relationships are an important part of learning, it might be worthwhile to further examine the role that appreciation plays in adult education.

It appears that HJA Day planners succeeded in strengthening the appreciation, emotions and relationship elements of the day (as seen in the qualitative graph). Inclusivity, community and care were facilitated through the welcome speech, group discussion and promotion of questions, the catered lunch, and the networking session. Perhaps the day can be structured to increase cognitive development of the participants as much as it did for affective development. As we saw in the quantitative analysis, the fieldtrip structure was minimally related to perceived knowledge gain. *Perceived knowledge gain* was, however, moderately related to satisfaction with the *fieldtrip presenter*, again reinforcing the idea that people and relationships impact learning (Lizzio, Wilson, & Simmons, 2002; Pianta, Hamre & Allen, 2012). The quantitative analysis showed that *perceived knowledge gain* was also strongly related to *appreciation, change in thinking* and *satisfaction*, suggesting that when we meet participants’ goals, in this case learning, they respond positively.

However, fostering emotional connection may lead to increased knowledge gain in two ways. First, fostering a sense of enjoyment and appreciation, through creating a sense of

community and care that allows the learner to feel at ease while also stimulating the cognition of the learner may create an environment that enhances learning (Crowther, Maclachlan, & Tett, 2010; D'Amato & Krasny, 2011; Pianta, Hamre & Allen, 2012; Top, 2012). A learning environment that creates a feeling of safety and belonging and meets the lower-level physiological needs of the learner allows the learner to concentrate on learning and on the task at hand (Maslow, 1943).

Maslow's Hierarchy of Needs (1943) explains just this. In his hierarchical pyramid, Maslow suggests that people care most about their physiological needs - food, water, and shelter. The next major concern is safety, then belonging, then self-esteem. Only once all of these needs are met can the person achieve self-actualization, or higher levels of thinking. By structuring HJA day to meet all of these lower-level needs, in which participants did not have to worry about transportation, timing, getting lost, getting hungry, or feeling out of place, we potentially allowed the learner to concentrate on higher levels of thinking and take on deeper learning processes with the content presented. This doesn't mean that all participants will use higher levels of thinking or take on a deep learning approach, but that they can, if they choose to, because their other needs are already taken care of. It also facilitated a sense of care throughout the event because their lower-level needs were met. This follows other adult education literature that says adults learn best in a non-stressful environment in which they are respected (Knowles, 1984; Ozuah, 2005).

Second, if we can foster appreciation for the people and the program, we can strengthen the desire to return, and therefore provide an environment of continual learning. We found that for many participants, networking was the highlight of the event. The opportunities for communicating with other participants between sessions and during lunch allowed participants to

meet their goal of networking and learn from other sources. Davey & Tatnall (2007) also found that networking was the most favored outcome for tenured Information System academics at an IT conference, as it allowed the participants to learn about new connections to their own research and stay up to date on the research within their field. This is what lifelong learning is all about - continual learning. So one important element of learning is enjoyment and appreciation of the learning environment to create returners who enjoy learning and form a sense of community through their continued presence (McMillan & Chavis, 1986).

HJA Day participants often made comments that suggested they felt like they were part of a scientific community. When asked about their favorite part of HJA Day, participants responded, “The opportunity to interact with the science community, both established researchers, and students,” and “the sharing with a community of people who love a place and love what they do.” This was linked to enjoying discussions with other participants and presenters, as there was great appreciation of soaking up knowledge from the presenters and appreciating their information dissemination. Sense of care was shown through comments about the van ride, the welcome, the lunch, and the general flow of the day.

Overall, we started this study interested in specific outcomes: knowledge gain, change in thinking, satisfaction, and appreciation. Through open-ended qualitative analysis though, we found outcomes and factors that we didn’t anticipate. The two main qualitative outcomes, *appreciation and enjoyment* and *knowledge gain and application*, reinforced the goals of participants: learning and networking, and followed two of the quantitative outcomes that we sought out: *satisfaction* and *perceived knowledge gain*. We also didn’t anticipate that appreciation would underlie the whole event, as appreciation was a major qualitative and

quantitative outcome, strongly related to all other outcomes and factors. We saw this in participants' comments about their relationships with other participants, the presenters, and the place, as well as their appreciation of the organization of the event, the feeling of being cared for, and their engagement with the content at HJA Day. All in all we could say that relationships within the learning environment facilitated learning at HJA Day.

Limitations and Research Recommendations

Bias. With a capacity of only 130 participants, the nature of the event caused volunteer bias, or nonresponse bias, (Boughner, 2010) because participants were a unique population that self-selected to attend the event. We did not check for nonresponse bias because participants were given several opportunities to complete the survey, in two different formats and over a substantial time period. However, the benefit of conventional content analysis is that bias is minimized. Without any preconceived categories, interpretation is subjective and grounded in the data. This form of analysis is structured to capture maximum complexity and diversity (Hsieh & Shannon, 2005). While this method of analysis minimizes bias, some bias may have been present from the start of the study. The research questions of adult learner needs guided the search for categories and the use of certain questions from the survey. Additionally, by attending the event as participants and researchers, we may have inadvertently made assumptions about comments that non-participants would not have known.

Positivity bias, a subconscious bias for positive memories, (Cox-Peterson, Marsh, Kisiel, & Melber, 2003; Falk, 2009) may have skewed the results of the study, as it was clear that the goals of the survey was to understand participant satisfaction and participants may have wanted to avoid seeming unappreciative. Alternatively, it may simply have made the objectives of the

study clearer to respondents. Similarly, reported satisfaction may be a result of high expectations rather than perceived quality of the event (del Bosque & San Martin, 2008). This is a well-studied and valid issue. While our main dependent variable is overall satisfaction with the event, we examine other outcomes as well, such as overall appreciation, change in thinking and perceived knowledge gain, in the hope that they will strengthen/validate the findings. This is especially important since we only had one question to gauge participants' *overall satisfaction* with the event.

Participants. We asked participants about specific elements of the fieldtrip (Table 7 and 8) because we thought that it would be difficult for them to remember specifics of the morning sessions by the time they took the post-survey. However, many comments on this survey focused on all aspects of the event, even when we specifically asked about the fieldtrip. In hindsight, we would ask the participants detailed questions about all aspects of the day, rather than assume that they won't remember.

Additionally, it would have been helpful to know more about our participants. We suspect that most participants are involved in higher education and have a career in research, as many were affiliated with Oregon State University and US Forest Service research stations, but it would have been beneficial to ask. Though we know what their initial goals were, we also don't know how much of the information from HJA Day is useful for their work or personal lives and how much is simply interesting. Understanding this information would be valuable in understanding the motivation and purpose that participants had in attending HJA Day. Future studies could ask more questions about their background and motivations for attending this event.

Research Methods. A majority of participants indicated that their thinking was changed in some way. This is not a trivial finding, but in order to understand participants' change in thinking more thoroughly, we could have asked more pointed questions. We don't know whether participants' thoughts were changed positively or negatively or whether biases were challenged. Furthermore, we only had one qualitative response to support the variable *change in thinking*, which suggests that no significant change took place for that participant. Presenters' *change in thinking* response was significantly higher than participants, but it could be that they were reflecting on their participants' attitudes. Perhaps through interactions with participants, they felt that the participants had a large change in thinking and reported on that rather than their own change in thinking. In future studies, we should probe more deeply for a better understanding of how participants' thinking might have changed, if event planners find this to be an important outcome. Understanding this is important for understanding the learning that took place at HJA Day. However, if HJA Day objectives are simply to inform participants but not challenge their old ways of thinking, then the importance of the variable may not need to be emphasized.

Perceived knowledge gain, or learning, was the foremost goal for participants, yet it was only moderately linked to *satisfaction* in the quantitative analysis. One issue could be that the variable *perceived knowledge gain* only comprised three items from the survey. Perhaps the variable needs more items to be an effective indicator and we should have asked more questions directly related to perceptions of knowledge gain. The qualitative results did not support the quantitative results, as we saw a clear link between the two variables *perceived knowledge gain* and *appreciation and enjoyment* within the comments about HJA Day overall.

Appreciation is a variable that is very similar to satisfaction, but is strongly linked to everything. Though appreciation is commonplace in everyday relationships, it is one of the least studied forms of communication (Bello, Brandau-Brown, Zhang, & Ragsdale, 2010). However, this study shows that it plays an important role in the experience at this type of event. More research on the role of appreciation in adult learning, informal science education, and nature interpretation would be useful in better understanding how to create environments in which it is possible and even complementary to the cognitive learning process.

Close-ended survey questions limited us to mostly fieldtrip responses because we were concerned that participants would not recall specific aspects of the morning sessions as well as the afternoon sessions. As per the research questions, however, we wanted to know about experiences from whole day. This was the advantage of having a mixed-method study because our open-ended comments allowed us to see participant satisfaction with the event as a whole. In the future, we might ask different questions that allow us to understand a broader scope of the event.

While we had a good deal of qualitative data, more in-depth questions would likely have garnered more in-depth responses. Though some of the questions probed for deeper thinking, many of the questions that received the most responses were very open-ended, such as “Comments?” While this is useful for gathering many comments, many of the responses we received were short and trivial, such as “Great day!” In the future, event organizers might word these questions differently if they want more detailed answers.

Finally, because of the small sample size, our sampling error was 8.1% rather than 5% at a 95% confidence interval when presenter surveys were removed. We also can't generalize to the greater population because of the small sample size of participants who attended HJA Day.

Chapter 6: Implications and Conclusions

Implications and Recommendations

While we cannot generalize our findings to the greater population, this study does have relevant implications for event planners and adult educators. Adult learning is an on-going process in adults' lives. Formalized or non-formal learning, however, must meet the needs of adult learners in order to create positive outcomes. Adults are autonomous people with busy lives, so spending time on non-formal learning must mean that is important. In order to meet the demand of adult education programs and decrease levels of attrition, educational programs need to cater to the multiple needs of adult learners in ways that respect, validate and stimulate the minds of adults so they can pursue lifelong learning (Nesbit, Dunlop, & Gibson, 2007).

In this study, we found, among other things, that a sense of care and community is important for enjoyment and appreciation. Studies that examine non-formal adult education have similar findings (e.g. Crowther, Maclachlan, & Tett, 2010; Lim, Morris, & Kupritz, 2007), and reinforce the idea that incorporating the tenets of adult learning, such as using adults' prior knowledge, taking a problem-centered approach to teaching, incorporating hands-on activities, and providing topics of interest to learners, is beneficial for successful learning and satisfaction. This research can be used to enhance future HJA Day events and non-formal science education programs. By adjusting the structure of the event to better meet the needs of learners, we are following the bi-directional path of the learning process that Biggs (2003) wrote about in which learners and educators impact each other. We can use this information to understand how to make HJA Day and adult learning at the event more effective.

Recommendations for Event Planners and Adult Educators

Incorporate a Theme. The need for a theme or set of objectives was a common issue with this HJA Day. Some participants were looking for a way to understand the whole of the event. When asked what could be improved, one participant commented, “Some sort of overarching theme- come away feeling like I understand what the Andrews is all about, rather than a patchy sense of the kinds of things that are done there.” Without set objectives, it was difficult to determine whether the event was successful. Future HJA Day planners might seek to create and communicate a theme or set of objectives.

Draw on Participant Knowledge. Participants liked incorporating their past knowledge with what they were learning at HJA Day. We know from past research that this is an important type of deeper learning for adults (Knowles, 1984). If event planners were able to integrate participants’ past knowledge into the learning curriculum, it would benefit the learners not only by increasing satisfaction, but also by fostering deeper engagement and learning. This could be done either by learning about participants before creating a program or by creating a program that is flexible enough to incorporate participant knowledge on the spot.

Tailor the Event Structure to the Learner. The event structure had a significant impact on the learning and enjoyment of participants. The length of topics, sessions, and activities were often commented on, as well as the flow of the event. While everyone seemed to enjoy the flow and general organization, there were many comments, both positive and negative, about the timing throughout the day. Because there was a balance of positive and negative comments, one could understand the differences as personal choice. This again points to the importance of knowing the needs and preferences of the learner and allowing flexibility to adapt to the learner.

An indication of boredom may prompt the educator to move on to the next topic or activity while signs of interest would indicate that the educator delve more into topic. A similar thing occurred with the amount of information provided by presenters. Just as many comments were made about the information being too deep as there were about the information being too shallow or broad. Therefore, it is important to know what the learner is looking for in an educational program and adjust to the learner's needs, whether it be in-depth, specific information or broad, general information about a topic. Adult educators may be keen to gauge participants' reactions to information dissemination and alter their teaching methods accordingly.

Use Preferred Learning Styles. Participants of HJA Day favored hands-on learning, lectures or presentations, and small group discussion the most. We would see this as a positive result for event planners and adult educators. Any mix of the learning styles would arguably increase learning outcomes. It doesn't have to be that the learning curriculum uses mostly hands-on learning, then some lectures, then some group work. It could be that any current curriculum could be improved through use of one of the three preferred teaching methods. However, the more an educator or event planner recognizes the preferences of the learner, the more he/she can tailor the learning style to meet the learner's needs.

Foster a Sense of Community and Care. Participants seemed very appreciative from the various elements that created a sense of care: the van ride, snacks and lunch, and clear organization. To foster a sense of care in learning programs, event planners and adult educators could focus on these same elements. A welcoming learning environment, such as the welcoming speech at HJA Day, impacted the learner and fostered a sense of belonging. The ability to network in the van, at lunch, and in between the sessions fostered a sense of community. Repeat

participants instilled this sense of community, along with interaction between repeat visitors and newcomers. Event planners might be able to replicate this sense of community by crafting ways to enhance interaction and communication.

Conclusion

In summary, it is imperative for adult education programs to satisfy the needs of participants so that they will continue their life-long learning pursuits. This study is one attempt to further understand the learning experience for adults at a non-formal science education event.

Biggs (2003) wrote that the learning process is a system of interaction between the learner and teacher, and indeed we have findings to support his notion.

Understanding the elements that make for a successful learning experience is important, especially for adult learners. We know much about the “best” learning environment for children and university students, but we don’t know much about the best adult learning climate, and we know even less about the best outdoor learning climate for adults.

We found that who participants were, the structure of the day, the people and networking opportunities, and the learning style preference of participants all had an affect on participants’ outcomes at the event. Sense of community and care emerged as an element that related to learner enjoyment and appreciation in a way that we did not anticipate. All of these findings reinforce the notion that the learning environment plays a role in learner outcomes. By understanding what elements help adults learn, we can create a learning environment that is caring, supportive and allows the learner to grow and integrate learning in a way that leads to lifelong learning.

This study has given adult education program developers an insight into the factors that contribute to positive learner outcomes. As adult learners are primarily internally driven to attend educational programs, meeting the needs of attendees is likely to contribute to the success of these events and continued registration of participants each year. Therefore, event planners might find it helpful to consider our findings as they plan and implement adult education programs. However, future research that examines these same variables in relation to participant satisfaction, learning, and motivation to attend other educational events would allow a more in-depth understanding of how program developers may meet the various needs of participants and may serve to extend our results to a more generalized population. Although the fieldtrip presenter characteristics had the strongest relationship to overall satisfaction in this study, further exploration of variables that might impact overall satisfaction, motivation to attend repeated adult learning events, and further learning outcomes of adult education programs is recommended as well.

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APPENDICES

Appendix A: Survey

Pre-HJA Day Survey

Dear HJA Day Participant,

June 26, 2014

Thank you for attending HJA Day 2014! While the annual HJA Days have been a growing success for 20 years, the Andrews LTER program would like to improve its communication of scientific information in a meaningful, effective way. This survey is designed to help us understand your experiences and thoughts about HJA Day 2014.

We are asking all HJA Day participants to help us by providing feedback on this survey. By responding to these questions, you will help create a better understanding of what is important to people who attend HJA Day. This information will be useful for the Andrews LTER staff who organize and run HJA Day each year. It is also valuable for completion of the project coordinator's Master's thesis.

Your participation is completely voluntary, and you may skip any question(s) for any reason. Your answers will be strictly confidential. Your name will not be connected to any of your responses. In fact, we do not ask for your name or any contact information at all. We do request you use your unique code that you created on the pre-HJA Day survey when completing this post-event survey. Though we cannot identify who you are by the code, we can match your pre- and post-event survey responses to see how your opinions may have changed.

The survey should take about 5 minutes to complete. We understand how valuable your time is and appreciate your efforts to help inform us of your opinions. The survey may be completed in person or online. If you wish to complete the survey online, please see the back of this page for instructions.

If you have any questions about this survey please contact Lauren Remenick using the information below. If you have questions regarding your rights as a participant in this research project, please contact Oregon State University Institutional Review Board (IRB) Office at (541) 737-8008 or by email at IRB@oregonstate.edu.

Thank you for your time and consideration. We look forward to hearing from you.

Sincerely,

Lauren Remenick
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Christine Olsen, Ph.D.
Project Director
541-737-8669

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Your responses to this survey are confidential. We do not ask for your name or other identifying information, but we would like the ability to match your answers from the Pre-HJA Day survey to your answers from this Post-HJA Day survey. Your code will be 4 characters long. Write the appropriate characters on the line below.

First character - Last **letter** of your first name

Second character - First **letter** of your birth month

Third character - First **number** of your birth date

Fourth character - Last **letter** of your last name

1. Excluding this HJA Day 2014, how many HJA Days have you attended in the past?

2. What did you like about previous HJA Days? Please comment on anything - organization, flow, topics, food, etc.

3. What favorable memory do you have about past HJA Days?

4. How did you hear about HJA Day 2014? (Choose all that apply.)

- Colleague
- Email notification
- Friend
- Flyer
- Other (please explain) _____

5. Have you visited the HJ Andrews Forest in the past, other than for HJA Day?

- Yes
- No

6. What was the main purpose of your previous visit to the HJ Andrews Forest? (Choose all that apply.)

- Attend another program
- Perform research in the forest
- Visit the forest
- Other (please explain) _____

7. Why are you participating in this HJA Day 2014? (Choose all that apply.)

- Learn about or stay up to date on the research and education programs performed at the HJ Andrews Forest
- Network with other participants or researchers
- Receive a free lunch and snacks
- Spend time in the forest or enjoy a day in nature
- Other (please explain) _____

8. Given your response to the last question, which format for HJA Day would be more meaningful for you?

- Briefer, less in-depth sessions that allow you to learn fewer details about more topics
- Longer, more in-depth sessions that allow you to learn more details about fewer topics

9. People learn in different ways. We're interested in learning about what teaching styles are most helpful for you. Please indicate how helpful the following teaching styles are to you when learning new material.

	Not at all Helpful	Slightly Helpful	Moderately Helpful	Very Helpful	Extremely Helpful
Self-guided reading or visual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lecture or presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Large group discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Small group discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hands-on participation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Sometimes certain factors can help you learn and retain new information. Please indicate how helpful the following factors are for you when learning new material.

	Not at all Helpful	Slightly Helpful	Moderately Helpful	Very Helpful	Extremely Helpful
Curiosity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emotional connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Past experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal relevance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practical application	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal investment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. What is your connection to the HJ Andrews Forest? (Choose all that apply.)

- Field crew
- LTER personnel
- Local resident
- Oregon resident
- OSU faculty or staff
- PNW Forest Science Lab
- Region 6 National Forest Staff
- Researcher
- Graduate student
- Undergraduate student
- Other (please explain) _____

12. What is your age (in years)? _____

13. What gender do you identify with?

- Male
- Female

Thank you for taking our survey! Your answers are very influential for the success of future HJA Days.

Post-HJA Day Survey

June 26, 2014

Dear HJA Day Participant,

Thank you for attending HJA Day 2014! While the annual HJA Days have been a growing success for 20 years, the Andrews LTER program would like to improve its communication of scientific information in a meaningful, effective way. This survey is designed to help us understand your experiences and thoughts about HJA Day 2014.

We are asking all HJA Day participants to help us by providing feedback on this survey. By responding to these questions, you will help create a better understanding of what is important to people who attend HJA Day. This information will be useful for the Andrews LTER staff who organize and run HJA Day each year. It is also valuable for completion of the project coordinator's Master's thesis.

Your participation is completely voluntary, and you may skip any question(s) for any reason. Your answers will be strictly confidential. Your name will not be connected to any of your responses. In fact, we do not ask for your name or any contact information at all. We do request you use your unique code that you created on the pre-HJA Day survey when completing this post-event survey. Though we cannot identify who you are by the code, we can match your pre- and post-event survey responses to see how your opinions may have changed.

The survey should take about 10 minutes to complete. We understand how valuable your time is and appreciate your efforts to help inform us of your opinions. The survey may be completed in person or online. If you wish to complete the survey online, please see the back of this page for instructions.

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Thank you for your time and consideration. We look forward to hearing from you.

Sincerely,

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Your responses to this survey are confidential. We do not ask for your name or other identifying information, but we would like the ability to match your answers from the Pre-HJA Day survey to your answers from this Post-HJA Day survey. Your code will be 4 characters long. Write the appropriate characters on the line below.

First character - Last **letter** of your first name

Second character - First **letter** of your birth month

Third character - First **number** of your birth date

Fourth character - Last **letter** of your last name

1. What sections of HJA Day did you attend? (Choose all that apply.)

- Morning introductions/ Welcome
- Morning sessions
- Lunch
- Afternoon field trips
- Van rides
- Networking
- Other _____

Comments?

2. Which afternoon field trip did you join?

- Discovery Trail - The Forest as a Teacher
- Forest Detectives
- Live-Streaming Ecology (Without the Internet)
- Ecological Forestry: A New Paradigm in Forest Management?
- I did not attend an afternoon fieldtrip. (Skip to Question 5.)

Why did you join that specific afternoon field trip?

3. Please rate your experience with the following elements of the afternoon field trip.

	Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied
Time of day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Length	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of participants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Topics covered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visuals or graphics used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professionalism of the speakers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clarity of the speakers' presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to hear speakers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to see speakers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enthusiasm of the speakers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information provided by the speakers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount of time allocated to discussion or questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speakers' response to questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments?

4. To what extent do you agree or disagree with each of the following statements about the afternoon field trip?

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
The speakers' presentations were interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The speakers' presentations were thought-provoking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The speakers were biased (one-sided) in the information provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The speaker effectively explained complex issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have any comments or feedback for the speaker?

5. Please rate your experience with each session using the categories in the top row. (Choose all that apply. Leave blank if not applicable.)

	Enjoyed	Learned from	Kept my attention	Remember in a month	Other
Morning introductions / Welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Morning sessions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Lunch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Afternoon fieldtrip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Van ride	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Networking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____

Comments?

6. Please rate your experience with each activity.

	None	A little	Some	A moderate amount	A great deal
Self-guided reading or visual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lecture or presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Large group discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Small group discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hands-on participation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Please describe an experience for each activity listed below that you encountered at HJA Day. (Leave blank if not applicable.)

Self-guided reading or visual: _____

Lecture or presentation: _____

Large group discussion: _____

Small group discussion: _____

Hands-on participation: _____

Group work: _____

8. Please evaluate each activity that you experienced at HJA Day using the categories in the top row. (Choose all that apply.)

	Enjoyed	Learned from	Kept my attention	Remember in a month	Other
Self-guided reading or visual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Lecture or presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Large group discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Small group discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Hands-on participation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____
Group work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> _____

9. Opportunities for discussion with other participants:

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Enhanced my understanding of the material or information presented.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Were too long.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Were too short.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Opportunities for personal reflection or alone time:

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Enhanced my understanding of the material or information presented.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Were too long.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Were too short.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Did your experience at HJA Day spark, draw upon, or inspire any of the following for you? (Please explain.)

	No	Yes
Curiosity		
Emotional connection		
Past experience		
Personal relevance		
Practical application		
Personal investment		

12. To what extent did HJA Day influence any of the following for you?

	Not at all	A little	Somewhat	A moderate amount	A great deal
Enhanced my appreciation for the Andrews Forest site	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhanced my appreciation for the Long-Term Ecological Research program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased my knowledge about programs at the Andrews Forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased my knowledge of specific scientific topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Overall, how satisfied are you with your experience at HJA Day 2014?

	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Overall HJA Day 2014 experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. What could have enhanced your experience at HJA Day 2014? (Choose all that apply.)

- Overnight trip
- More time to network
- More time in the forest
- More hands-on activities
- More small-group discussion
- The opportunity to participate in multiple field-trips (trips would be shorter)
- Other _____

15. What other topics would you like to see covered at HJA Day? (Choose all that apply.)

- Art
- Creative writing
- Forest ecology
- Forest management
- Outreach and education
- Technology
- Watersheds
- Other _____

16. As a result of participating in HJA Day 2014, I gained an appreciation of:

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
HJ Andrews Forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research conducted at the HJ Andrews Forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research topics covered at HJA Day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. HJA Day 2014 changed the way I think about:

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
The complexity of problem-solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The connection of science with policy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forest management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My field trip topic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Past knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Final thoughts:

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I learned something new at HJA Day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HJA Day was a waste of my time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HJA Day reminded me of something that I had not thought about in a while.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to participate in HJA Day again.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you have any other thoughts about HJA Day overall?

Thank you for taking our survey!

Appendix B: Public Report

Examining Visitor Perspectives about HJA Day

Frequency Report November 2014

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This frequency report displays data from two in-person/internet questionnaires from HJA Day 2014. While the annual HJA Days have been a growing success for 20 years, the Andrews LTER program would like to improve its communication of scientific information in a meaningful, effective way. These pre- and post-HJA Day surveys were designed to help understand visitor experiences and thoughts about HJA Day 2014. By responding to these questions, participants helped create a better understanding of what is important to people who attend HJA Day. This information is useful for the Andrews LTER staff who organize and run HJA Day each year.

A combined total of 136 individuals registered for HJA Day 2014. Registrants were requested to complete both pre- and post-HJA Day surveys either in person or online. Of these, 76 registrants completed each survey for a 56% response rate of both the pre- and post-HJA Day survey. This frequency report provides an initial look at both pre- and post-HJA Day responses. Unless otherwise noted, the numbers represent the percent of respondents.

Do not cite without permission of the principal investigator.



PRE-HJA DAY SURVEY RESULTS

76 participants took the Pre-HJA Day survey.

37% (28) took the survey on paper.

63% (48) took the survey online.

16% (12) were presenters.

84% (64) were participants.

Q1. Excluding this HJA Day 2014, how many HJA Days have you attended in the past?

0 times	64
1-2 times	14
3-10 times	12
11-20 times	8
21 or more times	1

Q2. What did you like about previous HJA Days?

Energy of the scientists, the food (oh my!), the high level of organization, exposure to so much but also the time to dive into longer field trips in the afternoon, the beauty of the forest, the sharing with a community of people who love a place and love what they do.

Quality of research, presentations, Q&A, and great food! Organization seems to have improved in recent years.

The sharing of scientific information but also of the work that the scientists do in the field, the energy and passion of the researchers. The food, the flow, the topics chosen.

Interaction with students, researchers, scientists, great weather, good food.

Information on current research; meeting new people

Energy at the forest. Attention to the program. The food.

Opportunity to see different parts of the forest.

Visiting different research projects.

It's changed greatly in format. Always liked the meal portion - used to be an evening barbecue and now lunch - but this has always been a great time to network with others. The lunch works out well with the morning topics around the compound. Given the current large size of the event it is well organized.

The learning and discovering that allows me a better understanding of our forests

The forest is beautiful and it's a real pleasure to be able to spend time at the HJA. I rode the van both ways - I really appreciated not having to drive and our van driver was fun and informative. The food was outstanding. I think the way you staggered the tours was smart and I never felt rushed or lost.

The sessions at HJ with the fish in the tank and the canopy experience for kids. Also one of the presenters is always great at teaching and presenting they're a constant favorite.

The important thing to me is the mix of people with different exposures to HJA program and place - long-time vets, new comers, old and young - and the sharing of findings and questions about relevance to the world. We've had congressional staffers and general citizens and REU students just beginning their HJA lives. A mix of talks and sideline conversations moving among stations and over lunch is critical.

Food, meeting people, interesting discussions

Organization into shorter stations and longer field trips (last year only); diverse audience attending; good overview of projects

Hearing about the research and the research results; being out in the woods at the HJA

The opportunity to interact with the science community, both established researchers, and students.

Food, time in woods, researchers

Being outside, meeting people who work at the Andrews and those who are interested in what is done at the Andrews Forest, hearing about different work underway

Open dialogue about science, social relevance and where science is leading us.

The chance to meet and interact with amazing people, engaged in fascinating work on all manner of projects and the chance to gain an appreciation of the diversity of those projects that would otherwise be hard to obtain.

Topics, exposure to research, food

The food was good!

Topics and the ability to network with researchers

The chocolate croissants were delicious.

Fieldtrips, food, stations (maybe my favorite)

Q3. What favorable memory do you have about past HJA Days?

The wonderful short poems that participants created during the mini-writing retreat at the log decomposition site last year.

Learning a lot!

The findings that are a surprise - findings that represent long term commitments to a place.

The year when my sister came. it was fun to have her see it all.

Sun going down, air cooling; vans have just pulled away after another seemingly successful event

People having a good time. it's a general feeling.

Listening to long-time Andrews researchers talk about their research on the Andrews. Always loved the photo in front of the snow cat (discontinued).

The weather was nice.

Barbeque dinners with the whole gang

I liked all the tours - and I really liked being tasked to collect data at the watershed (my sons were asked to do some math too and loved working with the scientists (who were really great with kids). Lots of great photo ops.

When it rained like 3/4 HJA days I've been on

Just the energy and connections being made in hundreds of small communications events.

Sitting in the woods

Intense discussion between applied managers and scientists on harvesting

The photo on the snowcat with the trash can lids

Being asked to speak at several of them

Learning about research technologies - Doppler air, fiber optic stream temperature. Log decay study and literary response.

Group picture (on the snowcat)

Asking a presenter how you respond to E.O. Wilson's great quote, "we are drowning in data while starving for wisdom" How do you separate the data from the wisdom. No answer as yet.... Hopefully this time...

The feeling of humble be-wonderment at the end of the day (each time), of having learned something new, surprising and amazing about the forest, where every answer does quite literally seem to birth a hundred new questions.

Learning about the research projects being done here.

When we put the green dye in the stream.

Watching the tree climbing demo.

I liked the stations two years ago. I learned a lot. That was interesting.

**Q4. How did you hear about HJA Day 2014?
(Choose all that apply.)**

Colleague	45
Email	43
Friend	12
Flyer	3
Other	22

Other.

I know about it from previous years

I helped organize it

I help organize it

HJA website and instructor

I work here

Osmosis - I've been around the program a long time

Ecology Class

I've been engaged for a number of decades.

Working at HJA

Professor

REU internship advisor

Mom

Staying at HJA, heard about it when I checked in

COF Today

Professor

Q5. Have you visited the HJ Andrews Forest in the past, other than for HJA Day?

Yes	60
No	40

**Q6. What was the main purpose of your previous visit(s) to the HJ Andrews Forest?
(Choose all that apply.)**

Perform research in the forest	57
Visit the forest	36
Attend another program	34
Other	30

Other.

To start my job. Haven't really left yet.

Administrative

Meet with Andrews staff

Teach a class

Class field trip. I haven't been to any HJA Days but just recently enjoyed a field trip there with my class. It was amazing and I am excited to go back and learn more! No past HJA Day but my field trip was AWESOME! I am having my mom join me at this years HJA Day so she can experience it too!!

Facilitate the engagement of others with the forest - leading field tours for scientists, writers, artists, journalists, general public, elected officials, ...

Show foreign visitors and utilize findings and research for job.

Field trip for Environmental Science class at Chemeketa

Lead class field trip

To prospect for research.

Internship

Meeting with researchers, reviewing projects for NEPA

Lodging while working nearby

**Q7. Why are you participating in this HJA Day 2014?
(Choose all that apply.)**

Learn about or stay up to date on the research and education programs performed at the HJ Andrews Forest	85
Network with other participants or researchers	70
Spend time in the forest or enjoy a day in nature	66
Receive free lunch and snacks	27
Other	22

Other.

Working as part of the program

Part of the job

I help organize it so I need to attend

Specific field trip of interest.

I work here, love HJA Day and sharing with public

Help to run the program and make presentations

After years in the College of Forestry, finally see what happens at HJA and meet with staff I frequently correspond with.

Present

I have been bugging my supervisor about research and continuing management opportunities in the forest

To help keep the stories flowing!

To learn about the types of studies that are being conducted.

Field work, presentations

Helping with a field trip

Q8. Which format for HJA Day would be more meaningful for you?

Briefer, less in-depth sessions that allow participants to learn fewer details about more topics.	54.5
Longer, more in-depth sessions that allow participants to learn more details about fewer topics.	45.5

Q9. Indicate how helpful the following teaching styles are to you when learning new material.

	Extremely	Very	Moderately	Slightly	Not at all
Lecture or presentation	8	57	28	7	-
Self-guided reading or visual	14	34	41	12	-
Small group discussion	14	51	23	11	1
Large group discussion	1	22	39	32	5
Hands-on participation	48	33	12	7	-
Group work	15	26	38	19	3

Q10. Please indicate how helpful the following factors are to you when learning new material.

	Extremely	Very	Moderately	Slightly	Not at all
Curiosity	54	37	8	1	-
Personal relevance	42	41	13	4	-
Emotional connection	28	43	24	4	-
Practical application	30	41	24	5	-
Past experience	22	47	28	3	-
Personal investment	27	39	23	11	-

**Q11. What is your connection to the Andrews Forest?
(Choose all that apply.)**

Oregon resident	46
Researcher	34
OSU faculty or staff	30
Field crew	20
LTER personnel	18
Undergraduate student	18
Local resident	14
Region 6 National Forest staff	12
Graduate student	12
PNW Forest Science Lab	11
Connected in other ways	18

I love trees.
Visiting PhD student
Intern

Q12. What is your age?

Ages range from 19 to 81 years.
The average age of participants is 41 years.

Q13. What gender do you identify with?

Female	57
Male	43

POST-HJA DAY SURVEY RESULTS

A total of 76 participants took the post-HJA survey.

64.5% (49) took the survey on paper.

35.5% (27) took the survey online.

13% (10) were presenters.

87% (66) were participants.

Q14. What sections of HJA Day did you attend?

(Choose all that apply.)

Morning introduction/ Welcome	92
Morning sessions	95
Lunch	99
Afternoon fieldtrip	99
Van ride	67
Networking	59

Other.

I was working all these session so please do not consider me as a normal HJA Day participant

Assisted with a presentation

Being friendly

Hammertime

Eating guacamole and chips and iced tea

Bathroom discussions

Hugging trees

Q14. Comments?

Well managed, well organized, thoughtful and friendly.

Morning sessions were good- accessible topics and engaging leaders.

Was the time after field trips specifically for networking? Somehow I never picked up on that.

Well organized and catered

Very enjoyable sessions

Awesome

I've only missed two of these since 1998.

I learned a lot!

The lunch was very tasty. The morning speech was great. I liked the artists in HQ.

Lunch was great and the river field trip was fantastic.

Great food

Smooth show, lots of energetic and positive people.

Everyone at HJA is knowledgeable in their field while maintaining a good sense of humor.

It was a great tour.

Absolutely awesome all the way around.

Yeh! Thank you! For a fun, educational time and a chance to talk to all kinds of interesting people.

Well organized, well-planned. Informational - everything was explained less scientific jargon.

Morning sessions were great, fast, and full of good stuff. Lunch was delicious and bountiful and an inadvertent networking opportunity. Afternoon was long and not as active as I expected but still fun.

Q15. Which afternoon fieldtrip did you join?

Live-Streaming Ecology (Without the Internet)	28
Forest Detectives	27
Discovery Trail - The Forest as a Teacher	24
Ecological Forestry: A New Paradigm in Forest Management?	20

Q15. Why did you join that specific afternoon field trip?

Because of the significantly differing opinions on what constitutes 'ecological forestry'.

It is related with my research.

Interested in outreach and public education about scientific issues. Interested in teaching natural science to grade school and high school students.

I was one of the people responsible for that trip.

Sounded like the most interesting hands-on and challenging forest terrain. I was looking forward to scrambling in the woods including challenging terrain. Loved it.

Interested in seeing ecological forestry treatments.

I thought it probably had the most technical aspects (LiDAR, for example) of all the choices.

To learn about ecological forestry and to see some managed stands at HJA.

Wanted to see Old Growth forest.

Personal interest in the topic and had to choose just one. All were of interest.

It sounded interesting.

Wanted to go on the trip that went into the forest the farthest.

I was one of the leaders for this trip.

Some of my work relates to protecting riparian areas for water quality.

It did not require riding in a van.

Wanted to know about interactions of social and ecological research at HJA LTER.

Because I am very interested in forest ecology and long term evidence of events in forest settings.

Match my interest

I participate in conservation education programs on occasion on the Forest.

It sounded interesting and less strenuous than Forest Detectives.

Personal interest in the subjects

I do primarily aquatic research so I was interested in learning about the tools that scientists use to study terrestrial environments.

Wanted to learn more about the topic.

The idea of learning from the forest is very exciting for me as is learning ways to pass that excitement on to others, particularly young people who are in the process of developing the relationship they will have with the land throughout their lives.

I was eager to explore the idea of the forest as a teacher and learn ways to apply this awareness to outreach with others, particularly the young.

Interesting and also relevant to my work

I was assigned to be a leader.

I like streams.

Closest to my interests.

I am interested in outdoor science education.

Water!

It was open! And I want to learn more about it.

It best fit my current interests.

Because my son selected it.

Relevant to my work/research

I'm an aquatic ecologist.

Interest in science education outreach. Had fewer people sign up.

I already know about ecological forestry and I don't like education. I like a presenter and I think they're a good instructor and manage their lab well.

I work on dispersion and ecology in river networks.

Had learned about stream ecology in class but had never worked in streams.

Water dye

The soil section was interesting. I didn't know about the various soil types.

I helped lead it.

I am studying rivers.

I was interested to hear how forestry personnel were trying to balance human needs and ecological preservation.

Education is my passion.

I am part of a project on engineered log jams so I am interested in learning more about streams, fluid dynamics, and stream ecology.

Tagged along with a friend.

I was interested in learning more about carbon storage.

I work with elementary and middle school students during various outdoor events. So I wanted to get some new ideas.

Interested in forest growth, etc.

Gain broader understanding of stream ecology

Because I had previously taken forestry classes and have walked the Discovery Trail, I wanted to learn about something new.

Because it had many things in common with my research project.

It's the one my daughter wanted to join so I did the same.

I like politics.

A specific presenter. And I wanted to core a tree!

Because it sounded interesting to me. The ecological forestry one sounded interesting also.

Sounded interesting

Interested in aquatic ecology of the forest.

I missed the vans.

I was interested in learning about the research surrounding the streams of the HJ Andrews.

Interest - general interest in stream ecology and exploring HJA watersheds

Ethical and philosophical ideas

I am doing a project in WS1.

Interested in interpretation and learning activities.

A specific presenter

Q16. Please rate your experience with the following elements of the afternoon fieldtrip.

	Very Satisfied	Satisfied	Ambivalent	Dissatisfied	Very Dissatisfied
Time of Day	55	34	11	-	-
Climate	39	47	12	1	-
Length	37	56	4	3	-
Number of participants	25	52	14	-	-
Topics covered	21	58	8	6	-
Visuals or graphics used	31	42	21	7	-
Activities	39	42	14	4	1
Organization	52	38	6	4	-
Professionalism of speakers	53	42	4	1	-
Clarity of the speakers' presentation	43	46	7	4	-
Ability to hear speakers	53	39	4	4	-
Ability to see speakers	49	46	3	1	1
Enthusiasm of speakers	65	29	3	3	-
Information provided by speakers	47	44	4	3	1
Amount of time allocated to discussion or questions	39	39	17	4	1
Speakers' response to questions	46	44	7	1	1

Q16. Comments?

There was little effort to look at or identify underlining assumptions or explore cause of effects attributed to past or present management. We need to go deeper and if we can't do it with scientists, who can we do it with?

The time is too short for each site

It seemed almost as if there were a reason not to adopt new models of sustainability with any haste. This troubles me some due to the urgency of the issue. If our children and their are to have the e same forest resources that we've had, we must move more rapidly toward sustainability. I do understand that the USFS must maintain a somewhat neutral stance. In this respect I almost wish the discussion leader had not been from the USFS.

Our presenter was excellent - obviously enthusiastic and knowledgeable. Soil pit was very hands-on and interesting. Lots of opportunities to learn. The presenters also had excellent visual aids and excellent discussion. My personal style is to listen more to what their areas of expertise are as opposed to them asking us for questions and hypothesis, but I know that isn't as engaging for some.

Trip was not very informative- ended up in more general discussion dominated by a couple of strong personalities (attendees, not leaders). We went to sites and stood for 45 minutes talking- would have been just as effective to be inside looking at photographs. Needed more activity and more focus on providing good information.

I would emphasize the enthusiasm exhibited by all the researchers.

So many facts and so much cool information! Just walking around and hearing about things from different people was awesome. I learned so much!

The morning sessions were about 10 minutes too short.

I thought it was an interesting and well-organized field trip.

I would have appreciated it being a little more fast paced. I had a hard time paying attention at points because we had been standing around too much.

Lunch was incredible! Morning sessions could be a bit more technical/in-depth.

The highlight of the afternoon (and the day) was listening to a specific presenter read various written materials from the writers in residence program and telling of their own evolution of the importance of including these perspectives into written and visual interpretations.

Climate? I do like the dry-summer temperate type

I had a really great experience getting to learn about the variety of research projects going on at the Andrews, and meeting the people involved in them....and the food was insanely good!

Too focused on what teachers need.

Too many on tour - Too much trampling on the paths (impact) like a herd of xxx (Just kidding.)

Some of the activities felt a bit long or drawn out.

Overall very good event!

I think this was the best organized HJA Day I have been to.

Speakers of morning sessions seemed burned out by the time it was the last group. Sessions were good though. I REALLY enjoyed the field trip!

Sometimes seemed like a USFS promo.

The dye in the streams was really cool!

Activities could be more active; the afternoon ones felt a bit unplanned / winged / last minute.

There wasn't a lot of time for discussion/questions but the activities were fun. Maybe talking about the concepts / topics before going to the stream to get an idea of what to look at / for.

Ability to hear speakers - I am a smidge hard of hearing, so I was able to position myself closer to speakers - so not a problem.

I really enjoyed the program, however I feel like some of the things / terminology / specifics may have been over some people's heads! I loved it though.

I really do not think it is responsible to dump large amounts of dye in the stream, especially just for a demonstration.

Great job overall

The speakers did a great job keeping the conversation on track and moving. The presenters posed engaging questions to the audience.

More talking than doing, especially for experiential learning session. Some fun activities and some monologue from a presenter telling people about the forest teaching but not using the forest - or giving space for explanation, observation, meditation - to allow it to do so.

Q17. To what extent do you agree or disagree with each of the following statements about the afternoon field trip?

	Strongly Agree	Agree	Ambivalent	Disagree	Strongly Disagree
The speakers' presentations were interesting.	43	51	6	1	-
The speakers' presentations were thought-provoking.	41	43	15	1	-
The speakers were biased (one-sided) in the information provided.	3	4	34	48	11
The speaker effectively explained complex issues.	24	49	22	4	1

Q17. Do you have any comments or feedback for the speakers?

When there are disagreements about past management or implications for present or future management, that needs to be further discussed, not ignored.

A specific presentation is really good.

The field trip description stated, "You'll be invited to share your own insights and observations." This was done only within the context of planned activities. There was little encouragement to offer insights outside these programmed activities. A little more attention to the general issues of outreach and education would have been appreciated.

While the Ecological Forestry afternoon session was worthwhile, it wasn't much more than a continuation of the same conversations that have been taking place in the public venue for the last couple of decades. I'd like more discussion on policy vs. practices both historic and current, differences between practices of public land vs. private land, and models for sustainability both developed and in development.

Maybe too many people in one group; could have split this group into two.

Great job all around!

If anything the presentations were beyond strongly interesting and generated substantial self-reflection.

Keep up the enthusiasm!

Could have proceeded more quickly through activities/stations, but overall great afternoon.

I was especially impressed with a specific presenter. His topic is so hard but he did very well making it clear.

Really liked how hands-on it was!

Do a quick breakdown of riparian ecosystems at beginning to fill in knowledge gaps of audience.

Perhaps some discussion of larger social / world / environmental impacts.

Narrow discussion down to a few topics and explain in depth.

I appreciated the diversity of those speaking on the Discovery fieldtrip! A teacher and a researcher and a presenter reading poetry.

Complex issues may not be appropriate for this audience and amount of time. More interest with generalness.

Everyone was awesome.

Disturbing the forest should be minimized in order to minimize confounding variables.

Well organized - no comments

Our presenter is full of wonder and joy and fun to be on the trail with. The teacher did a good job explaining and running activities. Sometimes we started an activity and then just trekked after it instead of doing something with it.

Q18. Please rate your experience with each session using the categories in the top row. (Choose all that apply.)

	Enjoyed	Learned from	Kept my attention	Remember in a month
Morning introduction/ Welcome	75	18	52	15
Morning sessions	61	82	53	43
Lunch	88	14	22	33
Afternoon fieldtrip	58	60	49	54
Networking	68	35	30	35
Van ride	55	18	16	16

Q18. Comments?

The driver to HJA was attentive and efficient. The ride home was actually a little scary. The driver seemed more interested in her conversation with the passenger in the front than in her driving, constantly looking at the passenger and gesturing with one hand. At those moments less than half her attention was focused on driving. Everything else about the day was equally unforgettable in a more positive and constructive manner.

Van ride was on-time, comfortable, and reasonable length. I didn't ride back in the van. I had many networking opportunities and feel that was nearly the highlight of the trip. There was time give for this at meals, between sessions end of day etc. Food was absolutely fantastic - both morning and lunch. Morning sessions: two presenters were excellent, informative and interesting. Two presenters had a good idea but I think it would have been more interesting to see more long term correlated results as opposed to having it be so open ended. Afternoon sessions: I was in forest detectives and felt the sessions were informative and the right length.

Going down to HJA with 8 people in the van felt more comfortable than coming back with 12 people. Not only in a physical comfort way, but also in the ability to have/enjoy conversations with others in the van.

While I enjoyed the morning sessions, I thought they were a little bit 'scaled back' in terms of density and complexity of information. The long term ecological measurements especially was very basic and I didn't learn that much. I think I actually preferred some previous HJA days where there were presentations and/or poster sessions that provided more detailed information on current studies. This day seemed more geared to provide an introduction to students.

I am not sure the categories apply, so difficult to answer.

Perhaps the most important aspect was networking with past and present FS employees and scientists, one on one.

Q19. Please rate your past experience with each activity.

	A great deal	A moderate amount	Some	A little	None
Lecture or presentation	60	24	6	7	3
Self-guided reading or visual	42	32	14	3	9
Small group discussion	43	38	13	2	4
Large group discussion	35	35	16	4	9
Hands-on participation	46	30	15	5	5
Group work	40	33	16	4	7

Q20. Please evaluate each activity that you experienced at HJA Day using the categories in the top row.

Please describe an experience of the activities listed below that you encountered at HJA Day.

	Enjoyed	Learned from	Kept my attention	Remember in a month
Lecture or presentation	70	75	63	46
Self-guided reading or visual	67	52	38	18
Small group discussion	52	56	44	27
Large group discussion	43	44	43	28
Hands-on participation	67	62	53	47
Group work	56	47	26	26

LECTURE OR PRESENTATION

Too much 'party line' and not enough depth of exploration - underlining assumptions or cause and effects of past management relative to triple bottom line.

The people in our group stand in a circle and the leaders given the presentations.

Fairly tightly organized; stayed on subject except for some of the poetry reading. There were moments when it seemed tangential, though enjoyable.

The morning intros were brief presentations, but not really what I would call lectures.

Morning session

All four morning sessions and the afternoon session has lectures/presentations and I enjoyed and learned from this the most. I prefer this style because I want to learn what the experts know.

Pollination

Field trip; description of LiDar

Except for above ([the exhibit/self-guided or visual]), the rest fall here.

The stations

Various

The morning sessions and Discovery Trail had presentations

The co2 flux presentation.

Morning talks and afternoon

Tracking pollinator movements using RF tags: interesting and enlightening

AM presentations (pollinators)

Morning activities and field trip

Welcome

Art - great. A presenter's xxxxx and hummingbird - great. All morning sessions - great.

Listened to the scientists explain concepts and research activities and goals

Should be reduced time of this

Pollinators, climate station

Really liked these - great speaker.

Hummingbird presentation

Some AM stuff fell into this.

Engaging and interactive

Morning presentations

Morning lecture about climate research

The climate morning session

Forest detective soil and vegetation presentations and discussions were highly informative and interesting.

Hummingbird presentation was very interesting and scientific. I learned a lot from the presentation.

Climate presentation, there were many new things / machines to look at.

Satisfied - pollinators, privet - very helpful to learn about research projects in HJA

Like them.

Morning session on hummingbird

SELF-GUIDED READING OR VISUAL

Pictures of past logging and comment to have juxtaposed with plantation (industrial) forestry to accent the differences.

The interdisciplinary exhibit had elements of this form of activity

The presentations in the conference room were informative even without each one being attended by an expert.

I don't recall seeing much or any self-guided material except possibly in the morning artist session which I did not look at.

History poster in morning sessions.

HJA history, art exhibits.

Only spent a few minutes there before moving on to lunch.

The interdisciplinary exhibit in morning session; otherwise not much

The artists area

Exhibits during the indoor morning rotation

The morning session had some poster sessions

The 'science fair style' set up of the history and art presentations inside one of the lodges.

Looking at the history/art/writing/scientific offerings in the conference room

HJA LTER humanities projects (history, poetry, art)

Morning activities

Art - great. A presenter's xxxxx and hummingbird - great. All morning sessions - great.

Read the history of HJA poster and info on the osprey cam

The morning activity with the artists and forest live-feed videos.

Posters, activities in conference room

Did we do this?

Reading in the headquarters

Got to look at osprey cam - so cool!

Visually stimulating

Looking at maps and projects at the morning interdisciplinary session

The morning session about the record keeping at HJA

Interdisciplinary station was a good chance to explore the stations on my own and look at what I wanted.

In the conference hall, we would spend time at each station at our own will, which I enjoyed.

Station number 4. I learned by visualizing graphs and counting / correlating rings in the tree cookie.

Exploring the different graphs, topographic maps, camera views

Morning session

Not fun

SMALL GROUP DISCUSSION

Greater opportunity for depth of discussion

Might have tried this more, as breaking into small groups is a way to deal with not enough samples in exercises.

In each morning station and the afternoon field trip, discussion was relevant and stimulating.

A lot of this occurred in the afternoon session. I don't prefer this interactive style as much. As in a question is asked, and it is turned back to the participants.

Lunchtime and van discussions were a great place for this.

Field trip re: origin of soil in soil pit

Afternoon field trip: Stream Ecology

Various

Van ride and the Discovery Trail

Stream ecology and pollinators presentation.

How to examine and interpret LIDAR imagery

Networking

Just listened to scientists and tour participants discuss observations on hands-on stream ecology event

The afternoon field trip had portions of informative small group discussions.

Efficiency wary of the small group discussion in the field

Fieldtrip on Discovery Trail - items that don't belong

Had fun in the art session.

Afternoon field trip

A little in the AM session.

The Discovery afternoon tour. The group was a good size for generating casual discussion.

The presentation at the fire pit promoted interacting with other folks and discussing.

Enjoyed participating

I talked to other participants about the plants we were seeing.

Thought provoking - team work

My group was small. I liked it. Easy to ask questions.

LARGE GROUP DISCUSSION

Not enough depth..

Not encouraged as much as could be desired.

Ecological forestry trip was largely this form of interaction

Some of this occurred in the morning sessions.

Afternoon field trip

Some ability to ask questions and discuss; but not much discussion

Afternoon field trip: Stream Ecology

Limited

Morning talks and afternoon

PM ecological forestry

Morning activities had good discussions.

Impossible of this kind of large group discussion

I think good - liked Stream Ecology group

Introduction

My afternoon session was this.

Afternoon fieldtrip

Well organized - critical thinking in the group

HANDS-ON PARTICIPATION

Good choice of exercises overall.

There was a tiny bit of this at the interdisciplinary exhibit. This is the only morning session I experience, since this was my station.

Didn't have quite enough of this. But I imagine it may have been influenced by my choice of afternoon sessions.

Afternoon session in the soil pit. Fun and interesting.

Afternoon sessions (particularly soil)

Afternoon tour had lots of fun hands on stuff.

Field trip increment boring; soil texture classification

Afternoon field trip

Afternoon field trip: Stream Ecology

Discovery trail bug traps

Hands-on macroinvertebrate count

Discovery trail had several hands-on activities

Stream ecology presentation

Afternoon talk

How to classify soils based on texture and color

Field trip - traps

Fieldtrip

Ok.

Really enjoyed the hands-on exercises.

I got to observe various stages of leaf decomposition and invertebrate activity - got to feed invertebrates to fish - heehee. Son caught a frog - gorgeous.

The afternoon trip "Forest Detectives" had a good hands-on activity with soils that taught me a lot.

Field trip on Discovery Trail - pitfall traps

Liked a lot - Leader letting us use dyes, fish, etc.

Afternoon field trip

Field trip - got to pick out invertebrates, measure light, see animals

Hit or miss

Fantastic

The live stream ecology experiments

Most of the sessions had something to interact with but the Discovery afternoon tour was my highlight.

Stream ecology bug collection was interesting as well as to see degradation over time and to see the effects of stream flow dynamics.

Stream field trip. We got to estimate locations with most light availability and sort through leaf litter for insects. Fun.

The contests were fun and memorable.

Learned - we got to examine litter bags for stream critters

Very little.

Bug traps on afternoon Discovery Trail activity

GROUP WORK

Minimal but difficult with a big group.

Long-term research station in the morning

Afternoon field trip somewhat; could have been more

Afternoon field trip: Stream Ecology

Limited

Discovery Trail had some partner work

Fieldtrip

Same [category] as hands-on?

Afternoon field trip

Interesting

My friend and I worked together, picking insects out of the litter-bags.

Good team work - stream dye observation

Q20. Comments?

The substantial issues (environmental, economic and social) require a much wider focus of integration and synthesis that can address the significant declining opportunities we are leaving future generations. If not now, when. If not here (with science) where?

Please keep in mind that my experience is not one of a normal participant. I was involved in delivering some of the content from every bit of HJA Day I experienced. Please don't lump me or others like me in with normal participants, it will skew your results and make this survey unhelpful.

I would probably favor more hands-on experience in the AM hours. I was getting pretty tired past 3pm and was probably not as engaged as I would have liked to have been.

I don't think this is an effective way of ascertaining if these types of learning should be included. For example, I personally like hands on stuff, but the particular hands on activity I did was not very interesting.

NO ALL

Didn't feel that the information provided revealed data about the forest as a whole or what the research is being used for.

YES ALL

All are applicable to my work.

Q21. Did your experience at HJA Day spark, draw upon, or inspire any of the following for you? (Choose all that apply.)

Curiosity	97
Personal relevance	82
Practical application	79
Emotional connection	75
Personal investment	74
Past experience	71

CURIOSITY

Why there is a disconnect with science and social relevance?

Interesting people I might meet.

Curiosity (along with my job description) is what has pushed me to learn the information I needed to be able to lead HJA day sessions.

Pollination station was very engaging and thought provoking.

Technical issues

I love learning about new things, especially science.

Truffle

I am interested in science and research.

Yes, I always like to learn new things.

The drone

Curious about the visual and writers in residence and the pollinator research

Liverworts

Career

Thought-provoking

Art/image processing

How does light affect fish?

Pollinators.

I found myself brainstorming more ideas.

Interdisciplinary activities always spark curiosity because it is not topics I think of often.

Enhanced my knowledge and curiosity

Hummingbirds are cool!

PERSONAL RELEVANCE

Bringing personal experience (almost 40 years) to the discussion.

Long term connection with HJA

I live and work here.

Culture of science- seems cars removed from me.

Micrometeorology

I work on streams

One presenter talked about spiritual connection to nature.

The Discovery Trail was relevant for any work I do in conservation education

Career

Nice to cover familiar topics and concepts in a new ecosystem!

Worked here a long time

Interested in incorporating stream ecology into my ELJ project.

Pollinators.

I can use many of the ideas presented.

Afternoon Discovery Trail session, arts / humanities AM session

PRACTICAL APPLICATION

Still frustrated that local experience and application can't be better integrated at the Andrews.

Can apply some of what I learned on the field trip.

The afternoon trip helped me think about future communication of this topic

I will use some of what I learned to inform my work.

The drone

Can apply to my work in the forest

Career

Not enough time to...

Relates to my research

Interested in incorporating stream ecology into my ELJ project.

Pollinators.

I can use many of the ideas presented.

I'm going into environmental science at OSU and this was a really great experience in application and investment.

Observation activity PM Discovery Trail

EMOTIONAL CONNECTION

Why we are so quick to discount the future.

Sharing love of nature always invigorating.

It definitely mined my emotional connection to the forest and the program.

It's a brief and impersonal experience with the forest.

One presenter talked about spiritual connection to nature.

The writers in residence readings connected emotionally with me.

Listening

Environment

Good chance to meet new people

The forest is inspiring.

Loved the art and poetry

Worked here a long time

Excitement!

Pollinators.

So beautiful here!

I loved the poetry and artwork presented.

Hummingbird nests and talking about trapping their tiny legs

PERSONAL INVESTMENT

I've given untold years yet rarely does that get acknowledged or appreciated.

A day worth spending at HJA.

I certainly wouldn't help put on HJA day if I wasn't invested in the program and the place.

Obviously a lot of other people are personally invested in the Andrews.

I work on streams.

Environment

Interested in incorporating stream ecology into my ELJ project.

Pollinators.

Keeping forests pristine to allow for a natural progression made me more excited about conservation issues.

I'm going into environmental science at OSU and this was a really great experience in application and investment.

(No.) I am already personally invested.

PAST EXPERIENCE

Why there isn't a greater emphasis to engage the local community with science at the Andrews.

Have always liked visiting/using HJA.

I tried not to repeat any mistakes I noticed from previous HJA Days.

Past HJA Day

One presenter talked about spiritual connection to nature.

I drew on my past conservation education.

Classes taken

Better understanding of forest

Reminds me of being at Cedar Creek LTER

Nice to cover familiar topics and concepts in a new ecosystem!

Worked here a long time

Info I learned in environmental science

Pollinators.

Slope failure talk to field excursion. Discussion involved how slope was triggered.

Made me remember an awesome fieldtrip

I remembered concepts I had learned.

Bug cups and observation experiments on Discovery Trail

Q22. Opportunities for discussion with other participants:

	Strongly agree	Agree	Ambivalent	Disagree	Strongly disagree	Not applicable
Enhanced my understanding of the material or information presented	18	57	15	3	1	6
Were too long	-	9	42	35	4	10
Were too short	6	14	49	25	1	4

Q23. Opportunities for personal reflection or alone time:

	Strongly agree	Agree	Ambivalent	Disagree	Strongly disagree	Not applicable
Enhanced my understanding of the material or information presented	6	24	26	1	1	41
Were too long	-	3	33	13	13	39
Were too short	6	17	38	8	-	32

Q24. To what extent did HJA Day influence any of the following for you?

	A great deal	A moderate amount	Somewhat	A little	Not at all
Enhanced my appreciation for the Andrews Forest site.	51	27	14	6	3
Enhanced my appreciation for the Long-Term Ecological Research program.	49	32	10	6	3
Increased my knowledge about programs at the Andrews Forest.	52	37	9	1	1
Increased my knowledge of specific scientific topics.	34	34	20	10	1

Q25. Overall, how satisfied are you with your experience at HJA Day 2014?

	Very satisfied	Satisfied	Ambivalent	Dissatisfied
Overall satisfaction	54	39	4	3

**Q26. How can we enhance your experience at HJA Day?
(Choose all that apply.)**

More hands-on activities	51
More time in the forest	48
More small-group discussion	32
Overnight trip	28
The opportunity to participate in multiple fieldtrips (trips would be shorter)	25
More time to network	20
Other	25

Other.

Address questions of social relevance and local community involvements and investment.

Holy cow, no overnight HJA Day, please.

I think the length of activities was appropriate given the available time.

Some sort of overarching theme- come away feeling like I understand what the Andrews is all about, rather than a patchy sense of the kinds of things that are done there.

Perfect as is.

It was a good mix of lecture and hands-on

More detailed presentations on ongoing studies at HJA

More technical discussions

Seemed to be well balanced for the wide spectrum of participants

More along time to visit forest and commune with it.

I thought the balance of activities and experiences was just right.

Perfect as is.

Shorter field trips to shorten day or allow more networking.

Great as is.

More discussion of data collected and results. Discussion of results and implications is interesting.

More time to reflect

**Q27. What other topics would you like to see covered at HJA Day?
(Choose all that apply.)**

Forest ecology	62
Watersheds	55
Forest management	49
Outreach and education	44
Technology	38
Art	29
Creative writing	17
Other	32

Other.

Where is science leading? How will it help future generations? When will we learn from past mistakes?

Open mike for natural history stories.

Any work accomplished toward sustainability

Topics should be selected from ongoing research and results.

Broader impacts- how is the science being applied. Also future directions/upcoming projects.

These have all been covered.

Nutrient studies, especially related to water

Were not those all covered?

History

We had some of these [art & creative writing] presented. Some of these too [all others listed].

Philosophy and ethics

Tree diseases. More botany stuff. Mushroom hunting? Plant identification.

I thought it was well-balanced.

I trust them to make this call!

History (of forest management and of native America)

Philosophy. Political economy.

Conservation education

Bird-handling. Wildlife field trip

Forest pests and diseases

None, all were covered.

Environmental philosophy

Q28. As a result of participating in HJA Day, I gained an appreciation of:

	Strongly agree	Agree	Ambivalent	Disagree	Strongly disagree
HJ Andrews Forest	50	46	3	1	-
Research conducted at the HJ Andrews Forest	42	51	6	1	-
Researchers	38	51	10	1	-
Research topics covered at HJA Day	34	58	9	-	-
Nature	43	37	17	3	-

Other.

The need for direct integration with local communities and social relevance

Dominance of OSU at HJA compared with past involvement of ecologists from UO.

The caterer!

Writers and Artists in Residence Programs

Great organization of day. The perfect event. Great staff - all helped to pull together.

Volunteers and people's work

Q29. HJA Day 2014 changed the way I think about:

	Strongly agree	Agree	Ambivalent	Disagree	Strongly disagree
The complexity of problem-solving	6	36	40	19	-
The connection of science with policy	7	32	45	14	1
Forest management	10	37	41	11	-
My fieldtrip topic	14	47	31	7	-
My behavior	1	14	66	19	-
Past knowledge	7	32	43	18	-
Research	10	43	33	14	-
Science	14	34	34	17	-

Q30. Final thoughts

	Strongly agree	Agree	Ambivalent	Disagree	Strongly disagree
I learned something new at HJA Day.	48	47	3	1	1
HJA Day was a waste of my time.	-	4	6	23	67
HJA Day reminded me of something that I had not thought about in a while.	13	51	25	10	1
I intend to participate in HJA Day again.	33	34	30	1	1

Q31. Do you have any other thoughts about HJA Day?

If you can incorporate my comments in future programs with implications for management, I would welcome more direct involvement with year around opportunities.

Perhaps emphasize more of the natural history of the site over discussion of project management. In other words, greater discussion of what has been learned over how the knowledge was obtained. More facts, less process.

Please note that there is a subpopulation of attendees that are Corvallis and site-based staff or researchers who lead field trips. Our experience is a very different experience. In some cases we are involved in organizing and delivering the program throughout the day and do not participate in any component as a normal attendee. In other cases we may attend one session in a way that is at least sort of similar to the experience of a visitor, but even then our background, motivations and objectives for HJA Day are so different from those of visitors that it makes no sense to lump us in with the general HJA Day population. Please, please, please don't do that.

Lunch was amazingly good. I am in love with HJA. I truly enjoyed every minute of my experience there. Thank you!

Very well organized with appropriate time intervals and sufficient time between for networking.

Good networking and opportunity to interact with colleagues outside of RH and Peavy.

Another fantastic day at the site and in the field.

Some sort of mild facilitation of networking, to help out the shy people?

The notice that goes out to the Forests is still not seen by all potential people who would like to attend.

A valuable endeavor

Thanks for the opportunity to participate, and thanks for the delicious lunch especially the sensitivity to those of us with gluten/meat/sugar concerns. The offerings showed that a healthy inclusive menu can still be phenomenal!

While I like this format for “outreach” to new students, public and field crews, it is not our tradition, so it will take some time to become effective at it. In the old days, our target audience was very much internal to the science staff - communicate among disciplines and teams. That doesn't happen in the current format because the senior presenters are all off presenting and don't have a chance to hear other presentations. It's a matter of objectives for the Day.

See you next year.

Amazing food and hospitality. Thank you so much for sharing HJA Day with us.

Thanks!

I always like a good HJA Day.

Delicious food!

Thank you!

Am 64, so one day's experience won't much affect how I view science, etc. Great food and snacks!

Very good experience. Super glad I came.

It was fun. More interactions with new people would be good, so we could learn from each other and discuss.

Too many questions to audience, not enough experienced people speaking.

There would be good if researchers bring lists to sign up in case somebody wants to volunteer during the fieldwork season.

The graphs on snowpack and stream height correlating with tree rings was very interesting.

Well organized, succinct, clarity in presentation and good job of explaining everything in laymen's terms

Fun energy! Thanks for everyone's hard work!

Overall, 33 participants completed both the pre- and post-HJA Day survey.

Appendix C: Codebook

Table 11: Themes, categories, codes and counts of the qualitative data

Theme	Category	Count	Code	Count
Satisfied	Structural Aspects	55	Organization	21
			Content	20
			Food	14
	Teaching / Learning Style	47	Teaching / Learning Style	47
	People & Networking	36	People	25
Networking			11	
Unsatisfied	Structural Aspects	76	Content	46
			Organization	27
	Teaching / Learning Style	16	Teaching / Learning Style	16
	People	13	Presenters	10
			Visitor Impacts	3
Outcomes of HJA Day	Appreciation & Enjoyment	32	Positive Experience	24
			Appreciation	8
	Knowledge Gain & Application	16	Knowledge Gain	9
			Knowledge Application	7
Participant Background	Personal Interest and Relevance to Andrews	20	Connection to Andrews	9
			Work / Research Relevance	8
			Personal Interest	3
Reason for Fieldtrip Choice	Structural Aspects	46	Content	37
			Organization	9
	Work / Research Relevance	14	Work / Research Relevance	14
	People	5	People	5

Codebook Descriptions

Codebook

Descriptions of codes, their abbreviations (for use in coding), and typical examples.

Satisfied (sat)

All codes will refer to participant satisfaction with some element of the HJA Day experience.

Ex. “Overall very good event!”

Organization (org)

The organization of HJA has changed in recent years. While participants used to get a more general idea of the LTER program through many quick and brief sessions, the structure of the day has changed to allow for a more in-depth and hands-on understanding of the program through fewer sessions. This new organization has both pros and cons, but this theme will refer to the benefits of this type of organized HJA Day. Comments will refer to any organizational aspect of HJA Day, e.g. structure. Generally the word used will be *organization* or *balance*. Sometimes the structure will not be mentioned, but described, such as “Smooth show.” Often, comments will refer to *time* or *length* of an activity or session. Comments about the van ride are also included in the structure of the day.

Ex. “I was in forest detectives and felt the sessions were informative and the right length.”

Networking (net)

Networking was a major aspect of HJA Day, and the second greatest reason that participants attended HJA Day. Other than a specific networking session, participants remarked that there was time for networking between sessions and at lunch. Comments will refer to networking, talking with others or meeting new people. Generally the word used will be *networking*, *meet*, *talk*, or *interact*.

Ex. “Perhaps the most important aspect was networking with past and present FS employees and scientists, one on one.”

People (peo)

Comments will refer to people in general, such as *everyone* or *people*. Comments may refer to *staff* or *volunteers*. Comments may only refer to people, such as “Friendly and thoughtful”, as inanimate objects are not generally considered friendly and thoughtful. Comments for this theme will generally come from the survey questions “What sections of HJA Day did you attend? Comments?” and “Do you have any other thoughts about HJA Day?”

Ex. “Everyone at HJA is knowledgeable in their field while maintaining a good sense of humor.”

People: Presenters (peo-pres)

Presenters were a significant part of the HJA Day event. The LTER principle investigator gave a morning welcome speech to start the event, morning sessions had four stations, each with one or two speakers, and each of the four afternoon fieldtrips had one or two leaders. Comments will refer to any aspect of presenters, such as their personality or comments on their presentation. Often a specific presenter's name will be used (to maintain confidentiality, we changed names to *a specific presenter*). Comments will generally come from the question, "Do you have any comments or feedback for the speakers?" Words used will include *leaders, speakers, researchers, or presenters*.

Ex. "Our presenter is full of wonder and joy and fun to be on the trail with."

Food (food)

There were multiple times at the event when food was available. Refreshments were available at the start of the event, lunch took place in the middle, and snacks were offered at the end of the event. Comments will refer to *food, lunch, snacks* or *catering*.

Ex. "The lunch was very tasty."

Content (con)

The content of information presented at HJA Day is a major aspect of the event. Organizers have the task of presenting information about the research and programs at the HJ Andrews Forest, but also providing information that will be interesting and useful to participants. Depending on participants' goals and interests, too much or too little of certain information could sway their overall satisfaction of the event. This theme only pulls comments about participant satisfaction with the amount and type of content provided. Comments may refer to the quality and quantity of information presented.

Comments will often refer to a topic encountered at HJA Day, such as *soil pit, streams, art, and pollinators*.

Ex. "The dye in the streams was really cool!"

Teaching / learning preference (tlp)

We asked participants about their satisfaction with the teaching styles used by presenters throughout HJA Day. Presenters' preferred teaching styles may be similar or different from the preferred learning styles of participants, and therefore enhance or decrease the satisfaction of participants' overall experiences. This theme refers to participants' positive experiences with the teaching styles employed at HJA Day. Comments will refer to a preference for a teaching or learning style, such as *hands-on activity, lecture, presentation, small group discussion, large group discussion, or group work*.

Ex. "The presenters also had excellent visual aids and excellent discussion. My personal style is to listen more to what their areas of expertise are as opposed to them asking us for questions and hypothesis, but I know that isn't as engaging for some."

Unsatisfied (uns)

All codes will refer to participant's dissatisfaction or desire to alter some element of the HJA Day experience, often to increase or decrease something.

Ex. "Not fun."

Organization (org)

Comments will refer to issues with HJA Day organizational elements, such as structure and time. Included in the organization theme are issues with timing of activities, discussion, or networking, the need for a theme, and how the structure affects those with physical needs. Generally the words used will be *organization*, *time*, or *length*. Sometimes the comment will allude to an issue with the organization of the day, such as "Was the time after field trips specifically for networking? Somehow I never picked up on that." Comments about the van ride also fit into this category.

Ex. "Maybe too many people in one group; could have split this group into two."

People: Presenters (peo-pres)

This theme refers to comments in which participants were dissatisfied with the presenters. Often they comment that the presenters are biased or too homogeneous. These will generally come from the question "Do you have any feedback for the speakers?"

Ex. "Too many questions to audience, not enough experienced people speaking."

Visitor impacts (vim)

Participants come to HJA Day with a variety of values and worldviews. This theme refers to comments in which participants were dissatisfied because the activities or sessions at HJA Day went against their personal values. Specifically, comments will refer to an issue with the use of a forest site or research plot. Strong negative words are used, such as *dump*, *disturb*, and *trample*.

Ex. "I really do not think it is responsible to dump large amounts of dye in the stream, especially just for a demonstration."

Content (con)

The content of information presented at HJA Day is a major aspect of the event. Organizers have the task of presenting information about the research and programs at the HJ Andrews Forest, but also providing information that will be interesting and useful to participants. Depending on participants' goals and interests, too much or too little of certain information could sway their overall satisfaction of the event. This theme only pulls comments about participant dissatisfaction with the amount and type of content provided.

Comments will often refer to the desire for *more detailed information* or *broader information*.

Often, requests for more detailed information will state the wish for *more discussion*. Most comments about topics, the content provided, will come from the question, "What other topics would you like to see covered at HJA Day?"

Ex. “While I enjoyed the morning sessions, I thought they were a little bit 'scaled back' in terms of density and complexity of information.”

Teaching / learning preference (tlp)

We asked participants about their satisfaction with the teaching styles used by presenters throughout HJA Day. Presenters’ preferred teaching styles may be similar or different from the preferred learning styles of participants, and therefore enhance or decrease the satisfaction of participants’ overall experiences. This theme refers to participants’ negative experiences with the teaching styles employed at HJA Day. Comments will refer to a preference for a teaching or learning style, such as *hands-on activity*, *lecture*, *presentation*, *small group discussion*, *large group discussion*, or *group work*. Often comments will reflect the desire to have more or less of the style.

Ex. “Didn't have quite enough of this [hands-on participation].”

Outcomes of HJA Day (out)

All codes will refer to the take-away that participants get from attending HJA Day. This theme is not about a satisfaction or dissatisfaction with elements of HJA Day, but what participants gained from attending. Themes include appreciation, knowledge application, knowledge gain, and positive experience.

Ex. “Enhanced my knowledge and curiosity.”

Appreciation (app)

A sense of appreciation is fostered by meeting the needs of participants: through facilitation to meet their goals and by providing them with elements that create a feeling of being cared for.

This theme however, is not about what fostered appreciation, but comments that claim that participants are appreciative. Generally comments will use the term *thank you*.

Ex. “Thank you so much for sharing HJA Day with us.”

Knowledge gain (kno-gain)

Comments will refer to participants’ statements about learning. This is not about a learning style preference but about learning something new. Comments will use the term *learned*.

Ex. “I learned a lot!”

Knowledge application (kno-app)

Participants often comment on how they can use the knowledge that they learned at HJA Day in some aspect of their life. Comments often use the term *use*, *inform*, and *apply*.

Ex. “I will use some of what I learned to inform my work.”

Positive Experience (pos)

Many comments cite that participants enjoyed their time at HJA Day. While exclamations of positivity, these comments are mostly general and vague with little, if any detail. Comments will often use upbeat terms such as *fun, enjoyed, awesome, great, good, fantastic, and valuable*.

Ex. “Another fantastic day at the site and in the field.”

Participant Background (back)

All codes will refer to the participant’s background or life outside of HJA Day. These are not judgments about HJA Day, but about how participants will use HJA Day to further their work or personal lives, or just about participants themselves. Themes include personal interest, work / research relevance, connection to Andrews, and fieldtrip goals.

Ex. “I work on streams.”

Personal interest (int)

Comments will refer to a love of learning, as a description about the participant. This is about who the participant is, not what they got out of HJA Day. Comments will often have the term *love, learning, and science*.

Ex. “I love learning about new things, especially science.”

Work / research relevance (rel)

While this theme may seem similar to the Knowledge Application theme, it is not. This theme refers to a statement about participants’ work or research relating to the information provided at HJA Day rather than an explanation of how participants will use the knowledge gained. Comments will generally refer to a participant’s background. Most comments use the terms *work or research*.

Ex. “Relates to my research.”

Connection to Andrews (And)

Comments will refer to a deep connection to HJA Day, the Andrews Forest or the LTER program. Comments will often use the terms *connection*.

Ex. “Have always liked visiting/using HJA.”

Fieldtrip goal (fld)

All codes will refer to a reason for why participants chose the fieldtrip option that they did. This is not about what they liked or didn’t like about the fieldtrip, but what they were looking for in the fieldtrip. These comments come from the question, “Why did you join that specific fieldtrip?” Themes include people, organization, content and work / research relevance.

Ex. "I wanted to core a tree!"

People (peo)

Comments will refer to people as the reason for why they chose the fieldtrip. People may include *presenters, family* or *friends*.

Ex. "Tagged along with a friend."

Organization (org)

Comments will refer to the structure of the fieldtrip as the reason for why they chose the fieldtrip. Reasons may include *availability, terrain, or physical constraints*.

Ex. "It did not require riding in a van."

Content (con)

Comments may refer to the quality and quantity of information presented.

Comments will often refer to a topic, such as *water, streams, forest, and ecology*. Comments may not refer to a specific topic, but allude to interest in a specific topic. In this case, comments will almost always use the word *interest*.

Ex. "Because it sounded interesting to me."

Work / research relevance (rel)

Comments will refer to a participant's background as the reason for why they chose the fieldtrip. Most often a relation to their *work* or *research* is cited.

Ex. "Because it had many things in common with my research project."