

LD850 Capstone Research Paper

Training Adults New Technologies: In Practice with UNH Facilities

Shelby A. Hoffman

University of New Hampshire

LD850 Capstone Research Paper

Training Adults New Technologies: in Practice with UNH Facilities

Within my career at the University of New Hampshire, I find myself in the vortex of an implementation project driving my interest in finding the best training methods to teach adults new technologies. Having little to no experience on this topic, I found this endeavor worthwhile and immediately relevant to my daily work life and goals. This exercise was immensely beneficial to the employees in my department and will continue to contribute to the effectiveness and enjoyment of future technology training.

This research paper will begin by sharing a summary of my organization and the challenge I want to address. I will convey the evidence I have found to prove the problem within my organization exists and the proposed solution to address it. I will report findings from researching the best training methods for adults learning new technologies, summarize my analysis and share my conclusions on the overall research materials. I will discuss some assumed challenges in developing an evidence-based solution to address my problem.

To saturate the research topic, I conducted my original research by offering a training program, evaluating its effectiveness, and analyzing the results. I will explore the findings of this research in culmination with literature research and share what evidence supports and how this applies to my institution. I will conclude by sharing my suggestions for further research on the best training methods to teach adults new technologies.

UNH Facilities

The Facilities Department at the University of New Hampshire (UNH) is one of the largest departments at the University. It has five divisions: Campus Stewardship, Project Management, Energy and Utilities, Asset Management, and Operations and Maintenance

(O&M). O&M has the biggest pool of employees within the department and works closely with Energy and Utilities. The other divisions reside in a separate building across the campus. O&M and Energy utilize work management software to track work, assign jobs, measure performance, track assets and run a preventative maintenance program on our assets. Campus Stewardship built the space organization within the software, which is the base layer of the database. The software that we used for twenty years was up for contract renewal. The department decided it wanted to transition to an Integrated Work Management Software (IWMS) to connect to all the other divisions of our organization that did not utilize the previous one. If we fast forward three years to the Fall of 2021, Facilities transitioned to its new IWMS software, Asset Works, for Phase 1 (just replacing how we used the software before). The Just-In-Time training was performed to end-users over two weeks before "Go Live," and the data was migrated over a weekend. Only four days of vendor support were provided, and we had two UNH IT employees for two weeks after Go Live to support the transition.

Evidence of Problem

Post-Go-Live, we had many challenges due to a lack of resources and launching prematurely. Because of the hectic nature of our launch, there was no discussion or thought put into ongoing training. We did not have designated trainers or a training program in our previous software. My customer service team assisted new technicians in O&M in learning their mobile devices and being shown how to use the software, but all other areas were shown how to use the program by other team members. After some of the immediate fires were put out after Go Live, it became apparent that we had some challenges when it came to training that we did not have before. The first is that we used to have a designated Facilities IT team, and this team heavily supported all users with troubleshooting and setup. The second is that we now had fewer

positions filled with knowledgeable people to help support this learning curve due to the early retirement package and another restructuring. Lastly, we had more people than ever using the software. Everyone was in the same learning deficit as one another, with a few super users that had taken ownership out of necessity.

Responsibilities for training are determined within the Asset Works Steering Committee, which comprises each division that uses the software. Discussions with this group, new employees coming inconsistently, and with the Phase II transition looming ahead, it's clear that some organization has to be developed around how people get trained. If new employees are not trained, they cannot perform job tasks, leading to loss of life or property, low customer satisfaction levels, loss of grant funds, or equipment failure.

Solution to Identified Problem

The solution to a lack of training program is to build one. Division-specific material must be covered with each group, and a list of training modules to be identified. In addition, there needs to be a mechanism or plan that starts a new hire on a path of learning. There needs to be an organizational platform for signing up for these trainings and tracking the attendance. Although no formal feedback was collected from the original vendor training, the consensus from the end-users was that it that the training was not effective enough. The quality and effectiveness of these training could increase by incorporating methods found during my research on adults learning new technologies. These can be incorporated into the training program for all trainers to utilize in the future.

Key findings in research

The themes I found in the research revolve around the participant's attitude towards learning, the training methods, adult learning characteristics, training structures, and how these affect the ability to gain skills and enjoyment level of the training.

Attitude's Effect

Two studies discussed the effect of internal or external mental models increasing or decreasing one's ability to understand the material. Gist and Rosen (1998) studied the impact of self-efficacy on performance by measuring the participant's confidence in their ability to learn the software before and measuring their knowledge post-training. This study showed that those with lower self-efficacy had lower performance than those with higher self-efficacy (Gist & Rosen, 1980). There has also been research that shows that stereotyping younger generations are more knowledgeable about technology and older adults know nothing, which has adverse effects on learning. These stereotypes cause young adults to feel extra pressure to learn more efficiently and older adults to feel unempowered (Huber & Watson, 2014).

Methods Matter

Two studies explored different training methods and how they contributed to the learning experience and measurable knowledge gain. These methods were Action Training (written step-by-step instructions), Attention Training (explaining the deeper why behind each action), Modeling Training (show then participants imitate), and Tutorial (observe). The first study between Action Training and Attention Training shows that when reference materials are taken away, Attention Training is more effective for long-term results (Hickman, Rigers & Fisk, 2007). When Modeling and Tutorial Training are compared, Modeling training is proven much more effective in learning as participants imitate the actions after watching the instructor (Gist &

Rosen, 1980). Lastly, when printed materials are utilized, only including minimal information will simplify the instructions so that older adults can follow easier (Huber & Watson, 2014).

Adult Learning Characteristics

In the *Journal of Educational Technology*, Ference and Vockell relate common adult learning characteristics and how they can be applied to software instruction. Adults are experienced in the world, focus on real-life applications, and are motivated by understanding why they should learn something and how these learnings will contribute to their lives. In addition, most adults learn more effectively with an active, experienced-based approach that allows independence (Ference & Vockell, 1994). Fritz and Connolly support this theory in their article in the *Journal of Systems Management* detailing how adult learners benefit from an approach that relates the learning to the professional life and improves job skills that will contribute to job satisfaction (Fritz & Connolly, 1995).

Training Structures

The best training structures were discussed in several resources. Utilizing Gagne, Briggs, and Wagner's nine events of instruction; Gaining Attention, Activating Motivation, Stimulating Recall, Presenting Stimulating material, Providing Learning Guidance, Eliciting Performance, Providing Feedback, Assessing Performance and Promoting Retention and Transfer, facilitate effective learning, especially when combined with adult learning characteristics (Ference & Vockell, 1994). In *Planning Programs for Adult Learners a Practical Guide*, the author describes how to approach designing a training program holistically, considering elements such as developing support, identifying program areas and objectives, prioritizing ideas, creating instructional and transfer of knowledge plans and evaluations as well as several logistical components (Caffarella & Daffron, 2013).

Literature Research Conclusion

Although I found useful research material with solid qualitative studies on this subject, I did not find enough material to saturate the topics. In addition, the research material I did find was older than 2013 and may not directly relate to the most recent decade of adult learners and the type of technology that has emerged. This gap in research shows the need for further focus on the subject. Even though our technologies and relationship with them are ever-changing, there will always be a difference in how adults learn compared to children and the need to understand how to teach technologies successfully. I believe the key findings of the research I was able to deduce will incorporate into a successful training program for the UNH Facilities Department.

Challenges

Facilities employees tend to have low confidence in their technological skills with qualities of older adult learners and often go into training with barriers to learning the material. The tradespeople specifically learn from doing things repeatedly (modeling) and are uncomfortable in classroom settings. Desktop users must perform complex custom configurations on their profiles to perform essential functions. This configuration takes one-to-one training, which is time-consuming and doesn't support employee learning retention for later edits. The biggest challenge outside of designing effective training modules for this demographic will be developing a training team that takes ownership of the role. This part of the challenge is not within my project but the Asset Works Steering Committee and the VP of Facilities. These barriers can be addressed with careful planning, communication, and collaboration.

Research Summary Analysis

Building a software training program for adult learners has many elements I considered based on the research conducted. I thought about the program holistically by touching upon broad objects, design, and resources needed. I then thought about instructional stages and how to apply these to the topics with adult learning characteristics in mind. I then designed modeling training modules with simple printed material to support the sessions. Lastly, as the trainer, I needed to acknowledge the importance of the learner's feelings of ability before the training and try to increase this with language, positivity, and communication so that the learners feel that they can be successful at the training. When instructing, it's essential that the facilitator treats all equally and does not fall prey to age-technology stereotypes that can negatively affect the learner's experience and success rate.

Original Research

To establish the best methods to train adults' new technologies, I chose a training module to apply concepts discovered in research and evaluate. The training intended to determine if the methods found in the literature support the findings of this sample group of adults. In addition, I was also trying to evaluate the ideal training time length, the level of ease in signing up for the training, the levels of satisfaction in software support, and the level of confidence in the software itself. See Appendix A for the complete survey. The results in Appendix B will evaluate if these methods were effective for adults learning new technologies and provide direction on how future training should be conducted.

The training module was an optional advanced session for mobile users. A detailed email invitation with subject lists was sent to all mobile users with a link to the sign-up page on our

training site. Participants were provided with a consent form to participate in the evaluation survey in this research project. Seven employees participated in the training session.

The training session was scheduled for two hours, allowing for a fifteen-minute intro, ten-minute break, and fifteen-minute survey with eighty minutes of subject material. The introduction included a review of the itinerary and learning checklist, an explanation of paper handouts, and positive comments about the trainer's confidence in the user to learn the material successfully. As each subject was presented, the relevance of the topic and how it relates to and affects the employees work-life was shared. Each skill set was modeled, then replicated by the learner with rotational assistance by the instructor and assistants until each learner was complete. After each subject, the learning checklist was updated, and hard copy cheat sheets were referenced.

Findings in Original Research

A fourteen-question survey was provided to quantitatively evaluate the techniques used in training. The responses unanimously support that an hour and a half of training with a fifteen-minute introduction and wrap-up was just right for these adult learners. All seven participants also found the sign-up for this training “not difficult”. When asked how confident the learner was in the Asset Works subject material before the training on scale of one to five, only two learners were a four or higher. When asked how confident the learner was after the training, five learners were a four or higher. The seven participants felt that this training was either worth their time or a good use of their time and would recommend or highly recommend it to other co-workers. This feedback points to successful methods to train these adult learners a new technology.

There were three methods applied from research tested in this training; A modeling approach (show then do), two handouts provided to reference, and topics explained about how it

affects the user, incorporating adult learning characteristics. Each of these methods were evaluated in the post-training survey. When asked how effective being shown the actions and having time to perform themselves, all seven learners chose effective or very effective as their answer. When asked how helpful the two handouts were on a scale of one to five, the learning checklist was given a four or higher by six participants, and the cheat sheet was given a four or higher by 5 participants. Finally, when asked if sharing how the topics will affect the learners in their ability to do their job personally contributed to their interest in the training, six out of seven learners thought this greatly contributed. These responses support what was found in literature research and contribute to finding the most effective methods to train adults new technologies. Although I was not able to evaluate the effect of positive encouragement, portraying confidence in the user's ability and lack of age stereotyping in the survey, I think it contributed to the gain in confidence in the subject matter the learners experienced.

For this pilot program, I also asked some open ended questions on the survey to gain some qualitative information and allow the participants to express themselves. Themes in responses revolved around language, local in-house training and hands-on approach. The language such as phrasing and using terminology familiar to the group provided by an in-house trainer versus an external training, allowed their needs to be met. In addition, this particular group of adults are trades people that work with their hands and the hands-on approach to the training was appreciated by the learners.

Conclusion

The problem I set out to resolve was that UNH Facilities had no existing Asset Works Training program. I proposed addressing this by developing an overarching training structure,

creating a learning path, identifying method for training sign-ups, and developing training templates that incorporate effective methods to train adult learners in new technologies.

Through the help of my team at UNH, we pinpointed twenty-five training modules that were needed and which department was responsible for the training. I then coordinated with the onboarding coordinator and shared what models each position requires. Using the Advanced Go User Training module as a subject for this capstone, I created a training course on our UNH IT website, posting a specific date and time available for sign-ups. I then developed my training subject material and methods, hand out resources, and organized the equipment needed for the training, followed by an email invite to GO users.

The outcomes from this endeavor are significant. My department now has a training plan, identified trainers, a place to advertise training, and templates with methods specified for each trainer. Ongoing work includes these trainers developing the subject material, hand out resources and course advertisements.

Based on the research I found in the literature and my original research, I feel that utilizing the methods explored in this capstone will be effective. However, since the sample size was small and specific to advanced users, I will continue to evaluate each training sessions so that the program can be improved upon.

References

- Caffarella, & Daffron, S. R. (2013). *Planning programs for adult learners a practical guide* (3rd edition.). Jossey-Bass. Caffarella, & Daffron, S. R. (2013). *Planning programs for adult learners a practical guide* (3rd edition.). Jossey-Bass.
- Grupe, & Connolly, F. W. (1995). *Grownups are different: Computer training for adult learners*. *Journal of Systems Management*, 46(1), 58–.
- Huber, & Watson, C. (2014). *Technology: Education and Training Needs of Older Adults*. *Educational Gerontology*, 40(1), 16–25. <https://doi.org/10.1080/03601277.2013.768064>
- Yvonne Barnard, Mike D. Bradley, Frances Hodgson, Ashley D. Lloyd, *Learning to use new technologies by older adults: Perceived difficulties, experimentation behaviour, and usability*, *Computers in Human Behavior*, Volume 29, Issue 4, 2013, Pages 1715-1724,
- Jamye M. Hickman, Wendy A. Rogers, Arthur D. Fisk, *Training Older Adults To Use New Technology*, *The Journals of Gerontology: Series B*, Volume 62, Issue Special_Issue_1, 1 June 2007, Pages 77–84, https://doi.org/10.1093/geronb/62.special_issue_1.77
- Gist, Schwoerer, C., & Rosen, B. (1989). *Effects of Alternative Training Methods on Self-Efficacy and Performance in Computer Software Training*. *Journal of Applied Psychology*, 74(6), 884–891. <https://doi.org/10.1037/0021-9010.74.6.884>
- Ference, P. R., & Vockell, E. L. (1994). *Adult Learning Characteristics and Effective Software Instruction*. *Educational Technology*, 34(6), 25–31. <http://www.jstor.org/stable/44428194>

Appendix A

Advanced GO User: Training Survey

1. You were emailed an invitation to voluntarily sign up for this training. How did you find the ease of signing up for the training?

Very Difficult Somewhat Difficult Not Difficult

Please share any suggestions you have to aid in improvement of sign-ups:

2. Compared to the training sessions provided by the Asset Works Vendor, would you say this training was;

More Effective As Effective Less Effective Not at all
effective

Please elaborate on why you made your choice:

3. Please rate your confidence in the asset works subject material **prior** to the training today. 1 being the least level of confidence, 5 being the highest.

1 2 3 4 5

4. Today our training session was 1.5 hrs with an additional 15 min set up time and 15 min of Q&A. In considering your ideal learning attention span, was this time;

Just right Too Long Too Short

If too long or too short, what would the best length of time be?

5. The trainer shared what topics would be covered and how these items affect your ability to do your job. Does knowing how these skills affect you personally, contribute to your interest in the training?

Not at all

Somewhat Contributes

Greatly Contributes

6. The trainer today used a modeling approach to teach you the material. They showed you the actions on the large screen as a group and then you were provided time to do them yourself. How effective was this for you considering how you best learn new technologies? **1 being the least effective, 5 be the most effective.**

1

2

3

4

5

Please provide any suggestions for improvement or why you made your choice.

7. The trainer today provided you with two handouts to aid in your training, how helpful is the Learning Checklist in your ability to learn the topics in this training session? **1 being the least helpful, 5 being most helpful.**

1

2

3

4

5

8. The trainer today provided you with two handouts to aid in your training, how helpful is the Cheat Sheet in your ability to learn the topics in this training session? **1 being the least helpful, 5 being most helpful.**

1

2

3

4

5

9. At the launch of our Asset Works Transition, how much support did you feel you would need to use the application?

No Support

Little Support

A lot of support

10. Was the amount of support you received during the transition adequate or inadequate?

Adequate Inadequate

11. What is the amount of support you feel you have now on the AssetWorks application?

Adequate Inadequate

12. Please rate your confidence in the asset works subject material **after** the training today. **1 being the least level of confidence, 5 being the highest.**

1 2 3 4 5

13. How beneficial was your time spent in this training today?

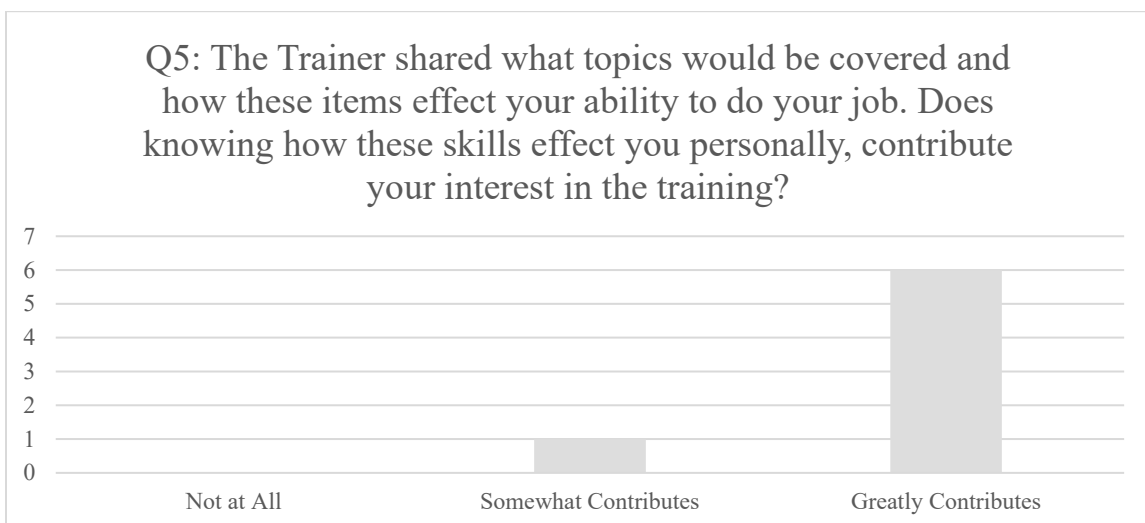
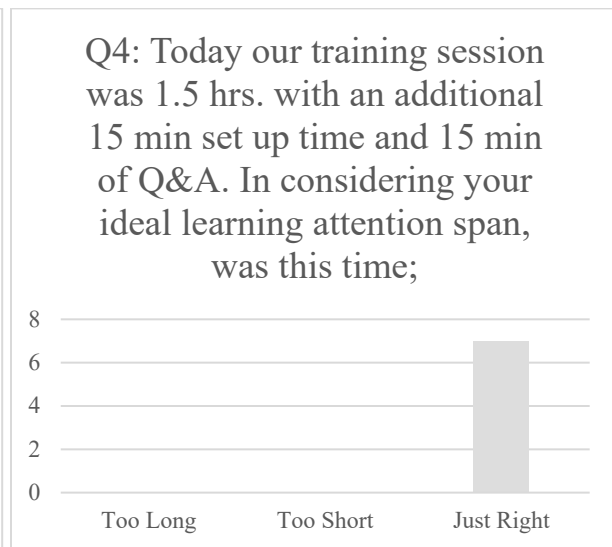
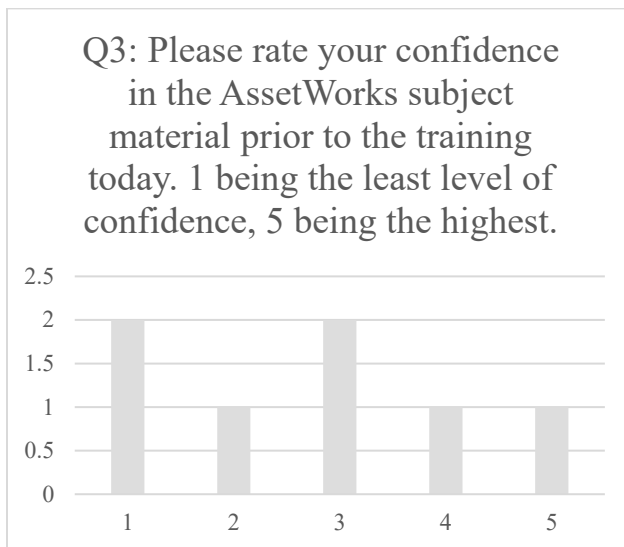
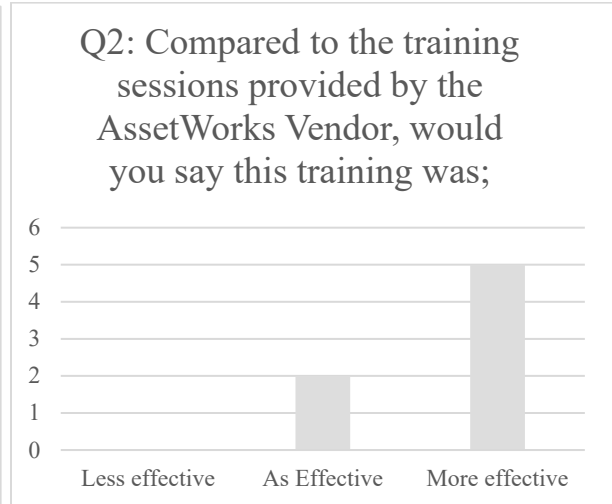
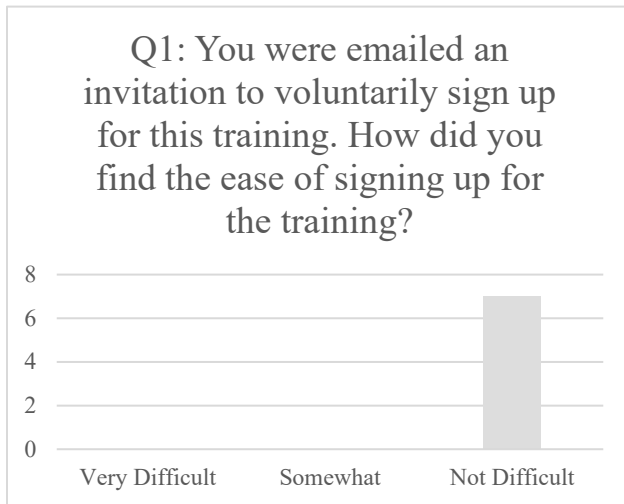
Not worth my time Worth my time Good use of my time

14. Would you recommend your other co-workers participate in this training?

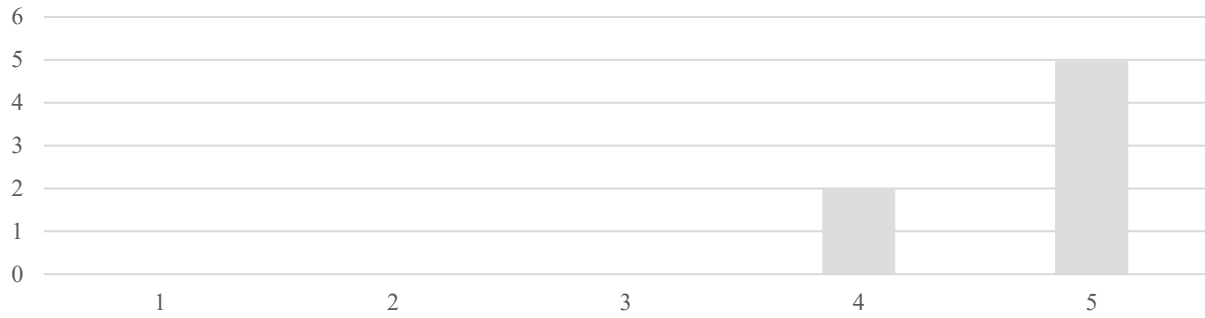
Do not recommend Recommend Highly recommend

15. On this survey, is there anything else I should have asked about your experience with the training?

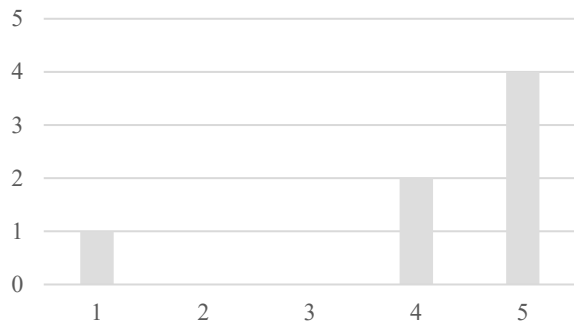
Appendix B



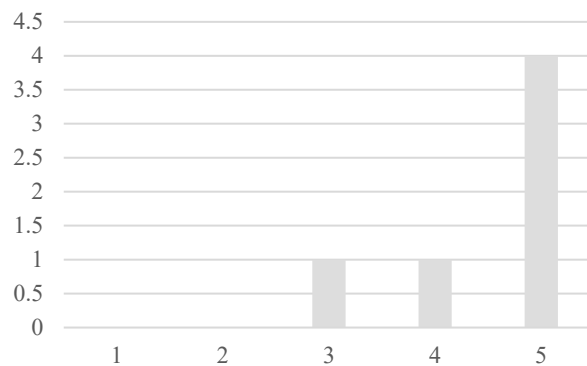
Q6: The trainer today used a modeling approach to teach you the material. They showed you the actions on the large screen as a group, and then you were provided time to do them yourself. How effective was this for you considering how you best learn new te

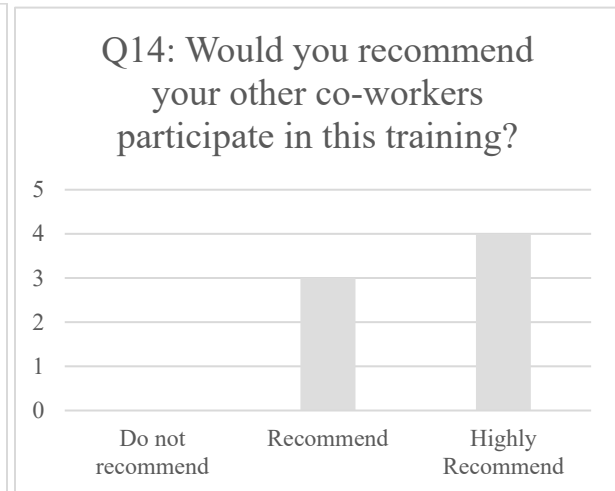
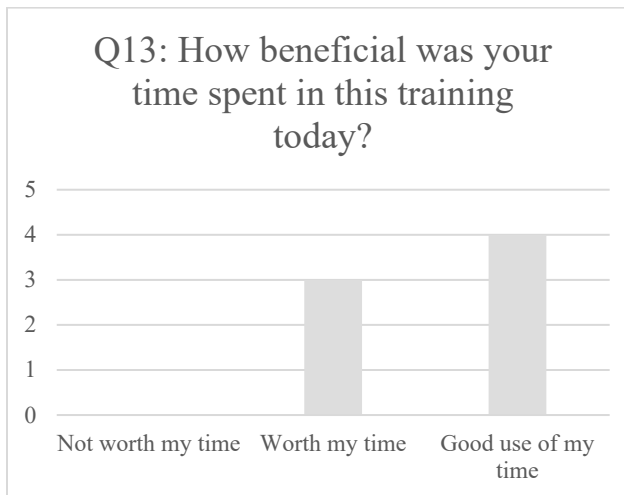
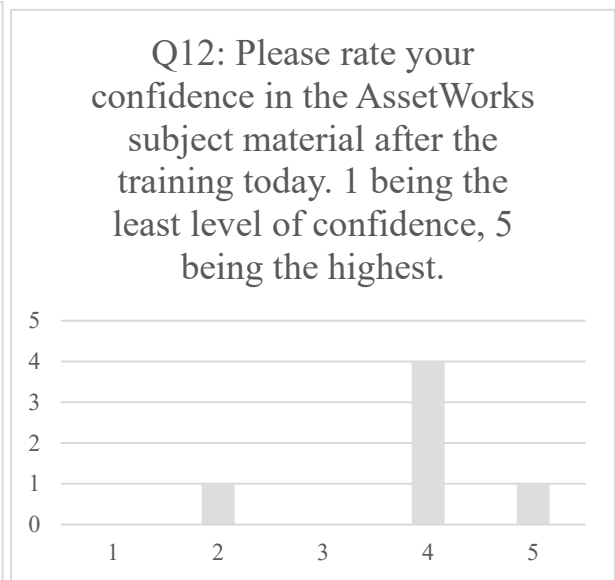
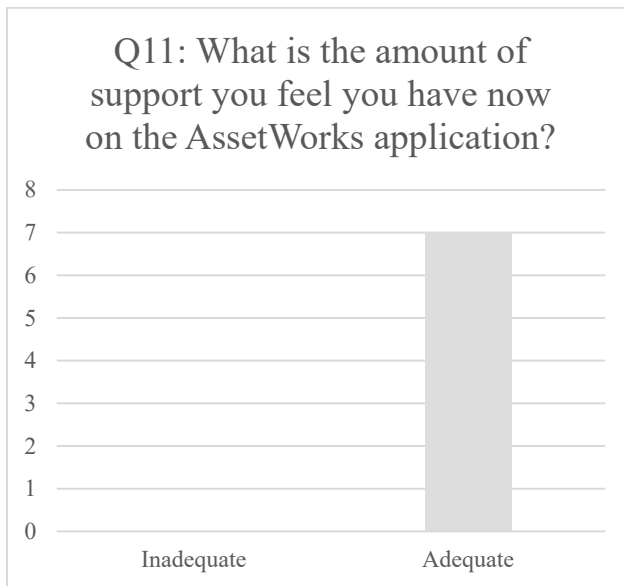
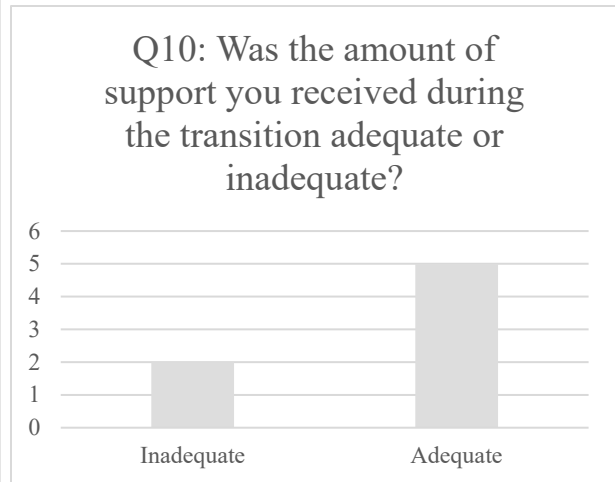
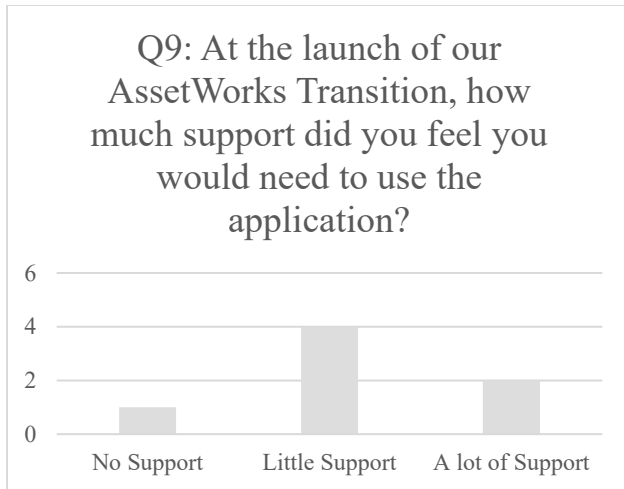


Q7: The trainer today provided you with two hand-outs to aid in your training, how helpful is the Learning Checklist in your ability to learn the topics in this training session? 1 being the least helpful, 5 being most helpful.



Q8: The trainer today provided you with two hand-outs to aid in your training, how helpful is the Cheat Sheet in your ability to learn the topics in this training session? 1 being the least helpful, 5 being most helpful.





Appendix C

IRB Approval

IRB Project # [202103sh371](#)

May 4, 2022

Dear Shelby:

On behalf of the Institutional Review Board (IRB), this project has been granted approval to be used at Granite State College.

If, during the course of your project, you make changes that may significantly affect the human subjects involved (particularly methodological changes), you must obtain IRB approval prior to implementing these changes. Any unanticipated problems related to your use of human subjects must be promptly reported to the IRB. The IRB may be contacted through the Office of Academic Affairs at 603.513.1310 or gsc.irb@granite.edu. This is required so that the IRB can update or revise protective measures for human subjects as may be necessary.

You are expected to maintain as an essential part of your project records, any records pertaining to the use of humans as subjects in your research. This includes any information or materials conveyed to and received from the subjects as well as any executed forms, data and analysis results.

Please note that IRB approval must be obtained and maintained for the entire term of your project or award.

Please submit the IRB Final Report Form upon completion of the project. Upon notification we will close our files pertaining to your project. Any subsequent reactivation of the project will require a new IRB application.

Please do not hesitate to contact the IRB if you have any questions or require assistance. We will be happy to assist you in any way we can. Thank you for your cooperation and efforts throughout this review process. We wish you success in this endeavor.

Sincerely,

Dr. Angela M. Neal

Institutional Review Board

Granite State College

25 Hall Street

Concord, NH 03301