

# Implementing Screencasts to Reduce Data Report Creation Time & Facility Layout Redesign



Project Design II

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## Abstract

The purpose of this study was to determine whether using screencasts and snapshots in an instructional workflow will lower the time required for employees to create a data report. Our team used the current workflow that Air Data Solutions has in place to teach new employees and redesigned it to include screencasts and snapshots. The group that learned using our walkthrough was able to complete their data report in about three minutes less than the control group, giving our group confidence to continue the study.

Our group was also asked to create a design for ADS' new office. The proposed redesign of the office for A.D.S. resolves the problem of employees using more than one computer and also generates additional collaborative areas for the employees to communicate and cooperate effectively.

## Theory

Our study is loosely based on a study that investigated the effectiveness of screencasts in teaching command interfaces. The team determined that screencasts have a "statistically significant difference" (Soepriyanto et al., 2021) on the effectiveness of learning command interfaces.

Effective facility layout design requires careful planning and consideration of the different types of layouts, as well as the factors that influence layout design (Shafaat et al., 2015). It can result in improved quality, reduced lead times, and increased profitability (Rezaei & Davoudpour, 2017).

Office ergonomic standards, which are guidelines and regulations that aim to promote safe and healthy working conditions for employees. The ANSI/HFES 100-2007 standard outlines ergonomic design requirements for computer workstations to prevent musculoskeletal disorders and other health problems associated with prolonged sitting and computer use. OSHA guidelines for lifting and moving heavy objects are also mentioned.

## Methodology

The study aimed to evaluate whether a screencast walkthrough was a more efficient method for new users to learn report creation than the current written walkthrough used by ADS. A virtual walkthrough was created and used for comparison with the written version. A control group using the written walkthrough and an experimental group using the visual walkthrough were timed, and data was collected, processed, analyzed, and interpreted to determine whether the hypothesis was correct. Additionally, the team met with the founder of Air Data Solutions, Mr. Cummins, to understand the company's requirements for office redesign. Based on the need for space between computers and organizing computers with similar software, the team decided to use a process layout for the office design. Office ergonomics and standards were also researched, and the team used AutoCAD to create a design of the office with computer placement.

## Results

The control group's mean time to complete a data report was 31 minutes, while the experimental group's mean time was 28.5 minutes, a two and a half-minute reduction in time with the visual walkthrough. The t-stat value of 3.375 is significant compared to the t-critical value of 1.812, indicating that the visual walkthrough significantly reduced the time to complete a data report.

The proposed design for the workspace houses 12 computer-based employees in a 100 ft. x 50 ft. room. The open workspace facilitates collaboration, while the distance between workstations offers privacy when required. Mobile whiteboards or screens can be used to temporarily partition the space for added privacy or to allocate space for different projects or teams. There is also a separate office for more privacy and a conference room for meetings.

Time to Complete Data Report			
Participant Number (Control)	Existing Workflow (minutes)	Participant Number (Experimental)	Visual Walkthrough (minutes)
C1	28.2	E1	26.8
C2	33.3	E2	28.9
C3	30.1	E3	28.0
C4	31.6	E4	29.3
C5	32.7	E5	27.6
C6	30.0	E6	30.1
C7	31.4	E7	28.2
<b>Mean Time</b>	<b>31.1</b>		<b>28.4</b>

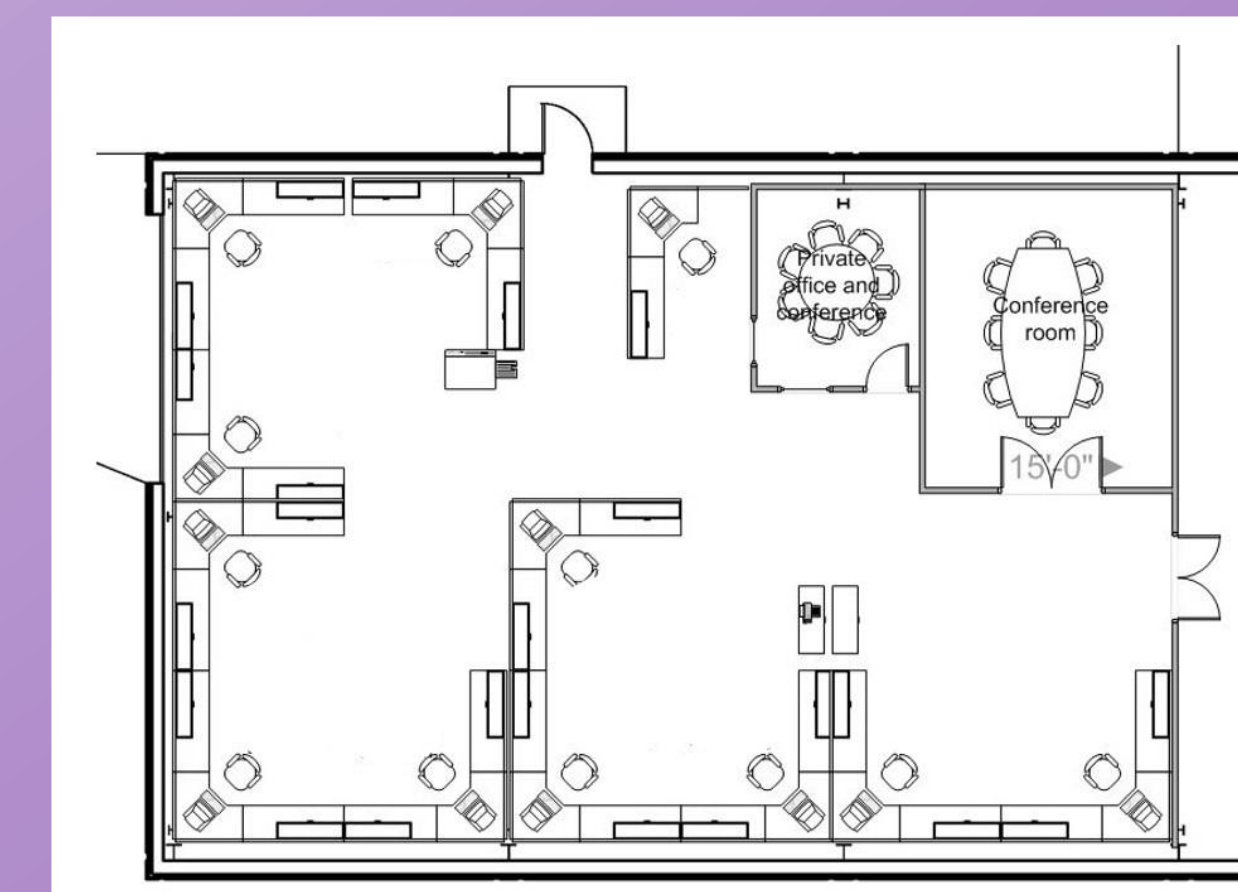


Figure 1: Our group's suggested design for ADS' office

## Objectives

Our team's goal in this study is to update the workflow to a user-friendly model that saves time and money, while teaching new users how to create a data report.

Our team also hopes to goal provide Air Data Solutions with a facility layout design that allows synchronous work.

## Conclusion

Our group conducted a workflow study and found that using the proposed workflow diagram would save time for new employees in creating data reports. The trend that we found would likely continue at a larger scale, and the difference between mean times would grow. The difference was statistically significant and would remain consistent with an increase in sample size.

Our proposed office redesign solves the issue of single employees using multiple computers and also creates more collaborative space for efficient communication and teamwork among A.D.S. employees.

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