Quad/Graphics: Manual Reel Loading Needs Analysis

1.0   INTRODUCTION TO CLIENT

Quad/Graphics is an international commercial printing company. Hazleton, PA is the point of contact and principal client for this training. The client typically outputs a large amount of phonebooks and other types of written material.

2.0   OVERVIEW OF PROBLEM

Problem: Training is done by shadowing. This creates inconsistencies and difficulties due to different learning styles and the linguistic barrier (English/Spanish) between learners and trainers. Most learners have only been trained on the automatic operation of certain machinery and an insufficient amount of time has been devoted to training. Workers are often unaware of all the steps that need to be performed. This results in loss of both product and production time, hence a loss of profit.

Learner Analysis

3.0 INTRODUCTION

3.1. Purpose of document

The purpose of this document is to identify the characteristics of the learner to develop a training program that suits their specified needs.

4.0   LEARNER PROFILE

This section was developed after meeting with Norm Verbeck, Gabe Zapotosky, and Randy Bell from Quad/Graphics. The learners for this training on the Patras machinery are the press assistants, 1st and 2nd operators and the general worker.

4.1.   Demographics

The specified learners are predominantly males from the ages 20-60. Many learners speak Spanish and English is their second language.

4.1.1. Design Decisions

The training program will be developed in English and Quad/Graphics will use their in house translator to translate into Spanish.

4.2.   Pre-requisite Knowledge

Learners have worked at Quad/Graphics for 1-2 years. They have already completed the eLearning training on working Patras in the auto mode. Before taking the training, learners will have 1:1 shadowing of a current employee on the Patras machinery. This shadowing will last for about two weeks. There are currently 3-4 employees who can teach the learner the machinery and can be shadowed.

4.2.1. Design Decisions

Due to the learner shadowing for two weeks, the training program will be used as a method of reviewing the specified information and terms needed. There is a language barrier with shadowing that sometimes occurs (English/Spanish). Because of this, they have an in-house translator for the training. Language will be kept simple and sparse with pictures and video demonstrations for maximum impact.

4.3.   Aptitudes, Experiences, and Learning Styles

All learners have an education background of at least a high school diploma or equivalency. There is no specialty or higher education required.

4.3.1. Design Decisions

Training will be developed using simple basic terms of at least an 8th grade graduate. Images and videos will be used to help comprehension of information.

5.0   REFERENCES

- Past Quad/Graphic Patras training module.
- Two interviews with Norm Verbeck, Gabe Zapotosky, and Randy Bell from Quad/Graphics (conducted on September 7, 2012 and September 13, 2012)

5.1.1. Strategies in Collecting Data

When collecting data, the previous training modules were viewed to help become familiar with the company and questions to ask. After collecting data from these manuals, the interview questions were created. The interviews were conducted based off of this information.

Learning Task Analysis

6.0   INTRODUCTION

6.1.   Purpose of document

The purpose of this document is to provide a detailed task analysis. This analysis will delve into the problems faced by Quad/Graphics and identify a means by which to resolve the gap in expected and actual performance levels.

7.0 LEARNING TASK

7.1. Issue

The problem experienced by Quad/Graphics is an inconsistency in the training of their employees. Employees train by shadowing and a language barrier makes this a tentative process at best. Workers are unable to operate necessary equipment in both automatic and manual modes to an adequate degree of success. Faulty operations lead to a waste of materials and a minimization of production time.

7.2. Equipment

The equipment where learners are in need of training is the Positioning MOT. This is a manually operated system that moves large rolls of paper from a loading area into the splicing area.

7.3. Recommended Course of Action

This training will focus on educating learners on the proper manual operation of the positioning MOT.

8.0 TRAINING DESIGN RECOMMENDATIONS

Training will, for the most part, take place on the shop floor. Due to the high noise levels in this area (and the absence of speakers on the computer at the learner's work station) it has been determined that audio should not be used in this training. Learners will be using this training as a point of reference after shadowing an experienced worker and going through the eLearning training themselves. As such, learning should be broken down into easily navigable chunks. Video and pictorial demonstrations should be the primary means of informing the learner, as opposed to words, due to the linguistic barrier existing between learners. This training will build on previous eLearning training and shadowing training. Trainers and managers must be made aware of the chronological order of this training (it is to come after the eLearning that deals with the automatic operation of the MOT).

9.0   REFERENCES

Below are some notes from the meeting with Quad/Graphics on September 7th and 13th 2012. They help to outline some of the issues they are having with the training and illustrate how the conclusions of this report were drawn.

9.7.2012

9:30 AM – 11:30 AM

First Meeting with Client: Notes: (edited)

- The training created by us (the ID team) will be beneficial for new hires
- There are usually 2-3 shadow leaders; over the course of 4 shifts there is one trainer per shift
- This training is more manual/physical
- The aim of training is reduced downtime on the press from errors caused by breakdowns and improper loading
- They are having issues with setup and want to standardize what people are trained on
- Standardize terminology
- Training transferable through different plants (QG is acquiring international facilities)
- ESL (English is a Second Language) for some
- They usually have a high school or an equivalent degree
- 315 people in plant
- Preventive maintenance – presses down for about a week replacing folders, bearings, etc
- Patras machine is a newer, computerized machine, it is all moved by chains and maintenance mostly consists of greasing and lubing said chains
- Patras gets very hot in summer (can reach 120 degrees inside if it's 90 degrees outside)
- The summer manual dealt with the automatic operation of the machine, we will be dealing with manual
- Each rail in the floor has a number, on the handheld device (MOT), select which one you want to move
- Language barrier with shadowing occurs sometimes (English/Spanish) (they have an in-house translator for the training, but language should be kept simple and sparse with lots of pictures and video demonstrations, etc, for maximum impact)
- They go manual when the computer doesn't work, which is sporadic (most likely people will often need to refer/brush up on the manual operation of the reelstand controls, meaning our training should be divided into easily identifiable and navigable chunks)
- Currently with shadowing, the reviewing of manuals and note taking, it takes everyone a different amount of time to learn, generally the auto is picked up in 2 weeks, but there are still glitches
- They run Windows XP (old software) on the touch screen for the auto machine
- 1 press is double-stacked with 3 reelstands, other just has 1 reelstand
- 2 presses that training is for

- 2-3 weeks to train on manual
- Handheld device is called the MOT
- Patras – reelstand
- Schmachtl – where carts and chains go
- All of the above (MOT, Patras, Schmachtl) are referred to collectively as Patras
- 4 people on machine at a time – 1-2- press operator, general worker (with press assistant running machine)
- 1 at a time training for shadowing
- 1 comp in press room office, 1 back at floor
- Lot of internal data systems not compatible with windows 7
- Training – long as it needs to be (last one was about 30 min)
- No question limit
- Don't use sound (loud, wear ear protection down on floor), no speakers on press computer
- Have video in presentation
- Objective – teach them how to work system with presentation (prior to them going down), be able to pull up steps down at press, no press experience and be able to operate
- Past (summer) training worked well
- No style guide/color preference
- Have video at end demo of whole thing
- Have pictures with parts labeled and highlighted, multiple choice questions
- 6 computers in computer lab, 5 main, 1 presenter, dim lighting, Acer Win XP World Color Image, the lab is not the primary learning site, the press room floor is.
- Numbers on floor for each section that moves the chain to coordinate with it
- Computer has motion sensor – won't let chains move until you go out of caged (computer-eye) area. Blinking lights let you know when someone's gone in an area

10.0 STRATEGIES USED FOR COLLECTING DATA

Data was collected via onsite meetings with client and by referencing an ID project that was completed in the summer of 2012 that dealt with Quad/Graphics. During onsite meetings with the client, the ID team made sure that information presented in the 2012 summer binder was accurate and supplemented that information with detailed notes, pictures and video.

11.0 DETAILED TASK BREAKDOWN

Procedural steps for Positioning MOT

1.   Disconnect bottom of end cap to attach MOT.

2.   Turn bottom red knob, Main Switch, to the center.

3.   Turn Key to Manual.

4.   Press Auto Activate button (Right hand button).

5.   Press Safety Button Curtain button (Left of key switch).

6.   Add slight pressure to button on right side of MOT (safety switch) until buttons light up.

7.   Paper is currently in the Strip station on track using center dial on MOT, slide to number 2.

a.   Top Buttons: left button moves one on left to the left (the number selected on the indicator is controlled by those buttons directly down the center of the MOT. The buttons on the left side control the chain that comes numerically after the number on the selector. Those buttons on the right control the chain that comes numerically before the number indicated on the selector. (For instance, if the selector is set to '2', then all the buttons down the center affect the number 2 chain, while the buttons on the left hand side affect the number 3 chain. The buttons on the right would move the number 1 chain. More than one chain can be moved at once, but only if they are being moved in a same direction (so buttons from the top and middle cannot be used concurrently). When the selector is set to 3, pressing the top left and top center button would move chains 4 and 3 to the left at the same time).

b.   Middle buttons: Move the chains to the right. The selector works as described above.

c.   Bottom buttons: Used on track 4 turntable. Right button = counter clockwise. Left button = clockwise. (Is the chain that goes into the MOT splicer region 0 or 6? (I think its 0)… We should describe which buttons (top/middle) move the paper further into and out of this area.

d.   Using MOT controls, press the top center button and the button to the right of it to move to section 2.

8.   Once in section 2 (Prep station) line roll to the center of guide (90 on both sides based on ruler on ground. Points are marked on ruler). If not in correct are, the next step will not work.

9.   Now press the safety switch on the MOT, press the 2nd button to the right to raise the roll. Refer to floor markings; this button has an arrow up. When in the correct location, the roll will stop.

10.   Press the safety button on the MOT and the right button on the floor to turn the roll clockwise. Strip the roll (refer to other training for description on how to do this).

11.   *Using the MOT, move cart 1 back to section 1 (strip station). Do this by putting dial to 1 and press the center button and right button in the 2nd row of buttons.

12.   *Then move cart 2 under the roll. **Buttons

13.   *Use the ruler (located on the inside of the safety curtain on the left side) to measure if cart is in accurate location. The back of the ruler is marked where the end of the roll should be.

a.   These last 3 steps may not occur if clamp truck has moved rolls to be dropped off at the prep station (section 2).

14.   Once done, press the safety button on the MOT and the floor button 2nd to the left to lower roll onto cart 2.

15.   Move the roll to section 4 by setting the dial on 4(or 2 Alanna?) and pressing the top left and center buttons. (We need a diagram of the floor plan with the chain numbers labeled. That way we know which sections of chain we have to get to move. Presently, I believe that if the dial is set to 2, pressing the top left and center buttons would move chains 2 and 3 simultaneously, allowing for a smooth, continuous transfer of the paper roll from its starting point on chain 2 to the now moving chain of 3, which would bring it up to the turntable of section 4).

16.   When roll reaches 4, and is in the accurate location, bottom lights will light up. Buttons will not light up until the precise location has been reached.

17.   Rotate roll to track 6. Do this by pressing either right bottom button to go counter clockwise or the left button to go clockwise.

a.   Bottom buttons will light up when in the correct location.

18.   When in correct location, the number 4 on the turntable should be located on the right, upside down and facing the user.

a.   Turntable can only be rotated to 360 degrees

19.   With dial still on 4, move roll forward on track 6. (I think this area might be track 0. I think we should look at the floor plan and draw up a reference chart for ourselves. It will make things easier as we go along).

20.   MOT will only take roll a specified distance.

21.   Press the Auto Load button on the reel stand.

22.   Reel stand eye will locate roll and deliver roll to next step automatically.

23.   Turning off: On the computer screen attached to the positioning MOT, press the 3rd button from the button (?). This button shows where rolls and golden rolls are located in the prep and strip stations. (Rolls are white, golden rolls are yellow and symbolize where there is a cart but not a roll.

a.   Turn key switch to auto.

b.   Press the activate button (button all the way to the right).

c.   Press the safety curtain (right of the key switch).

d.   Machine is now running on auto.

Instructional Context Analysis

12.0 INTRODUCTION

12.1. Purpose of document

The purpose of this document is to identify the environmental information relating to the learners of Quad/Graphics and determine how training can be tailored to better suit this group.

13.0 LEARNING ENVIRONMENT

There is a computer room with 6 computers, one of which is a 'presenter' computer and dim lighting. This is a classroom setting, which is not the typical area where employees are trained. The bulk of employee training happens on the press room floor. On the floor, ear protection is required due to the noise and safety regulations. Due to this, and the absence of speakers on the press computer, it is recommended that training not use audio. Video demonstrations and pictographic representations should be very prevalent in training.

13.1. Policies

Employees are presented with a manual at the beginning of their training. They then spend 2 to 3 weeks shadowing a SME on the floor. One employee at a time undergoes shadow training.

13.2. Technology

The learner does not have access to recent computer software. Quad/Graphics runs Windows XP software on the touch screen used for reel stand loading and Windows XP on the computers learners use. There is one computer in the press room office and one back at the print room floor.

13.3. Resources

There are typically four shadow leaders (SMEs) training employees with one leader for each shift. The employees are also presented with a manual at the beginning of their training. At the conclusion of the shadowing training period the learner has to rely on their retention of material and/or a SME should something go wrong. As of the summer of 2012, the learner now has a piece of training relating to the automatic operation of the reelstand.

14.0 TRAINING DESIGN RECOMMENDATIONS

The learning audience will primarily be using the training to supplement information received from weeks of shadowing an experienced reelstand operator. As such, the training's primary purpose is as a reference and a tool to reinforce previously taught information. For this reason, learning will be broken up into easily navigable chunks for ease of access. Learning will take place on the press room floor, making the inclusion of audio impractical. Due to the expanding international nature of the company and the prevalence of ESL (English as a Second Language speakers), the language used will be minimal and simplistic. This is also the reason for the emphasis on visual and video simulations and demonstrations.

Type of learning environment	Press room floor
Speed of presentation	30 minutes with easily navigable sections. Learning will be broken up into chunks for ease of access.
Techniques for gaining and focusing attention	Colorful and clear depictions of equipment and steps, as well as demonstrations of the functions of different pieces of equipment. Video and simulation examples will be employed.
Types of instructional strategies	Chunking information, drill and practice exercises, image and label association, demonstration of correct procedure, organization of information into a chronological format
Type of examples and practice items	Have learners practice specific skills with immediate feedback, demonstrate correct procedure, identify the functions of the MOT (handheld reelstand control)
Number and difficulty of examples and practice items	Moderate: Examples and practice items will all relate immediately to what was taught and what learners will need to know on the floor. One of the primary purposes of training is to serve as a reference, so there will not be an excessive number of test questions. There will be questions following each specific chunk of information to ensure grasp and retention.
Medium / media of instruction • Types of graphics • Types of animations/motion media	Video demonstrations, pictographic depictions of press room equipment, flash simulations
Level of concreteness / abstraction of information	Concrete procedural knowledge
Size of instructional chunks	Small, manageable chunks related immediately and chronologically to steps required to operate reelstand

	equipment.
Level of learner control and interactivity	High: The training will be self-paced and the learner will be able to select the section they need immediately when working on the floor.
Reading level of information	Low: Quad Graphics is acquiring international colleagues and a sizeable portion of current employees speak English as a second language. Information should mainly rely on visual cues, with small explanatory written sections.
Amount and type of learning guidance, cues, and prompts	Medium: There will be interactive portions, but learners will also be able to view something that will provide them with the answer. The training will serve both to educate and then as a reference guide. Should a learner answer incorrectly twice, the answer will be shown and explained to them. This will prevent learners from becoming trapped in training and help the training continue to move along.

15.0 REFERENCES

Below is a transcription of the notes taken on our first meeting with the client. It is from these notes, and an analysis of the training that we are to build upon[1] that this environmental analysis was composed. The notes below have been edited[2], removing those items with no bearing on the current situation.

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- They go manual when the computer doesn't work, which is sporadic (most likely people will often need to refer/brush up on the manual operation of the reelstand controls, meaning our training should be divided into easily identifiable and navigable chunks)

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[1] The training we are to build on is work done by an Advanced ID team in the summer of 2012. Their work related to the automatic aspects of the Patras reel loading system. This training is contained in a binder. It should be accessible via Dr. Phillips' office. The work done by myself and my teammates is seen as an extension of this and relates to the *manual* reel loading system.

[2] These notes can be viewed more completely in the Quad/Graphics dropbox, under "Meeting Logs and Agendas". The document is entitled, "Client Meeting 1 Notes".

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- Numbers on floor for each section that moves the chain to coordinate with it
- Computer has motion sensor – won't let chains move until you go out of caged (computer-eye) area. Blinking lights let you know when someone's gone in an area

Needs Statement

16.0 INTRODUCTION

16.1. Purpose of document

The purpose of this document is to identify the need that this training will fulfill for Quad/Graphics.

17.0 NEEDS STATEMENT

Quad/Graphics is in need of eLearning training for workers that will support their learning on the manual operation of the positioning MOT on the PATRAS machinery.