

Haitian Goat Project Analysis and Evaluation Paper
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Abstract

This paper examines best practices for goat milking in a sustainability project for children ages five to nineteen in Haiti. Given proper tools, performers will be able to milk goats consistently using best practices as evidence by the goat's milk being safe for human consumption. The project focuses on 800 children who reside around Port Au Prince, Haiti. New World Mission, Haitian based NGO, provides donated goats to school children to improve their overall well being. The goats can be raised and sold to pay for school books, uniforms, supplies and lunches. Goat's milk is a valuable by-product of this program and currently it is being wasted. However, with the current methods used by the children (performers) to milk the goat it is most likely unsafe to drink.

This phase of the sustainability project focuses on best practices for goat milking including sanitation and teat care. Future phases of the project will address cultural barriers to using goat milk for human consumption and using goat milk to produce alternate revenue.

This project will follow the performance centered design approach, a variation of the ADDIE model, which includes the following elements: a Business Process Model, a Persona Model, and a Content Knowledge Model.

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Analysis

The Haitian goat pilot project focuses on 800 children who reside in Chameau, a mountain village around Port Au Prince, Haiti. New World Mission, a Haitian based NGO, provides donated goats to school children to improve their overall well being. The goats can be raised and sold to pay for school books, uniforms, supplies and meager lunches. Goat's milk is a valuable by-product of this program and currently it is being wasted. However, with the current methods used by the performers (students) to milk the goat it is most likely unsafe to drink.

To improve the overall effectiveness of the program, the goat milk must be exploited to its full potential. Most of the performers are malnourished and consuming the goat milk would greatly benefit their well being. It is also necessary to provide on-the-job resources to ensure that the milk is safe to drink and can be used as an additional nutritional resource for the performers as well as others in Haiti. Training the performers how to properly care for and milk the goats is just the beginning of the process. The milking process is what the development team is focusing on at this time; but hopefully, the program will benefit long term by learning basic goat care.

Advancing the present skills, may lead to future goal accomplishments in alternate revenue streams for the Haitian community such as, goat cheese, facial cleanser, and goat soap.

The performance gap analysis will be approached using the ADDIE model and the PCD process which emphasizes the creation of three distinct models; a business process model, a persona model, and a content/knowledge model. The mission is to capture how Rossett and Schafer (2007) describe the essence of PCD by creating "...tools and systems that have knowledge of the task and workflow baked in. Wrap it all up in an intuitive interface and you've enabled users to

proceed with little or no prior training” (p. 111). The analysis and development of this project will result in the creation of such a performance support tool that will enable untrained performers to milk their goats using best practices, ensuring that the goat milk is safe for consumption.

The initial analysis was conducted using Chevalier's (2003) updated version of Gilbert's BEM. (see Appendix A, Figure A1). The analysis showed that environmental factors contained many performance barriers. These included safe, organized, and clean working conditions, the knowledge or access to training to fulfill job requirements, and positive atmosphere where performers believe they have the opportunity to succeed. Performers were not taught how to properly milk a goat, they have no modeling to refer to, the environment is unforgiving, and there is little water, or sanitary supplies available outside of the school property. Maslow's Hierarchy of Needs (1943), explains that if a performer does not have the basic human needs, performances will not be at their best. The performers involved in this project, are at the bottom levels of the pyramid, which hampers their learning and motivation (see Image 1).

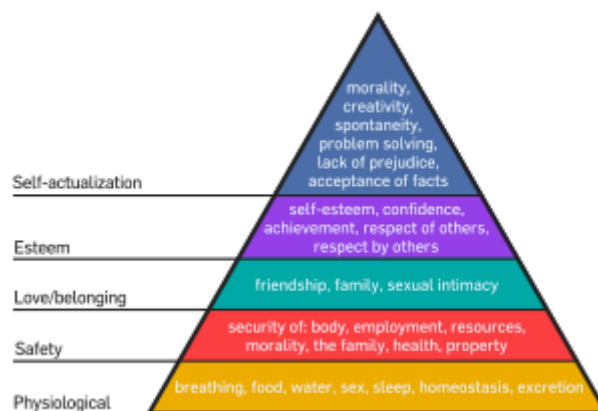


Image 1. Maslow's Hierarchy of Needs

Observation of a subject matter expert allowed the team to identify the wipe, strip, milk, dip technique that follows the best practices for goat milking. This technique forms the backbone of the Business Process Model (BPM) (see Appendix A, Figure A2). Each step is critical to

ensuring that the goat milk is safe for drinking and free from harmful bacteria. The BPM also showed the tools which are needed to complete the process which can be substituted with common everyday items that the performers are familiar with. Distributed Cognition Response theorizes that having prior knowledge of the tools, allows one to relate to the use of the tools as he/she knows them, and can then deduce how to use the tool, even in a new situation (Greenberg & Dickelman, 2000). It was found through interviews with project leaders that the school had a supply of necessary tools such as filters, rags, soap, jars and Clorox.

It was determined by interviews and observation that the performers do not currently use best practices for goat milking. An observation checklist (Appendix A, Figure A3), was created in the hope of being able to observe the goat milking processes in action. Given the cultural differences, it was necessary to observe the procedures and attitudes of the performers while milking. Long term observation and the availability of more participants would have been beneficial. Only two were observed in the milking process, and it was noted that the performers did not follow the business process model, due to the lack of training and knowledge.

A persona model was created by conducting a cast of character analysis aided by Jean Carlo, the Director of New World Mission, and is on site for the project. A primary persona, Chante, was found to be an 8 year old female student who has no tools or training in taking care of a goat, enjoys being outdoors, speaks French at school and Creole at home, but doesn't like milking her goat because it tries to bite her during milking.

Although the wipe, strip, dip technique is essentially a three step process, creation of a content/knowledge model quickly revealed an underlying complexity to the process. Mapping the content/knowledge model to the business process model (see Appendix A, Figure A2) shows where the cognitive load was the highest during the business process. For example, the

knowledge that is needed to correctly strip the teat includes gauging the milk that comes out and analyzing it for clots. As the business model process developed the team had to determine when to add additional training, or at what point to stop adding in new information. The team determined that a good place to stop would be to discard the stripped milk, by-passing additional issues which may arise if clots were found in the milking process.

Design

The performance tool, a step format job aid, (see Appendix A, Figure A4) was designed to reflect the findings that resulted from the PCD analysis. The process, persona, and knowledge model guided the prototype design. The persona model indicated that not all performers were literate and therefore a graphic representation was created. An ongoing graphic analysis was conducted by interviewing approximately 20 performers, showing them a variety of graphics that illustrated goat milking concepts such as; hand washing, an udder, and water. The performance tool attempts to place the primary persona in the performance zone by delivering just enough information to get the job done, using all the steps to the process, while aligning the information and its interface to the persona model.

Development

The development of the performance tool started with the selection of appropriate styled graphics that matched the graphic analysis results. These graphics had to fit within the constraints of the project which demanded the tool be a single A4 size, black and white page. Graphics were altered so that when printed in black and white and shrunk down a size of 2” by 2” they could be clearly interpreted, and fit on a one page job aid.

Implementation

Observation of the application of the job aid, and the milking process was limited in Haiti. Poor weather and the distance performers had to walk contributed to the performers leaving their goats behind. Surgical gloves filled with air were used a substitute for goat teats. The concept of practicing milking with an inflated glove, lent itself to playtime by the performers who had not seen inflated surgical gloves prior to this lesson. However, during the practice milking process the performers seemed to understand the steps depicted on the job aid and were actively engaged.

Evaluate

As prescribed by the PCD model, formative evaluation was an ongoing process during each stage of the project. The graphic analysis showed that performers favored a graphic style representation of objects which later proved to be the building block of the job aid. Later, feedback from the field indicated that the bottle cap we had used to illustrate adding a cap full of Clorox (bleach) to a quart of water was not familiar to the performers. Plastic coke bottles are popular and known by all performers, so a coke cap was used to replace the graphic and ensure that performers would clearly understand the ratio of Clorox to water.

Following the PCD process and continually evaluating and creating new iterations of the performance tool resulted in the development of a performance tool that focuses on the performers needs and will help the performer achieve the objective. Due to the time constraints of the project a proper evaluation will be conducted in the future using the Formative Evaluation Plan (see Appendix A, Figure A1).

References

- Chevalier, R. (2003). Updating the behavior engineering model. [Electronic Version].
Performance Improvement, 42(5), 8-14.
- Greenberg, J. & Dickelman, G. (2000). *Distributed cognition: A foundation for performance support*. Week 2. Retrieved from IP 563 4156/4157 course database.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review* 50(4), 370-96.
- Rossett, A. & Schafer, L. (2007). *Job aids and performance support: Moving from knowledge in the classroom to knowledge everywhere*. San Francisco, CA: Pfeiffer

Appendix A

Formative Evaluation Plan

	Analysis of Performance Gap and Cause	Selection/Design of Intervention	Implementation /Change Management
What do we want to accomplish by evaluating this phase?	Participants of the goat project to be able to drink goat's milk given sanitary equipment, healthy milking goats, and best practices in goat milking with less than 5% error in milking.	Design a self paced learning job using goat milking best practices that will reduce cognitive load, tap into prior knowledge be relevant, distributed at the time the task is needed, and enhance performance at a rate of 95% goat milking best practices.	Blended learning with combining F2F training in October with Job Aid, self evaluation, Evaluation Meetings, Rapid Prototyping, usability evaluations, think out loud protocol, and complete Cognitive walk through evaluation.
When do we evaluate this phase?	July 2011	July 2011, October 2011	October 2011, January 2012.
What resources do we need to evaluate this phase?	<ul style="list-style-type: none"> • Subject Matter experts • Prototype for equipment that is relevant to the participants of Haiti • PCD Cycle • Mission Statement of the NGO 	<ul style="list-style-type: none"> • Software to create animations- graphics • Team of designers • ADDIE and PCD • Access to feedback on initial graphics for 	<ul style="list-style-type: none"> • Team of analyst willing to go to the village which has a cholera outbreak. • Nubian Dairy Goats • Proper equipment • Hard copy of all evaluation documents.
What data will we	<ul style="list-style-type: none"> • Interviews from the 	<ul style="list-style-type: none"> • Prototype 	<ul style="list-style-type: none"> • Hard copy of evaluation

<p>collect to evaluate this phase? How?</p>	<p>director</p> <ul style="list-style-type: none"> • BEM analysis • Interview with Principal • Interview with other Local NGO's that have been working on the Haiti Goat Project. • Video/ meeting from a goat • Trip to Haiti by one of the designers. 	<ul style="list-style-type: none"> • Cast of characters • Business and content Models <p>Data from twenty students of graphic preferences</p>	<p>documents to observe goat milking process</p>
<p>What type of reports do we need at the end of the evaluation? Who is our audience? What do they need to know?</p>	<ul style="list-style-type: none"> • BEM analysis • Root Cause analysis • Gap analysis • Audience is 800 Haitian students. • Students need to know expectation for care of goats, and expectations of the program. 	<ul style="list-style-type: none"> • Business and content Model • Draft for initial job aid • Outline for PCD process • The participants need to give continual feedback about the usability of the job aid. • The principal needs to be the contact person for the designers as he has direct access to the participants. 	<ul style="list-style-type: none"> • Evaluation documents • The participants need to openly share their thought process while using the job aid during observation. • Need professional interpreters for the evaluations to eliminate translation difficulties experienced during the initial phases of the project.
<p>What basic alternative methods will we use to evaluate</p>	<ul style="list-style-type: none"> • Two-on-One • Panel discussions • Computer 	<ul style="list-style-type: none"> • Email feedback • Skype f2f feedback on design 	<ul style="list-style-type: none"> • Blended learning formative evaluation combining F2F training to eliminate knowledge and skill gap

this phase?	interviewing		alongside PCD job Aid.
Who will analyze this phase?	<ul style="list-style-type: none"> • Designers • Director of NGO in Haiti 	<ul style="list-style-type: none"> • Designers • Director of NGO in Haiti • Principals • Team Members in Haiti • Students participating in the goat project 	<ul style="list-style-type: none"> • Designers • Principal of School in Haiti • Teachers • Students by means of self-evaluation and feedback
What will it cost to evaluate this phase?	Trip cost about two thousand dollars.	Very low budget...for three grad students..	Between six and ten thousand dollars.

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Figure A1: Formative Evaluation Plan

The Business Process Model

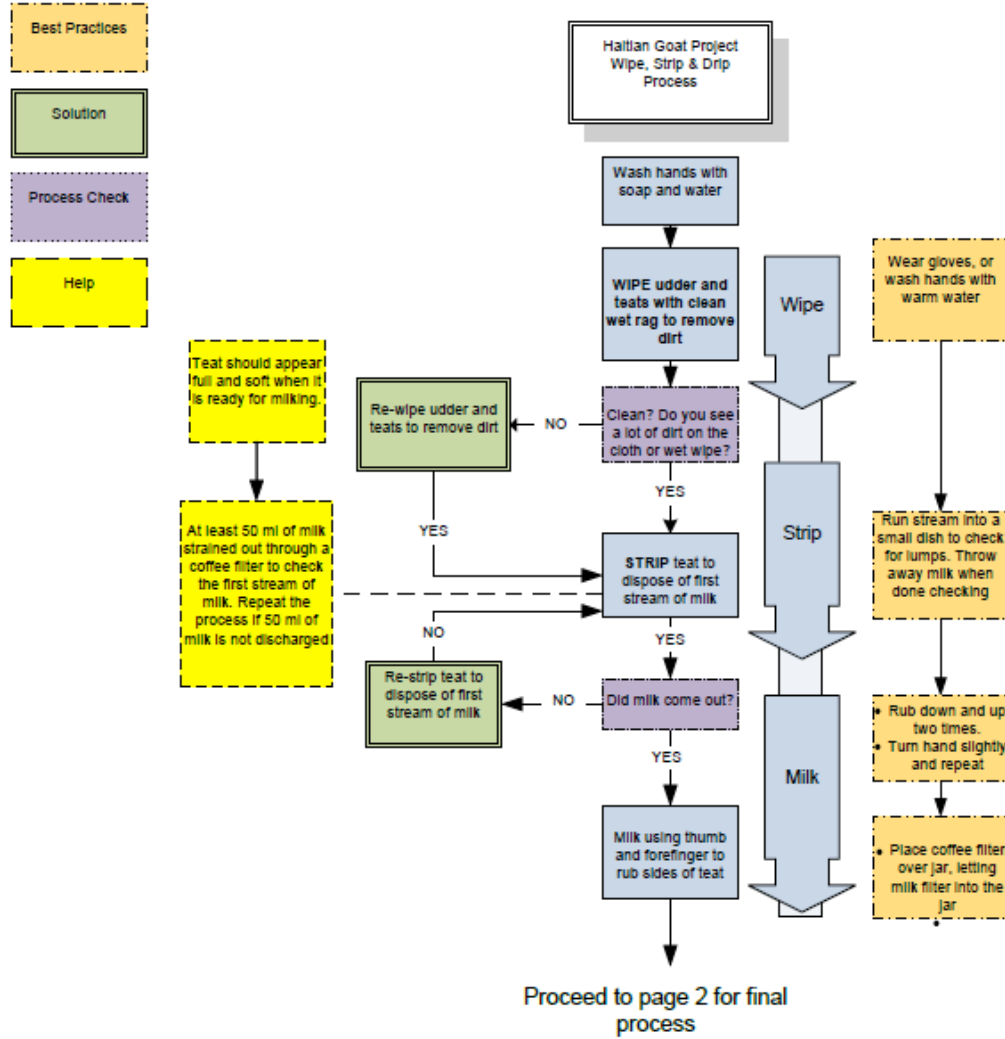


Figure A2. The Business Process Model page 1 of 2

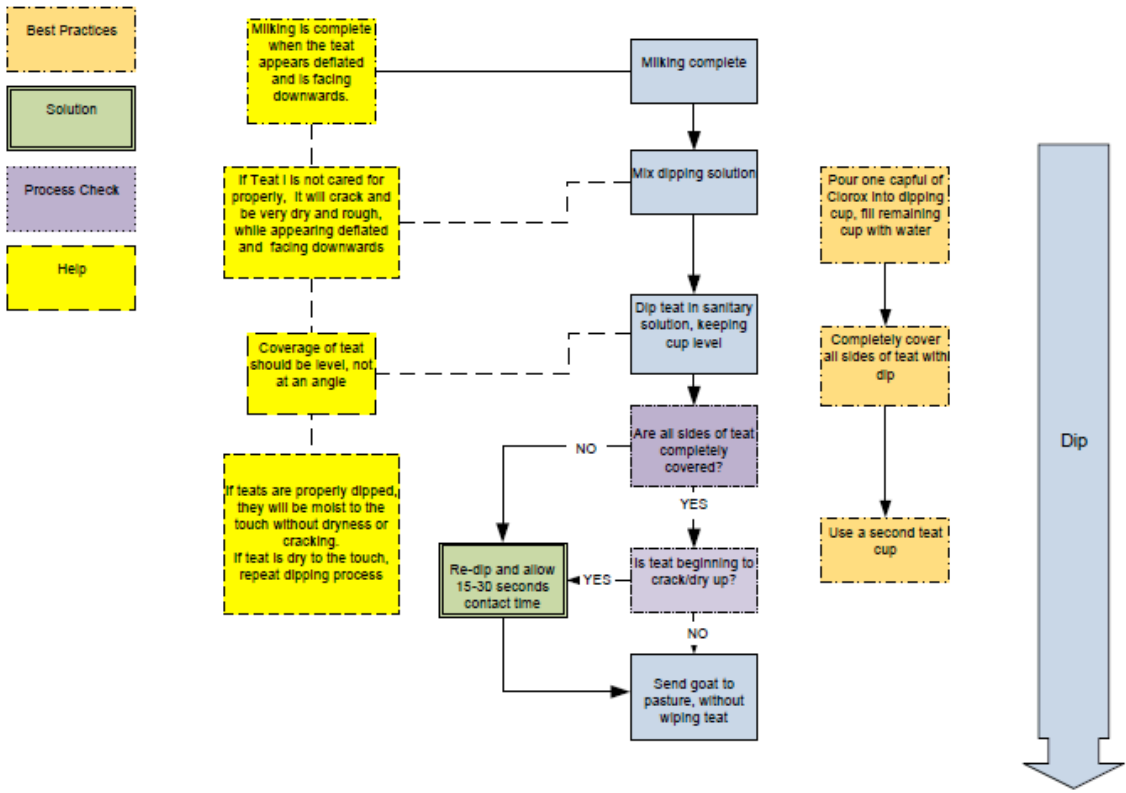


Figure A2. The Business Process Model page 2 of 2

Observation Checklist

OBSERVATIONS				
	User's Behavior	YES	NO	NOTES
1.	Does the milker milk the goat at the same time every day?			
2.	Does the milker milk the goat in the same place every day?			
3.	Are there other goats around when they milk the goat?			
4.	Does the milker milk the goat from the same side every time?			
5.	Does the milker wash the udder first, to relax the udder, and to ensure cleanliness?			
6.	How many times a day does the milker milk the goat?			
7.	Does the milker seem at ease?			
8.	Does the goat seem at ease?			
9.	Does the milker use any tools? (if no skip to 11)			
10.	What tools does the milker have?			
11.	Is the milking area noisy or calm?			

Figure A3. Observation Checklist

The Performance Job Aid

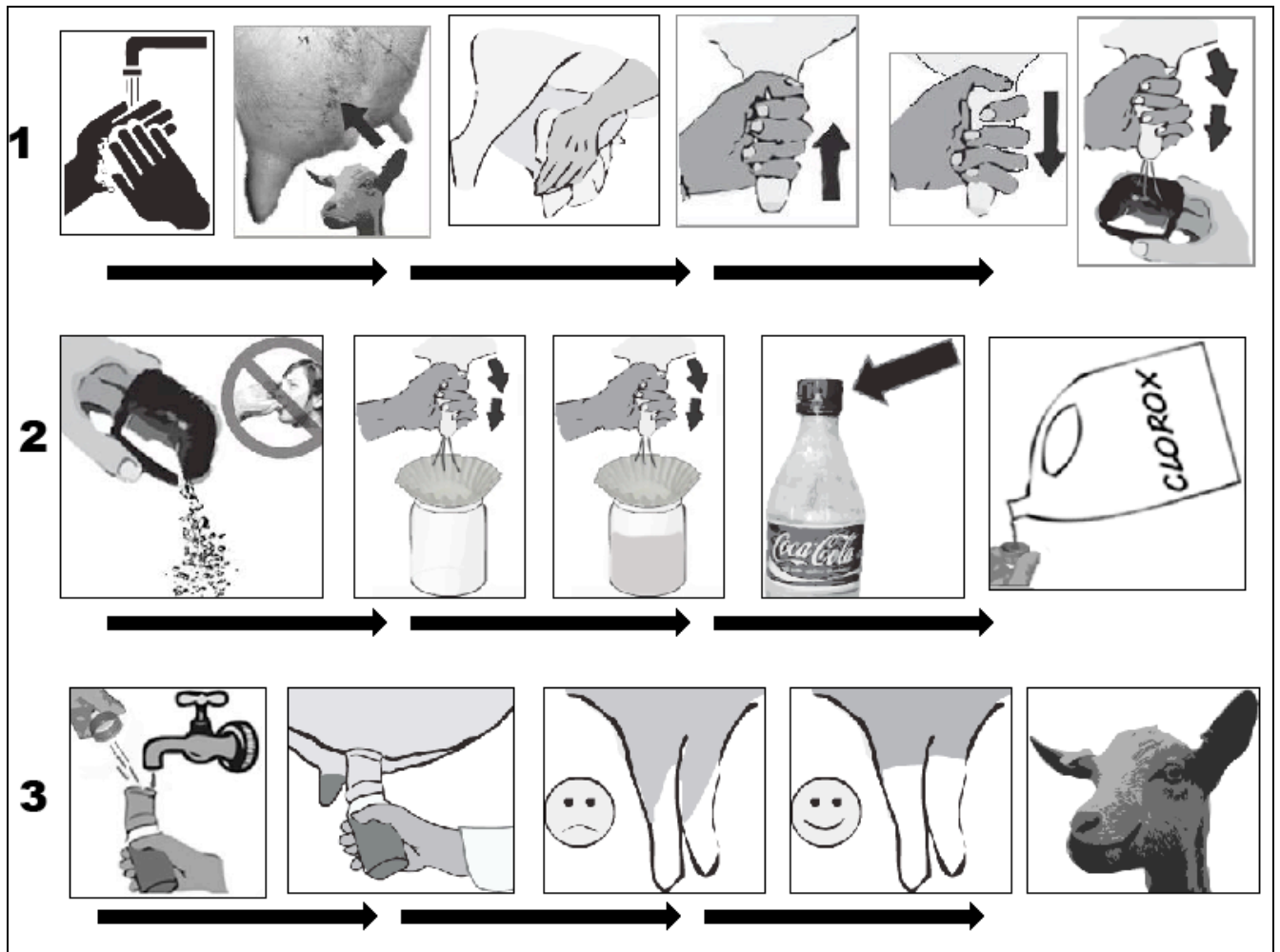


Figure A4. The Performance Job Aid