

Equipping employees with effective, humane, and efficient cow handling techniques

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Notes:

Paper and PowerPoint slides on following pages



**Department of
Animal & Dairy Sciences**
UNIVERSITY OF WISCONSIN-MADISON

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**Equipping employees with effective, humane, and efficient
cow handling techniques**

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On dairy farms, direct interaction with cows is necessary for animal care but presents a risk of human injuries that can be severe or even fatal. Furthermore, inappropriate handling of cows impairs animal welfare, milk production, and public trust in dairy farming, negatively impacting large and small farms alike.

Interacting with cows safely and humanely requires an understanding of their behavior and appropriate animal handling skills. Without proper training, handlers may use counterproductive, negative techniques such as raising their voices or striking cows, and they can

cause cows to panic by approaching too quickly or entering their blind spot.

In contrast, working with cows' instincts to move away from humans (i.e., their *flight zone*) and allowing them to walk at their own pace generates less fear and stress, resulting in greater milk yield and lower risk of injuries to animals and people.

Today, >99% of U.S. dairy farms are evaluated against standards established by the Farmers Assuring Responsible Management (FARM) Animal Care program. As of 2020, this program has required all farm personnel with animal-handling roles to document annual continuing education (CE) in appropriate handling techniques. What constitutes CE is currently open-ended.

No standard currently exists for effective training in cow handling. With few exceptions, animal-handling training tools have not been tested scientifically and have substantial limitations. Although the principles for appropriately handling cows are well established, not all handlers understand the benefits, know how to translate the concepts into practical skills, or apply them consistently.

Popular existing video- and text-based resources on cow handling principles are examples of passive learning, which do not provide opportunities to apply concepts and practice skills (i.e., learning by doing). In classroom settings, educational research has led to increased adoption of active learning techniques, which use greater engagement to help reinforce concepts and learning objectives. Nonetheless, even with in-person cow-handling training programs, trainees do not learn to navigate a variety

of challenging but common situations they are likely to encounter on the job.

To address the shortcomings of existing training resources, we developed a digital serious game, *Mooving Cows*[™]. The game, which can be played in English or Spanish, is like a flight simulator for dairy farm personnel to learn to move cows humanely.

Players of *Mooving Cows* take on the role of a dairy farm worker. They are tasked with moving cows through routine barn environments (i.e., freestall pen, milking parlor; **Figure 1**), guided by in-game tutorials. To become better prepared to handle real-world situations, players navigate simulated challenges, such as peer pressure and unpredictable or dangerous cow behavior. The in-game learning objectives are to understand how human actions affect cow behavior, stress, and productivity, and how interactions between humans and cows affect worker safety and farm efficiency.



Figure 1. Screenshot of the digital game *Mooving Cows*[™], in which all text and voiceover narration is available in Spanish or English. Players move cows through simulated routine barn environments, including the milking parlor (shown) and freestall pens. Visual augmentation includes a depiction of a cow's flight zone.

Upon successfully completing all eight levels in the game, players earn a certificate of completion, which can be used as documentation of training (e.g., to meet the FARM program expectations).

During the initial development of *Mooving Cows* in 2022, 30 Wisconsin dairy industry professionals played a prototype and gave input on how to make sure the game would be relevant to the dairy industry. After finalizing Version 1.0 of the game in early 2023, we conducted additional research to evaluate the suitability of this tool to improve knowledge in cow handling.

We collected data from 34 English- and Spanish-speaking workers from 3 Wisconsin dairy farms. Before and after playing the game, the participants completed a 10-question multiple-choice evaluation of their knowledge of best practices for dairy cow handling. The order of the questions and response choices were scrambled. That research-only version of the game took on average 36 minutes to complete, regardless of language, but with great variability among players (23 to 51 minutes).

The game appeared to improve confidence in and knowledge of best practices for cow handling. Before playing the game, participants answered on average 7.6 out of 10 questions correctly, responding “I don’t know” to 0.6 questions, and answering the remainder incorrectly. After playing the game, they answered 8.3 questions correctly,

selecting “I don’t know” for only 0.1 questions on average.

Overall, participants found the game enjoyable (mean = 3.7; 1 to 5 scale with 1 = very unenjoyable, 5 = very enjoyable) and somewhat easy (mean = 2.6; 1 to 5 scale with 1 = very easy, 5 = very challenging). Encouragingly, participants thought the game would be useful both for learners with little to no dairy cow experience to learn how to handle cows, as well as for those who already have experience to review handling practices (mean = 3.6 and 3.3, respectively; 1 = not at all useful, 5 = extremely useful).

Overall, the results from our research on Version 1.0 of the game established the proof of concept for *Mooving Cows* as an effective and engaging tool for trainees to learn appropriate handling techniques.

We incorporated feedback from those users to refine the game to Version 1.1, released in early 2025. It is available for free, with no advertisements, in both the Google Play (Android devices) and iOS (Apple devices) app stores. Most people can complete the latest version of the game in under 30 minutes.

Ultimately, we envision this tool being used on dairy farms across the U.S. for training and continuing education. In the future, we plan to expand the game to other challenging cow-handling contexts (e.g., loading a hoof trimming chute) and other livestock sectors.

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Download the game for free (no ads!) for Android or Apple devices through the UW-Madison School of Veterinary Medicine [Dairy Apps](#):



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Industry is prioritizing animal handling

2018: Dairy farm owners & managers requested training on cow handling for employees



Industry is prioritizing animal handling

- ↓ personnel injuries
- ↓ cow injuries
- ↓ cow stress levels
- ↑ milk yield
- ↑ milking parlor efficiency
- ↑ consumer confidence



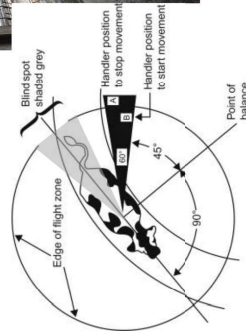
Grandin, 2008. *Humane Livestock Handling*. Storey Publishing; Breuer et al. 2000. *Appl Anim Behav Sci* 66:273-268; Hensworth et al. 2000. *J Anim Sci* 76:2821-2831; Vansor & Dyrnk, 2011. *J Agric Econ* 62:59-72; Robbins, Van Os, et al., 2024. *J Dairy Sci*. <https://doi.org/10.31695/jds.2023-2349b>

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Why is training needed?



Grandin, 2008. Humane Livestock Handling, Storey Publishing

Annual continuing education

- Effective January 2020 (Version 4.0)
- Anyone on the farm who directly handles animals
- Must be documented
- "Training" is open ended



Employee Training Record

Date: _____ Training Conducted by: _____

Select Topic Covered:

<input type="checkbox"/> Euthanasia	<input type="checkbox"/> Chemical	<input type="checkbox"/> Stockmanship	<input type="checkbox"/> Cows to Parlor	<input type="checkbox"/> Heifer Care
<input type="checkbox"/> Youngstock	<input type="checkbox"/> BQ and Vaccines	<input type="checkbox"/> Newborn	<input type="checkbox"/> Hospital Protocol	<input type="checkbox"/> Commodity
<input type="checkbox"/> Hoof Trimming	<input type="checkbox"/> Dystocia	<input type="checkbox"/> Hospital Protocol	<input type="checkbox"/> Animal Welfare	<input type="checkbox"/> Maternity
<input type="checkbox"/> Milking Class	<input type="checkbox"/> Tractor and Equipment	<input type="checkbox"/> Down Cow		
<input type="checkbox"/> Horsemanship				

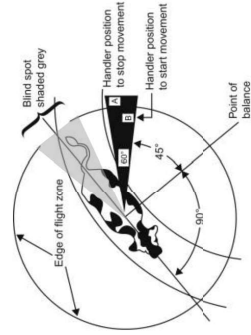
Print Name: _____ Signature: _____

Brief Description of What You Learned: _____

<https://matonaldairyfarm.com/dairy-farm-standards/animal-care/>

Why are more training resources needed?

- Cattle handling principles are well established...
- Why do people struggle to apply the concepts?
- Limitations of current resources:
 - Lack evidence of effectiveness
 - Passive vs. active modalities?
 - Accessibility barriers? (language, literacy, learning styles)

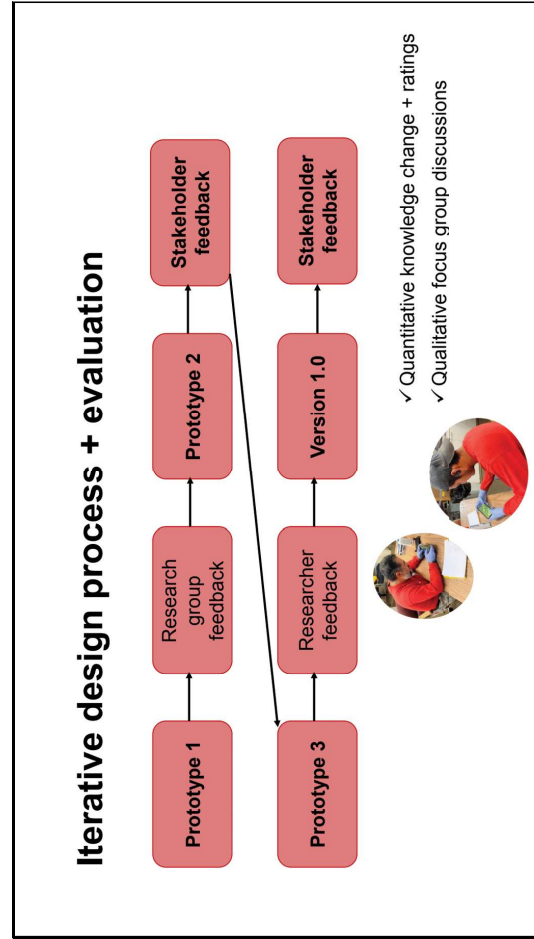
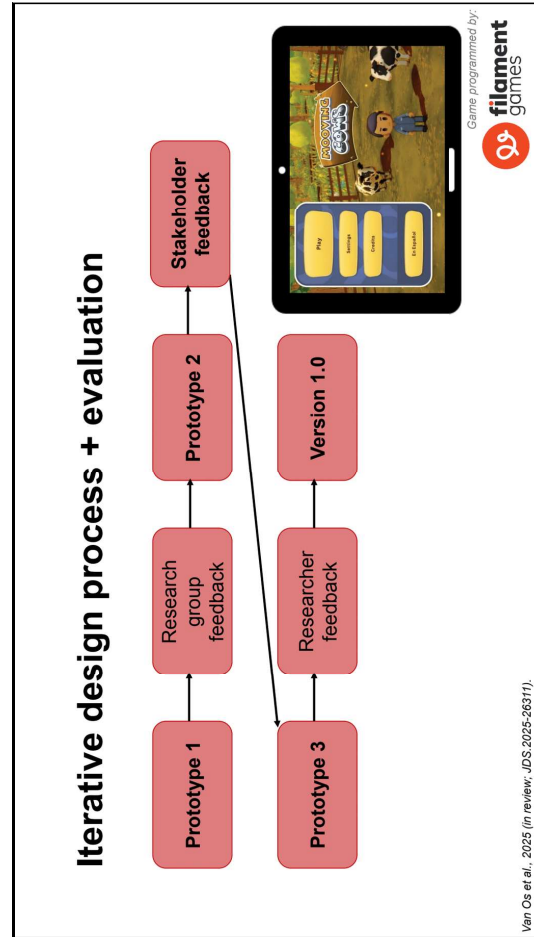
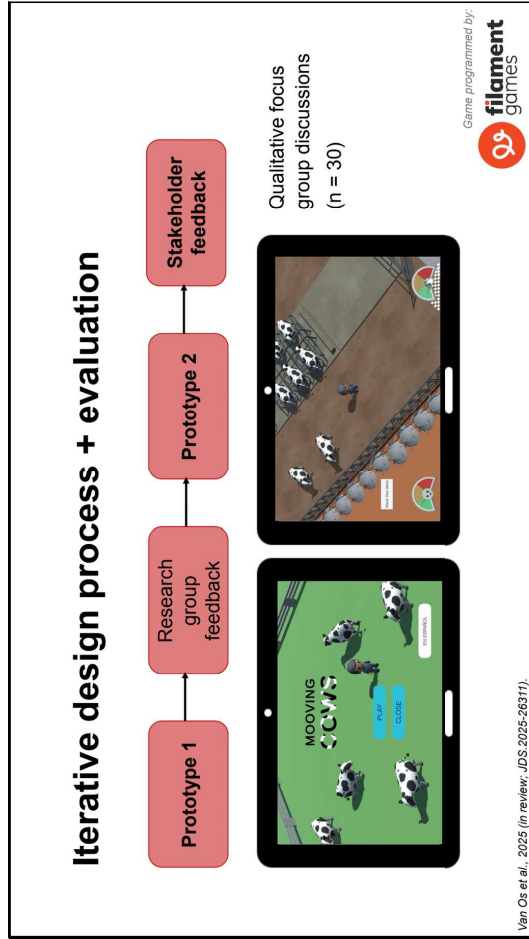
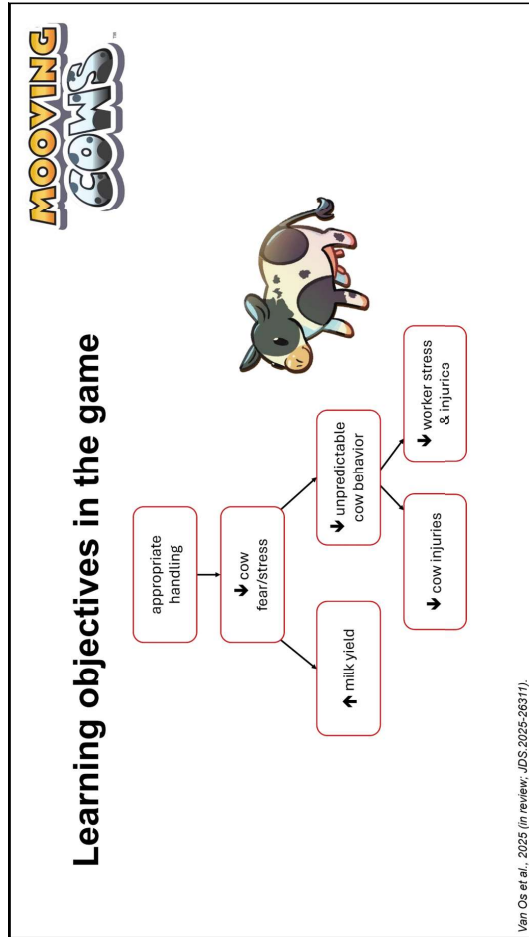


Grandin, 2008. Humane Livestock Handling, Storey Publishing



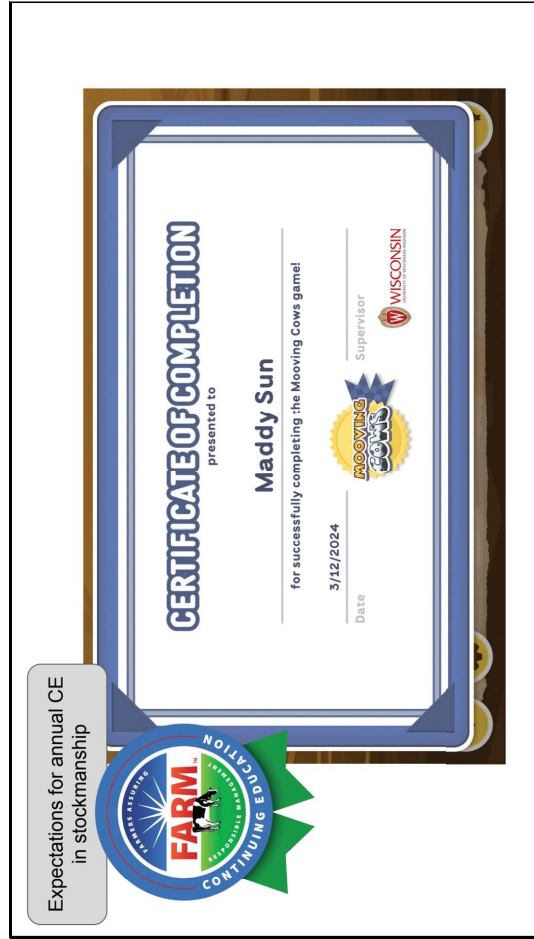
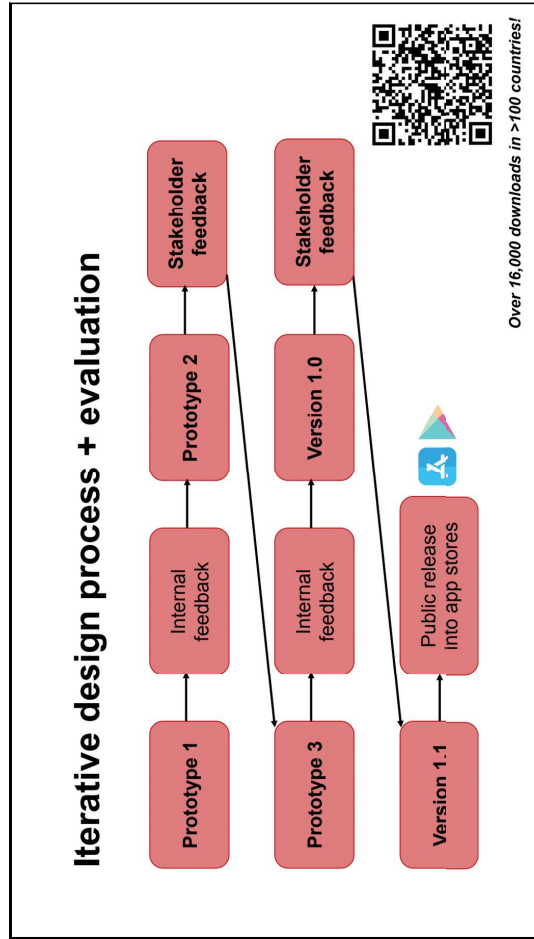
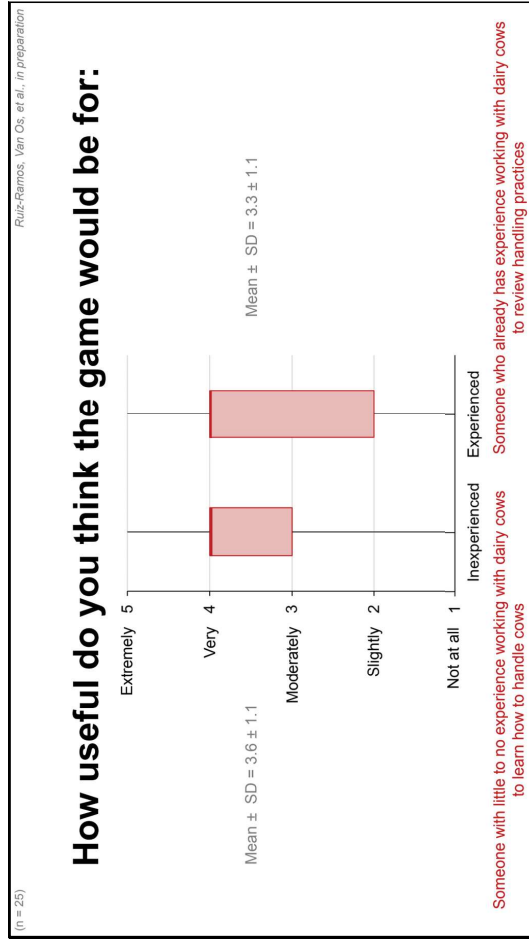
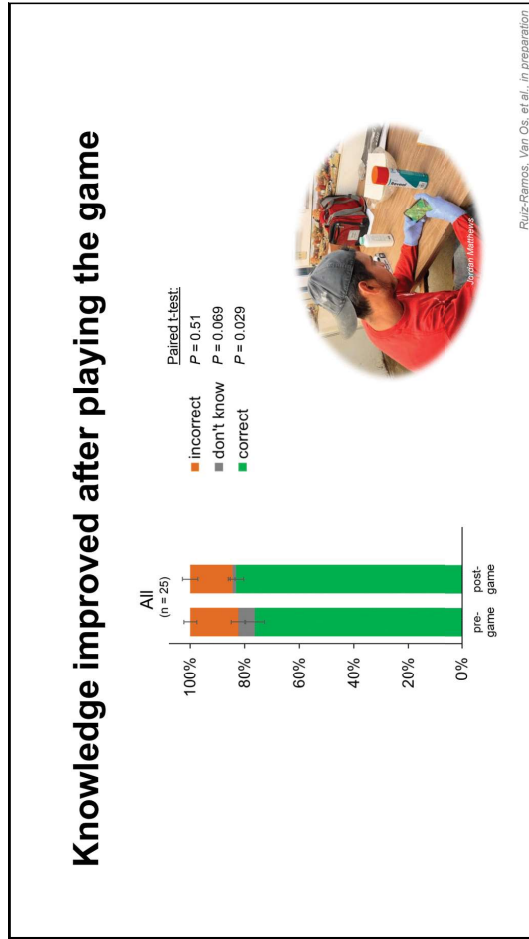
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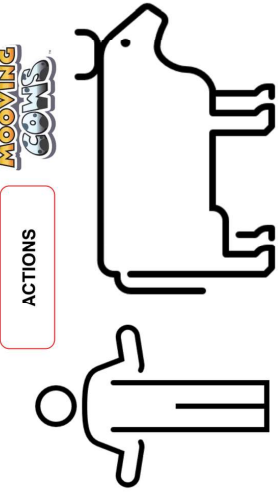
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Learning appropriate handling skills is one part of forming good habits...



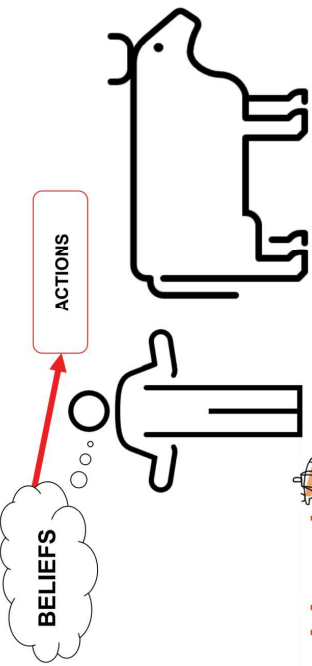
A diagram showing a stylized human figure on the left and a cow on the right. A rectangular box labeled "ACTIONS" is positioned between them, with a line connecting it to the cow.

MOOVING COWS

ProHand
Maximise your Positives, Minimise your Negatives

Breuer et al. 2000. Appl Anim Behav Sci 66:273-288; Hemsworth et al. 2000. J Anim Sci 76:2821-2831

...habits also depend on people's beliefs



A diagram showing a stylized human figure on the left. A thought bubble labeled "BELIEFS" is connected to the figure by a line. An arrow points from the "BELIEFS" bubble to a rectangular box labeled "ACTIONS". Another arrow points from the "ACTIONS" box to a cow on the right.

MOOVING COWS

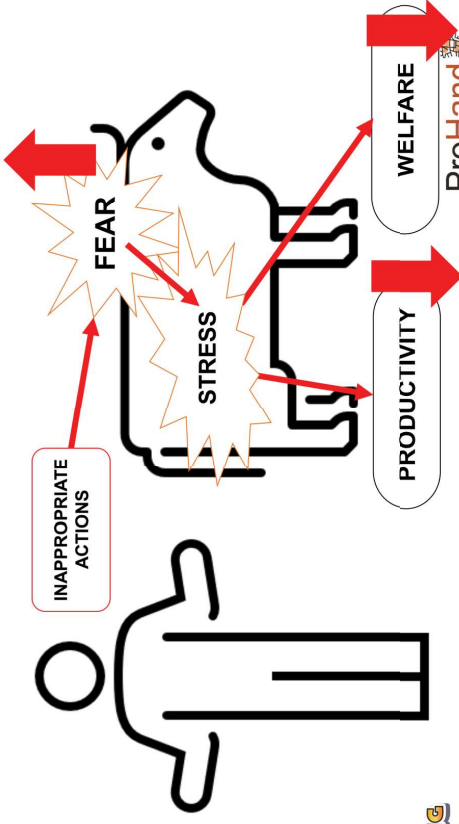
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Positive vs. negative handling actions?

- **Positive** = unlikely to ↑ fear in cows
 - Slow, predictable movement
 - Gentle physical contact (petting, stroking, resting hand on cow)
- **Negative** = likely to ↑ fear in cows
 - Fast, sudden movements
 - Shouting or loud sounds
 - More forceful physical contact (slapping, hitting, pushing, tail-twisting)

Sorge et al. (2014); Hemsworth et al. (2000, 2002); Breuer et al. (2000)



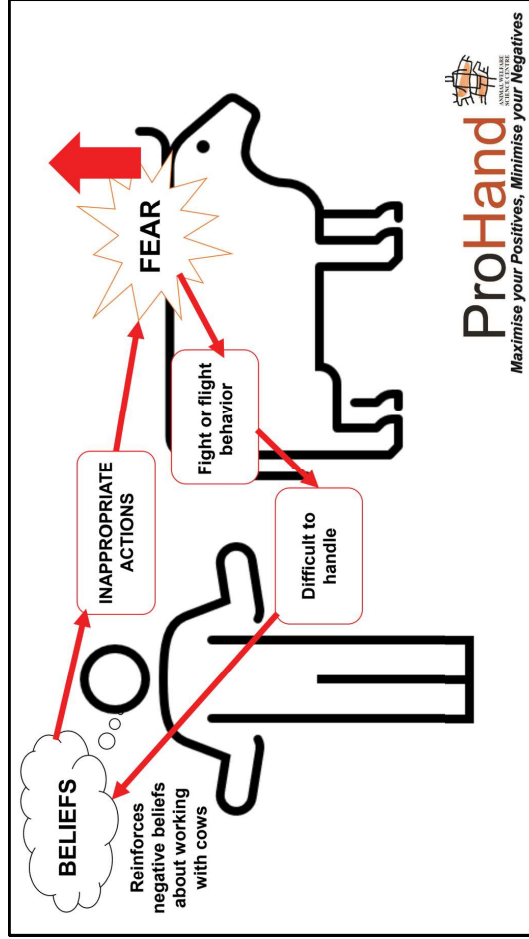
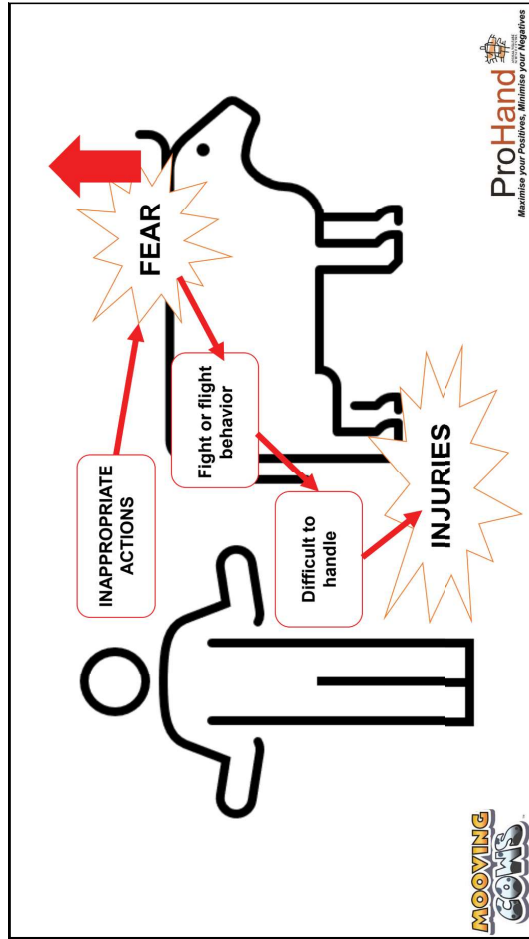
A diagram showing a stylized human figure on the left and a cow on the right. A box labeled "INAPPROPRIATE ACTIONS" has an arrow pointing to the cow. From the cow, two jagged arrows labeled "FEAR" and "STRESS" point away. From the cow, two straight arrows labeled "PRODUCTIVITY" and "WELFARE" point away.

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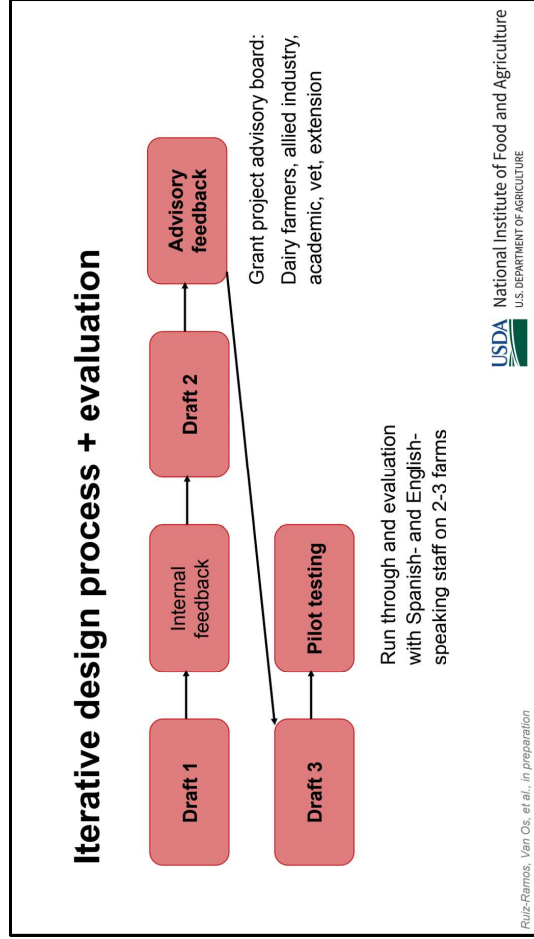


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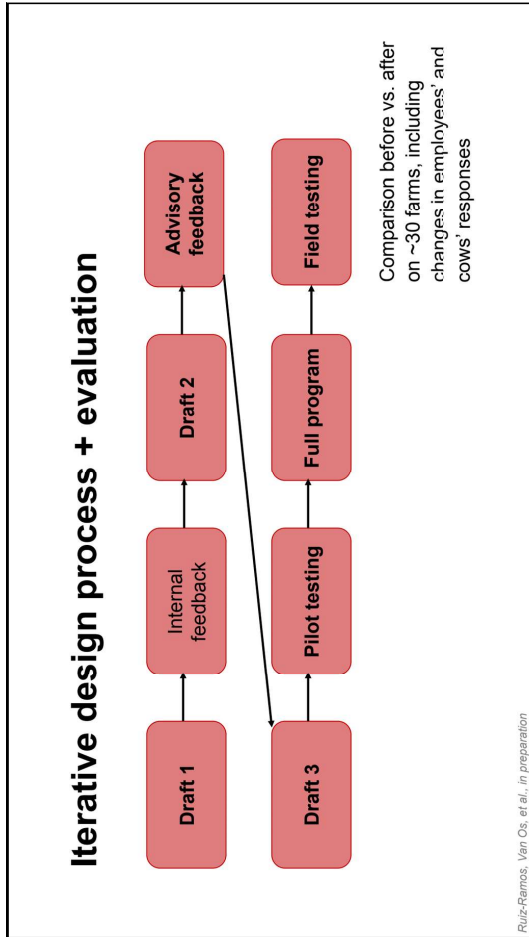
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Learners also receive customized feedback



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Take-home messages

- Effective learning programs on cow handling:
 - Involve end users in development
 - Research to show effectiveness
 - Interactive vs. passive
 - Languages: Spanish + English
 - Literacy barriers: voiceover, minimize text

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