

Behaviorism and Constructivism in Animal Science Laboratory Classes; Evaluated by Skill Performance, Student Confidence, and Heart Rate

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Study Background

- Exploratory mixed method study
- Designed around Camp and Doolittle's definitions of Behaviorism and Constructivism as published in 1999 in the *Journal of Vocational and Technical Education*
- Utilizes a pre-test/post-test design (short term and long term post-test)
- Gaining insight into the learning process during laboratory classes with an equine component

What am I sharing with you today?

- Data from a subsection of the study
- Comparison of confidence changes, student heart rate data, and skill performance scores
- Comparison of heart rate is established as a noninvasive measure of stress by König von Borstel et al. in the article *Equine behaviour and heart rate in temperament tests with or without rider or handler*



Practice Group	Skill A (Haltering)	Skill B (Pillow Wrap)
Black	Constructivism	Behaviorism
Red	Behaviorism	Constructivism



“Equine experience” = being in sole control of a horse for a minimum of ten events

Results: Survey Results

Increases in Confidence Identified by Use of Survey

	n	Behaviorism	Constructivism
Basic Skill	54	33.3% (n=30, $\mu=2.77$)	75% (n=24, $\mu=3.79$)
Advanced Skill	54	12.5% (n=24, $\mu=2.63$)	73.3% (n=30, $\mu=4.03$)

*Average practice time for the basic skill was 32 minutes and 57 minutes for the advanced skill.

Results: Heart Rate & Skill Scores

Skills Test 1				
Practice Group	Halter Score	HR Halter	Wrap Score	HR Wrap
Black	6.1	106.7	5.5	115.4
Red	6.4	112.3*	6.1	109.6
Skills Test 2				
Practice Group	Halter Score	HR Halter	Wrap Score	HR Wrap
Black	7.5	114.5	5.6	122.8
Red	6.6	107.3	7.3	118.5

*Outlier present in this group.

Score calculated out of 8 possible points.

HR calculated by averaging the peak hear rate of students during skills test situations

Results: Skill Scores Continued

Improvement in Skill Score

Practice Group	Basic Skill	Advanced Skill
Black	80.0%	41.7%
Red	23.3%	73.3%

No Change in Skill Score

Practice Group	Basic Skill	Advanced Skill
Black	16.0%	12.5%
Red	56.7%	16.7%

Results of the unannounced skills test (n=14):

Possible Scores	Basic Skill	Advanced Skill
N-	1	0
N+	4	0
Y-	4	5
Y+	4	8

Key:

N- = No attempt

N+ = Skill not completed

Y- = Completed, errors

Y+ = Completed, no errors

Conclusions and Recommendations

- Overall, learning by constructivism created increased skill performance in students.
- Though survey results indicated that learning my constructivism increased student confidence, heart rate data was contradictory.
- Further testing is necessary to understand the results of this study.
- In the classroom, assessing student confidence and the value of laboratory classes can be attained by using multiple different tools

**Any
Questions?**

References:

Doolittle, Peter E., & Camp, William G. (1999). Constructivism: The Career and Technical Education Perspective.

König von Borstel, U., & et al., (2011). Equine behaviour and heart rate in temperament tests with or without rider or handler. *Physiology & Behavior*, 104, 454-463.