

# Knowing By Doing: Does A Relationship Between The Importance to Teach and Ability to Perform Electrical Skills Exist?

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## Introduction

- It is a priority to develop prepared, knowledgeable SBAE teachers who possess pedagogical knowledge and the ability to perform skills needed to teach (Wells et al., 2021; Albritton & Robers, 2020).
- Strengthen performance through practical experiences such as (Wells et al., 2021):
  - Agricultural courses and labs
  - Hands-on fieldwork
  - Supervised student teaching
- Emphasis on importance of hands-on performance alongside theoretical knowledge has evolved (Traini et al., 2023).
- However, Education programs are not prepping SBAE teachers (Wells et al., 2021).
- This research highlights the relationship of importance to teach and ability to perform electrical skills.

## Theoretical Framework

- The theoretical framework guiding this study is Becker's (1964) Human Capital Theory (HCT). HCT explains how an individual's knowledge, skills, experiences, and competency collectively increase their overall success in agricultural mechanics (Becker, 1964; Leiby et al., 2013; Little 2003; Bernston et al., 2006).
- This study utilizes HCT to examine if an SBAE teachers' perceived importance of teaching electricity correlates with their ability to perform those tasks.

### The Human Capital Theory

Knowledge

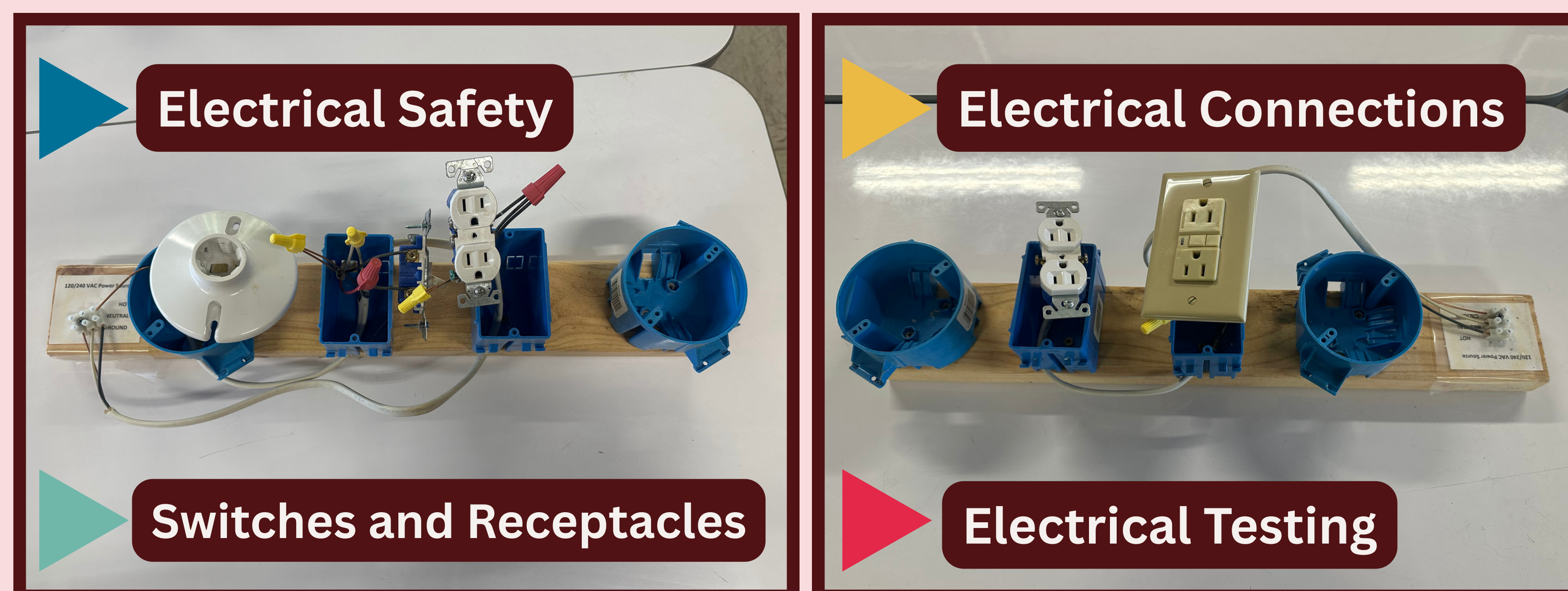
Skills

Experience

Competence

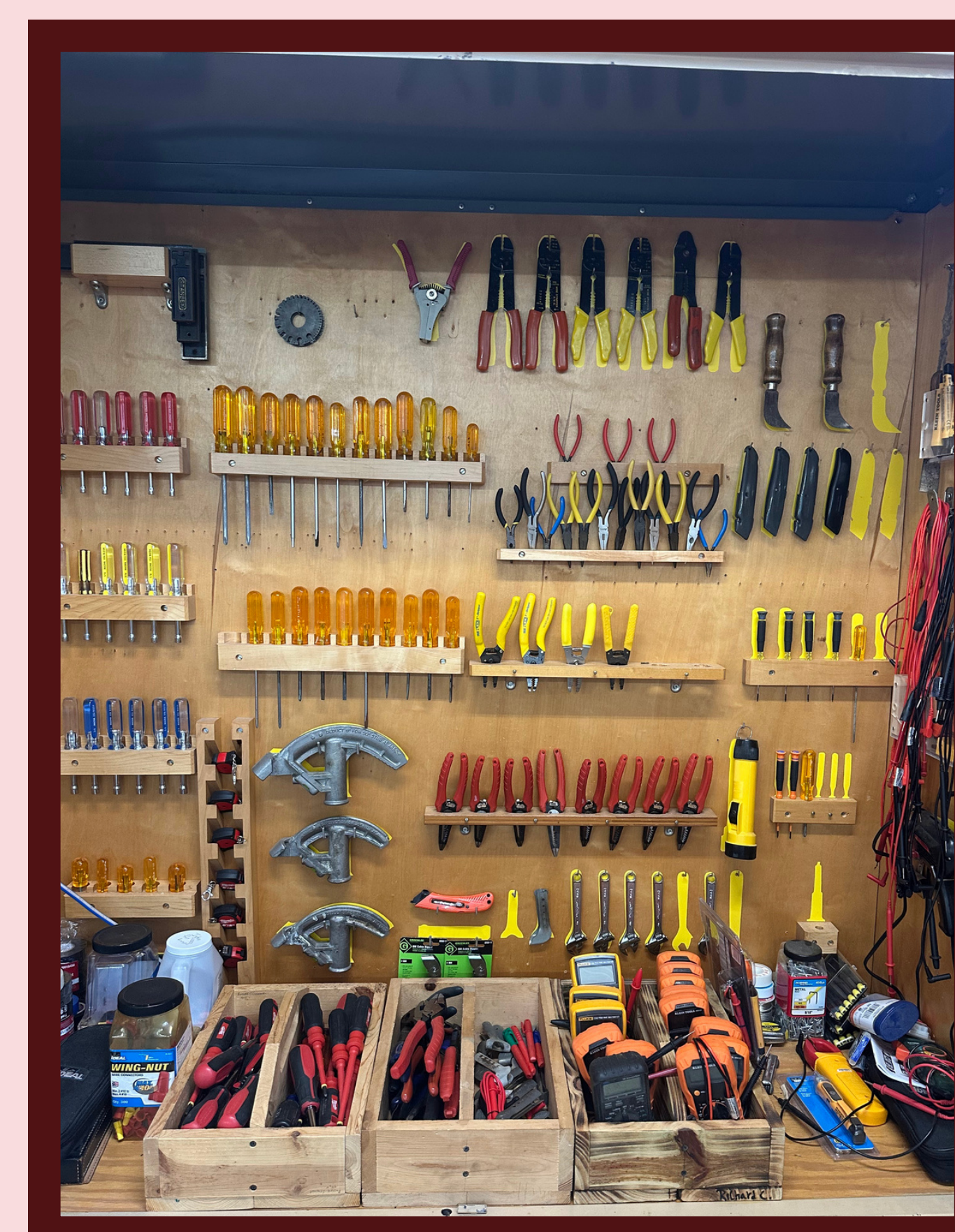
## Objectives

1. Determine if a relationship exists between performance and importance to teach electrical safety and tools.
2. Determine if a relationship exists between performance and importance to teach installations and operations of electrical switches and receptacles.
3. Determine if a relationship exists between performance and importance to teach how to make electrical connections.
4. Determine if a relationship exists between performance and importance to teach electrical testing methods.



## Methods

- This research was centered around electricity, with data collected from 80 participants over a 10-day workshop held annually between 2021 and 2024.
- Participants used a five-point scale to rate and complete a pre- and post-assessments covering 28 electricity-related skills.
- A post hoc Cronbach's alpha analysis was conducted with coefficients between four constructs.



## Results

- There was no significant relationship prior to training.
- However, post-workshop, data revealed a significant positive relationship ( $p < .05$ ) across all constructs.
- The results show that SBAE teacher's ability to perform these tests directly correlates to their perceived importance of teaching after the workshop was conducted.

**Table 1**

*Spearman Rho Correlations Between Importance to Teach Electrical Testing in School Based Agricultural Education and Ability to Perform Electrical Tests.*

|                    | Pre -Importance |              | Post Importance |              |
|--------------------|-----------------|--------------|-----------------|--------------|
| Electrical Testing | Pre-Ability     | Post Ability | Pre-Ability     | Post Ability |
| continuity testing | .180            | .127         | .091            | .503*        |
| Polarity testing   | .190            | .096         | .064            | .438*        |
| Voltage testing    | .192            | .141         | .075            | .510*        |
| Current testing    | .214            | .098         | .102            | .468*        |
| Resistance testing | .079            | .098         | .064            | .471*        |

## Conclusion/ Recommendations

- Additional positive exposure to electrical training early on for SBAE teachers through forms of mini lessons taught in the SBAE teacher preparatory classes or in informal settings like club meetings.
- YouTube channel focused on tutorial videos aligned with electrical skills that can be shared via social media.
- Further research is needed to assess the long-term impact of the YouTube channel on the instruction of SBAE teachers. This should include a comparison of the curriculum taught by SBAE teacher prior to and after watching the tutorial videos.

