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Utah Teachers' Perceptions of Teaching Genetic Engineering in the Classroom

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Introduction and Need for Research

- A shortage of skilled college graduates (Goecker, Smith, Fernandez, Ali, & Theller, 2015)
- Changes in agriculture influence an educator's ability to effectively teach agricultural topics, and variable beliefs about agriculture in the school community (i.e., students, parents, counselors) influence the number of students interested in agricultural careers (Boone & Boone, 2007; Thompson & Russell, 1993)
- Agricultural educators need to be trained with up-to-date information about issues and careers in agriculture (Perkins, Sorensen, Hall, Dallin, & Francis, 2017)
- Research Priority Area Three by preparing individuals to work in a global agriculture and natural resources workforce (Roberts, Harder, & Brashears, 2016)

Objectives

1. Determine if a professional development workshop on genetic engineering in agriculture produced gains in the teacher's knowledge, confidence/ability, and importance of genetic engineering
2. Determine teacher behavior related to incorporating genetic engineering into their classroom curriculum.

Methodology

- The professional development workshop was held on Utah State University's campus with 19 teachers from Utah within science or career and technical education (CTE).
- They participated in a one-day workshop about genetic engineering, consisting of lectures and tours.
- Teachers were provided resources, including agricultural curriculum in genetic engineering.
- Participants received a retrospective pretest posttest questionnaire to measure level of knowledge, confidence/ability, and importance before and after the workshop, as well as their attitude, subjective norms, perceived behavior control, and intention to integrate genetic engineering into their curriculum

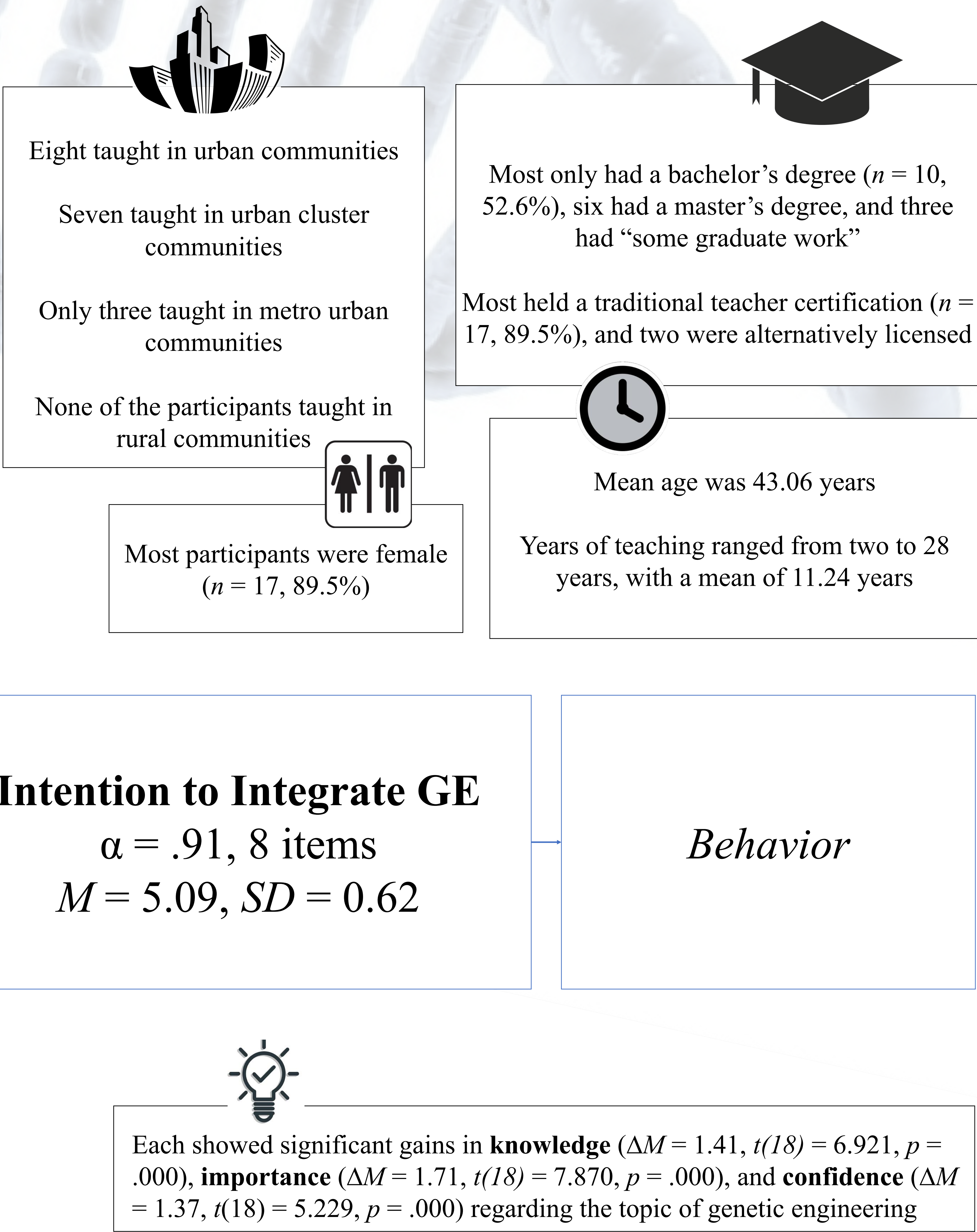
Theoretical Framework and Results

The theory of planned behavior (Ajzen, 1991)

Attitude
 $\alpha = .95$, 8 items
 $M = 5.18$, $SD = 0.83$

Subjective Norms
 $\alpha = .89$, 6 items
 $M = 4.32$, $SD = 0.77$

Perceived Behavioral Control
 $\alpha = .92$, 8 items
 $M = 4.72$, $SD = 0.77$



Conclusions, Implications, and Recommendations

- Participants had significant gains in knowledge, importance, and confidence through their participation in the genetic engineering professional development workshop.
- Professional development workshops might be an effective way to disseminate information about emerging technology in agriculture.
- Educational materials should be disseminated not only to agricultural educators but also to science and CTE teachers.
- Are rural teachers not interested in genetic engineering? Why didn't they register?