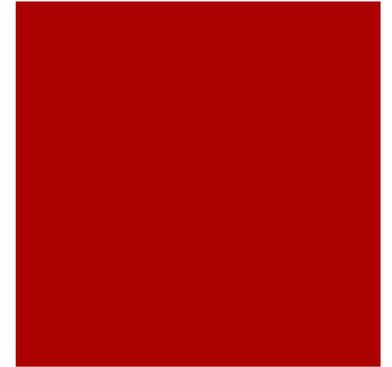


Agricultural Teacher Perceptions of Facilitating Inquiry- Based Instruction

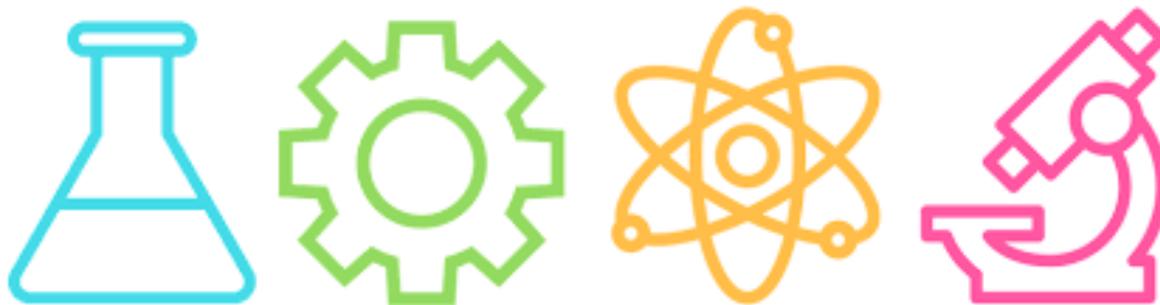
Matthew S. Kreifels, University of Nebraska-Lincoln
Nathan W. Conner, University of Nebraska-Lincoln
Bryan Reiling, University of Nebraska-Lincoln
Christopher T. Stripling, University of Tennessee
Matt Kreifels, University of Nebraska-Lincoln

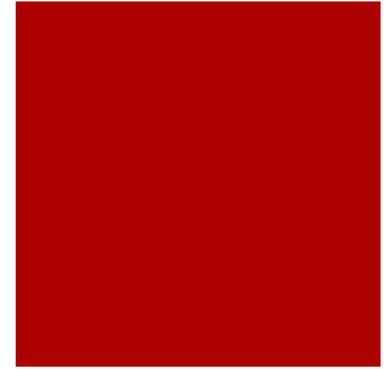




Introduction

- Over 50% of high school students in the U. S. lack proficiency in science (Partnership for 21st Century Skills, 2008)
- 27% of 11th grade students in Nebraska lack proficiency in science (Nebraska Department of Education, 2015)
- Nebraska Coordinating Commission of Postsecondary Education Funded this project





PD Goals

- Enhance science literacy in Nebraska by
 - providing secondary life science educators with a year long professional development (PD) program
 - Teaching real-world science through
 - genetics,
 - muscle biology,
 - microbiology,
 - nutrition
 - Using inquiry-based teaching methods



Components of the PD



- Face-to-Face Workshop (2 day)
- Zoom webinars
- Curriculum development and implementation
- Face-to-face Workshop (1 day)

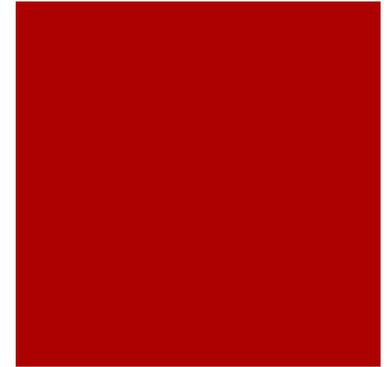




Objective

- To determine agriculture and science teachers' perceptions of science integration using inquiry-based learning as an instructional method when teaching about animal science within their curricula after participating in a 12-month professional development program





Methods

- Participant Selection
 - Criterion-based sampling
- Data Collection
 - 80 minute focus group
 - Observation notes
- Data Analysis
 - Thematic analysis method (Grbich, 2007)
 - Constant comparative method (Charmez, 2014)
- Trustworthiness (Lincoln & Guba, 1985)
 - Triangulation
 - Member Checking
 - Methodological journaling

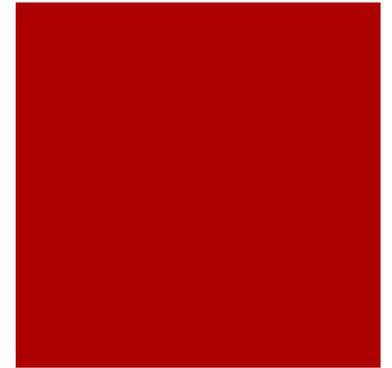


Themes

- A. Perceived value of inquiry-based learning
- B. Alignment to state and local expectations
- C. Value and challenges of a 12-month program
- D. Challenges in engaging science teachers
- E. Confidence in teaching technical content
- F. Integrating science concepts



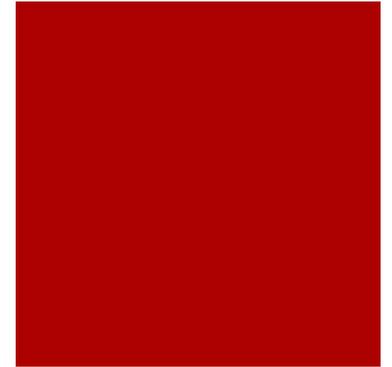
Perceived value of inquiry-based learning



- T4 stated “I think that first year was really more, you know, book discussion and lecture type thing. And part of it’s different types of classes because I didn’t have any animal science lessons my first year, but going into this and having to think about the inquiry based lessons and trying to keep myself from just guiding them down the path every lesson and letting them work through some of the questions and materials at times, rather than being their shepherd.”
- Inquiry-based learning encourages examination of how curriculum is delivered in all courses (T7)



Alignment to state and local expectations



- T5 stated, "Inquiry is such a new, or big—huge part of the new standards and so, [I enjoy] facilitating the use of more of that in my classroom."
- Science integration and Inquiry-based instruction help to meet state and local requirements, including local curricular requirements, including stated learning objectives (T6), approved teaching methods (T2), and helping prepare student for the ACT exam through the use of vocabulary (T7).



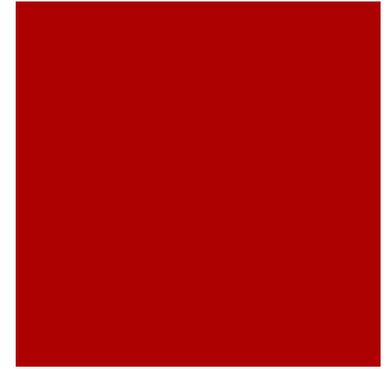
Value and challenges of a 12-month program



- Appreciated accountability (T1,T3,T6)
 - Curriculum facilitation and development
 - Zoom meetings
- Flexibility (T7, T8)
- Challenges
 - Zoom calls (T3,T7)
 - Lack of specific focus of Zoom meetings



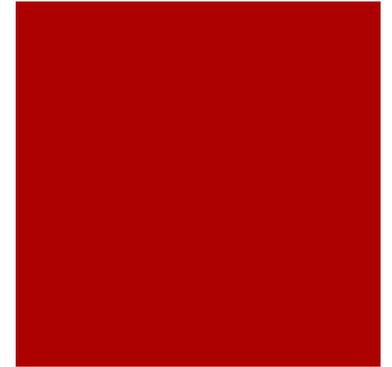
Challenges in engaging science teachers



- Lack of regular attendance at summer PD (T1,T8)
- Lack of relationship with ag and science teacher (T4)
- Science teacher retention (T2)
- I would say thank you to the [agriculture] teachers for helping to teach, because if kids can get it more than one way, it will help them to understand the material better" (T5).



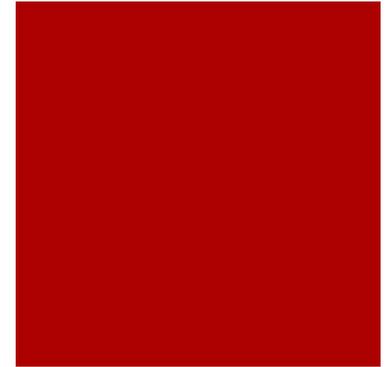
Confidence in teaching technical content



- Increased confidence (T1-T10)
- T5 stated, “You get really like, ‘This is what I do to teach this’ and it’s always ‘This is how I’ve done it.’ To come up with a new idea is sometimes difficult, or you’re like, ‘I don’t know where to start.’” She later added in reference to the provided curriculum, “[The materials are] already there for you, so that was helpful.”



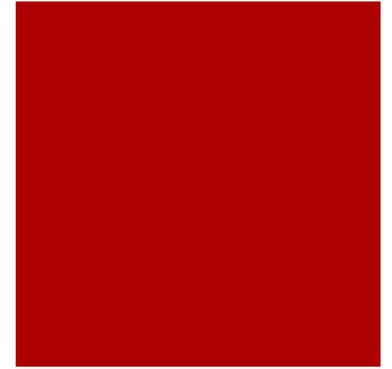
Integrating science concepts



- T7 stated, “It made me think a lot more about forcing students to [do] some research and come back with an answer the next day, [redacted] whereas sometimes I maybe struggled with that in the past.”
- Teacher T1 ,stated, “[Because] I knew more of the science behind it, I didn’t just kind of gloss over that and talk about strictly the animal and the digestive tract, but I was able to go into the science, so I would say [my integration of science] was better than it was.” .”



Conclusions and Recommendations



Conclusions

- Teachers feel more confident with prolonged PD
- Technical science skills/knowledge are needed to integrate science into agriculture
- Inquiry-based learning is built into NGSS

Recommendations

- Inquiry-based instruction continue to be taught
- Continual relationship development between agriculture and science teachers



Thank You!

Any Questions?

