Preparing a University Agriscience Teaching Methods Class to Design, Deliver, and Assess a Preservice Climate Science Teaching Activity

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Educational Partnership

• AXED 484: Methods of Teaching Biological, Earth, and Physical Sciences in Agriculture

• NMSU Extension and Research Youth Agricultural Science Center (NMSU-ERYASC)

• Integrating Extension activities with academics
CES and AES/Hatch Project

- Weather and climate science curriculum for middle school-aged youth
- Potential to adapt curriculum for 4-H project and after school, and summer enrichment programs
- Supplemented by Enchanted Life Foundation funding
Pre-service Teacher Education

• Developing and testing lessons during NMSU-ERYASC agriscience field days

• Fall 2017 piloted lessons
  – For the 7th grade: Understanding the difference between weather and climate (including graphing data sets)
  – For the 8th grade: Accessing (with class I-Pads) and analyzing local web-based weather and climate data http://scacis.rcc-acis.org/ (NOAA Regional Climate Centers Database)
Results

• Feedback from university students (n=14)
  – The teaching experience…
    • Highlighted the importance of effective classroom management
    • Allowed the university students to reflect after each lesson and to make team adjustments to content and content delivery throughout the day
    • Led to self-reflection and improvements in individual teaching approaches
• 7th grade lesson results (n=99)
  – Six-question multiple choice post-quiz
  – For Science Knowledge, students averaged 86.4% correct answers
  – For Science Skills, students averaged 75.3% correct answers
  – For Reasoning Abilities, students averaged 82.4% correct answers
Results

- 8th grade lesson results (n=85)
  - Six-question multiple choice post-quiz
  - For Science Knowledge, students averaged 81.2% correct answers
  - For Science Skills, students averaged 72.4% correct answers
  - For Reasoning Abilities, students averaged 78.6% correct answers
Conclusions

• University student feedback indicated that the agriscience field day was a valuable learning experience

• Middle school student results suggest the need for these lesson modifications
  – Lesson content
  – Expand both lessons to cover two class periods
  – Improve evaluation rubrics to standardize quality of formative and summative assessment
Future Directions

• Test the whole weather and climate science unit of instruction in January 2019
• Develop a 4-H/after school/summer enrichment climate science project
• Install a weather station at the Center to collect comparative data
• Integrate the science comprehension model into grades K-5 and 9-12 instruction
Thank You!
Contact Information

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