



Sustaining Agriculture through Graduate Directed K-12 Outreach Experiences

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Grant Specifications

- ***Agriculture and Food Research Initiative (AFRI) 91810***
- Partnership for Research & Education in Plant Breeding and Genetics at Purdue University
 - ***Herbert Ohm - Grant Project Director***
 - ***Neil Knobloch- Education co-Director***
 - ***Kiersten Wise- Education co-Director***



Purpose of Project

Develop graduate students intellectual resources in order for them to become more knowledgeable and effective leaders in production agriculture, government, industry and academia





Purpose of Education Output #3

Develop the intellectual capital to effectively engage audiences using learner-centered teaching strategies in K-12 and Extension settings.

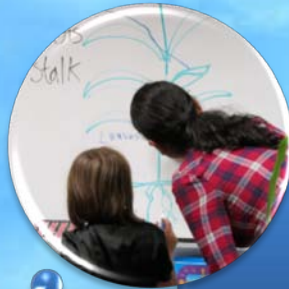


- Develop professional skills for academia and industry
- Participate in the cohort experience
 - Interact through weekly sessions
 - Participate in experiential activities

Plant Breeding Research for
Extension Education



Plant Breeding Research for K-12
Outreach



Plant Breeding Education &
Outreach Seminar



Educational Process



1st Session

– Learning Centered Teaching modules


- Backward Design and LCT
- Learning Objectives
- Evidences of Learning
- Learning Experiences using Active Learning
- Learning Experiences using Inquiry Learning
- Learning Experiences using Contextual Learning
- Putting all Together and Designing the Course

Educational Process

- Multiple intelligences
- Party Host
- Hieroglyphic Moment
- Spaghetti & Marshmallow teams
- Jeopardy- online games
- Flow Chart
- Color organizer




In Class Activities




2-3rd grade classroom James Cole Elementary
Boy Scout troop
Murdock Elementary
Tri-county High School
Purdue Spring fest

Outreach Activities

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- Define Agronomy and identify career fields
 - Cell structure and functions of DNA
 - Field crops of Indiana, edible plant parts, plant products
 - Plant disease history, plant disease progression, plant disease management
 - Plant breeding basics

Outreach Topics of Interest



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- Graduate students: 1st Cohort
 - Agronomy & Botany and Plant Pathology Departments
 - 2 Masters
 - 14 Doctoral
 - 9 Females
 - 7 Males
 - 6 American
 - 10 International

Participants

20 item Questionnaire

- Measuring their beliefs about teaching and learning
- Based upon 5 point Likert-type scale
- Students were “some” what self-efficacious
- $\bar{x} = 3.56$
- 40% of students show a very high belief in their ability to always make their expectations clear to students
- 53% confidence in their ability to make students believe they are able to learn and apply the content

Self-efficacy

- “Being an aspiring plant breeder, it was great explaining the young students about basic genetics in very simple terms”
- “I feel as if it could be a springboard for not only pursuing a career in education, but giving me valuable insight on how to lead or educate coworkers or colleagues in future endeavors whether in industry, the private sector or academia”

Graduate Reflections

- “I wanted them to understand why I chose to study plant breeding and plant genetics in college and that they too can study this in college.”
- “I now appreciate my mother’s career in teaching a little more”
- “I think in Agriculture, broadcasting the knowledge and new techniques to the non-professional public are as important as doing research”
- “I hope other graduate students will also give this experience a try so that they will also be reminded that there are people other than those in academia and that these are the people we are trying to help through our research.”

Graduate Reflections

- “I am glad to have this opportunity and recommend the other graduate students to have this kind of experience too.”
- “We should use various methods to make ourselves understood. As a plant breeder, I certainly need to communicate with farmers & other researchers in future”
- “By using LCT techniques, we considered various strategies using active learning in our teaching, including visual, social real-time feedback and so on during the teaching process”

Graduate Reflections

Graduate students recognize the value in propagating their research to an audience outside their research facilities.

K-12 audience displayed a positive response toward graduate students presenting Agriculturally based research and career options

Final Thoughts