Evaluation of a Three Year, Multidisciplinary Food and Agricultural Workforce Development Program for High School Counselors and STEM Educators

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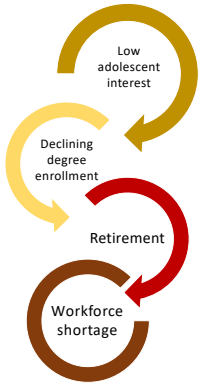
Introduction



- High school students lack interest, awareness, and exposure to careers in agriculture, food, and natural resources (AFNR)[1-2]
- Teachers report low competency facilitating AFNR career related activities[1-2]
- Drexel's Summer Food Science, Urban Agriculture, and Nutrition (FUN) program was developed to address career knowledge gaps among educators

Conceptual Framework

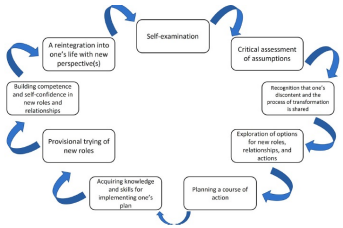


Figure 1.Mezirow's (1997) theory of Transformative Learning[3]

Methods

Setting
- A four-week, in-person, immersive program took place on Drexel's campus from 2023-2025

Sample
- 61 high school STEM teachers and counselors from the Philadelphia School District.
- Cohort 1 - 2023 (n=16) Cohort 2 - 2024 (n=23), Cohort 3 - 2025 (n=22)

Outcomes
- Knowledge of careers and educational pathways, awareness of career scope, and confidence communicating careers were assessed using a pre and post 24 item 5-point Likert Scale survey.

Statistical Analysis
- Paired t-test to compare pre and post survey scores for each cohort year

Results

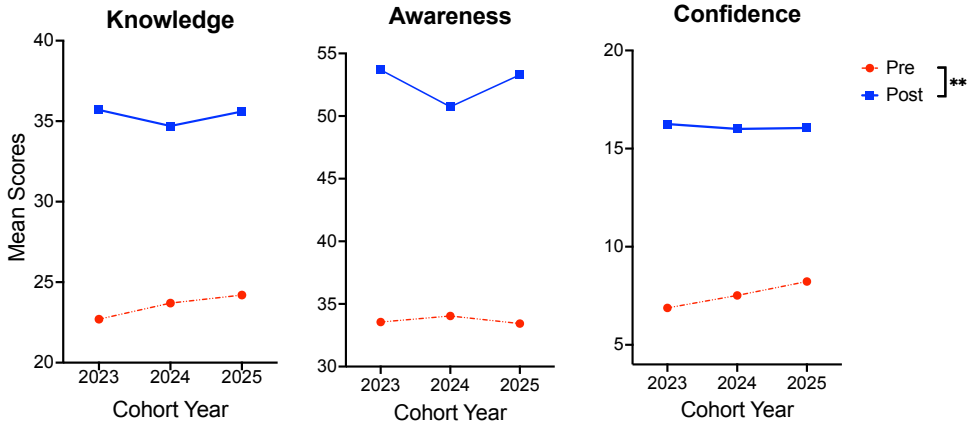


Figure 2. Pre-post changes in knowledge, awareness, and confidence across cohorts (2023-2025)

Figure 3. Images illustrate hands-on labs, industry engagement, and field experiences across four career awareness modules

Figure 4. Description of module content and reflective learning assignment

Discussion

Key Findings
- All measured outcomes demonstrate consistently significant pre-post improvements across cohorts
- Variation in baseline and outcome scores may reflect changes in recruitment strategies and program refinements across cohorts;, further investigation is warranted

Limitations
- The small, urban sample and use of self-reported surveys may limit generalizability

Recommendations

- Industry collaboration, experiential learning, and reflective assignments may facilitate reshaping of AFNR career perspectives among secondary educators
- Prioritize interdisciplinary professional learning opportunities for secondary educators to bolster knowledge of diverse agricultural careers and vocational pathways

Future Directions
- Long term student follow up to assess career interest
- Expand to diverse settings and populations to improve generalizability
- Qualitative investigation on programming impact is on going

Acknowledgements

This work is supported by the Agriculture and Food Research Initiative – Education and Workforce Development, funding award number 2023-67037-39947, from the U.S. Department of Agriculture's National Institute of Food and Agriculture

References

1. Blanton, E. A., Anderson, R. G., & Drewery, M. L. (2024). Service-learning outreach to attract high school students to degrees and careers in agricultural sciences. *Translational Animal Science, 8*. https://doi.org/10.1093/tas/txae012
2. Hendrix, J. D., Campbell, Y. L., Zhang, X., Downey, L. H., Jagger, C. B., & Schilling, M. W. (2021). Delivery and evaluation of a food science professional development training for Mississippi career technical education teachers. *Journal of Food Science Education, 20*(4), 197–207. https://doi.org/10.1111/1541-4329.12228
3. Collins, S. L., Mueller, S., Wood, E. A., & Stetten, N. E. (2022). Transforming Perspectives Through Virtual Exchange: A US-Egypt Partnership Part 2. *Frontiers in Public Health, 10*. https://doi.org/10.3389/fpubh.2022.880638