Innovative Idea

Determining Agricultural Literacy at a Small Sized Western Region University

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Introduction

Agricultural literacy is a growing issue across the United States as more individuals continue to become further removed from the basis of agriculture. Due to the success of the American farmer, most citizens are not required to work in production farming (Birkenholz, 1990). This results in fewer and fewer members of our society being involved in the production of food and fiber (Birkenholz, Harris & Pry, 1994). Currently agricultural producers are struggling with marketing products due to consumer misinformation and a possible lack of agricultural literacy. The term agricultural literacy is described as "understanding and possessing a knowledge of our food and fiber system" (Frick, 1990, p.41). Improving agricultural literacy across the Unites States has been the mission of agriculturalists for many years now. Many studies have been conducted on the agricultural literacy of student grades K-12. According to Igo (l998), he studied three schools (K-8) using the Food and Fiber Systems Literacy (FFSL) Framework for infusing agriculture into the core curriculum. He reported that it was possible to use the standards and grade grouped benchmarks to infuse instruction about agriculture and increase student knowledge of agriculture. Meischen and Trexler (2002) conducted a qualitative study in which fifth-grade rural students were interviewed based on two frameworks, Benchmarks for Science Literacy and the Food and Fiber Systems Literacy Framework, it was determined student understanding and the ability to converse about meat and livestock industries were not adequate. In a study done by Pence and Leising (2004), they found that students enrolled in rural schools were less knowledgeable about agriculture than students attending urban or suburban schools. Although agricultural literacy studies have been conducted, there have not been many studies conducted on the agricultural literacy of college age students. The purpose of this study is to determine the agricultural literacy of students attending a small western region university. Determining the agricultural literacy of undergraduates can aid in the development of courses and curriculum at post-secondary institutions to create a more agriculturally literate society.

Methodology

Undergraduates at a small sized western region university were emailed a link to the Judd-Murray Agricultural Literacy Instrument 9-12:1 questionnaire hosted by Qualtrics. Judd-Murray (2019) recognized the need to create a uniform instrument for determining agricultural literacy. Judd-Murray (2019) validated the JMALI to measure agricultural literacy in post-12th grade adults with the intention to provide a single instrument to assess agricultural understanding. Judd-Murray (2019) also measured agricultural literacy using JMALI-based participant proficiency levels. This instrument was utilized because it has been found to be a valid and reliable assessment tool for agricultural literacy (Judd-Murray, 2019). The Total

Design Method (TDM), as offered by D.A. Dillman (1978) was utilized. The email link was sent out to the undergraduate student population of a small sized western region university with the target responses of 350. To date 227 responses have been received. Of the 227 responses, 65 were not used due to unanswered questions leaving 162 usable responses. The response rate was 71%. Using the Judd Murray Agricultural Literacy Instrument instructions, the full questionnaire responses were assessed and separated into the exposure, factual literacy, and applicable proficiency stages. The exposure level has a lower than 50% agricultural literacy understanding and "the respondents demonstrate limited agricultural literacy and can recognize everyday agricultural products, tools, plants and animals" (Longhurst et al., 2020, p.182). The factual literacy level has between 50% to 80% of agricultural literacy understanding and the respondents "make connections among context of agriculture in order to determine relevancy such as planting, watering, and harvesting" (Longhurst et al., 2020, p.182). The applicable proficiency level has a higher than 80% agricultural literacy understanding and the respondents "demonstrate the ability to explain complex situations in terms of impacts and outcomes in agriculture" (Longhurst et al., 2020, p.182).

Results to Date/Implications

The 162 responses consisted of 17 (10.49%) freshman, 17 (10.49%) sophomore, 29 (17.90%) juniors, and 53 (32.72%) seniors. Forty-six (28.40%) respondents chose not to identify their current classification. Fifteen respondents were rated at exposure level, 109 at factual literacy, and 38 at applicable proficiency level. From the data collected, we can observe 67% of the respondents are at a factual literacy level, understanding 50%-80% of the questionnaire. Of the respondents 23% were at the applicable proficiency level. While only 9% of respondents showed an exposure level with understanding less than 50% of the questionnaire. Results to date demonstrate that most undergraduate students responding have a factual literacy level. At the factual literacy level undergraduate students have enough agricultural literacy to make connections in agriculture to those things that are relevant to them but cannot explain the impacts and outcomes their choices have on agriculture. This data implies the need to improve undergraduate students' agricultural literacy to meet the applicable proficiency level and increase their understanding of their impacts on agriculture.

Future Plans/Advice to Others

As we continue to collect data the survey will be sent out to students again in the fall. The final data from this study will aid in the development of agricultural courses and curriculum for post-secondary institutions. Future studies need to be conducted to determine if introduction to agricultural courses offered to all undergraduate students would aid in increasing consumer awareness and alleviate the acceptance of misinformation. Additionally, it would be beneficial to be able to have students complete the survey as part of a course to receive more responses.

Costs/Resources Needed

The funding for this research was from USDA HIS-2020-38422-32259. The only cost involved was funding for an undergraduate research assistant.

References

Birkenholz, R. J. (1990). Expanding Our Mission in Pre-Secondary Agriculture Education. The Agriculture Education Magazine, 63(1), 12–13.

Birkenholz, R. J., Harris, C. R., & Pry, H. W. (1994). A Pilot Study: Assessment of Agricultural Literacy Among College Students. NACTA Journal, 38(3), 63-66.

Dillman, D. A. (1978) Mail and telephone surveys: the total design method. New York: John Wiley & Sons. https://doi.org/10.2307/2577403

Frick, M. J. (1990). A definition and concepts of agricultural literacy. *Journal of Agricultural Education*, *32*(2). https://doi.org/10.5032/jae.1991.02049

Igo, C. G. (1998). A case study approach to food and fiber systems literacy assessment. Unpublished doctoral dissertation, Oklahoma State University, Stillwater.

Judd-Murray, R. (2019). Development and validation of an agricultural literacy instrument using the national agricultural literacy outcomes. (Doctoral dissertation). Utah State University.

Longhurst, M. L., Judd-Murray, R., Coster, D., & Spielmaker, D. (2020). Measuring Agricultural Literacy: Grade 3-5 instrument development and validation. *Journal of Agricultural Education*, *61*(2). https://doi.org/10.5032/jae.2020.02173

Meischen, D. L., & Trexler, C. J. (2002). Rural elementary students' understanding of science and agricultural education benchmarks related to meat and livestock. Journal of Agricultural Education, 44, 43–55 https://doi.org/10.5032/jae.2003.01043

Pense, S. L., & Leising, J. G. (2004). An assessment of food and fiber systems knowledge in selected Oklahoma High Schools. *Journal of Agricultural Education*, *45*(3), 86–96. https://doi.org/10.5032/jae.2004.03086