Research

After-School Enrichment Programs Enhancing Agricultural Literacy

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Introduction

The need for agricultural literacy has been established over the past two decades. Increasingly, society will face issues at the social, economic, and political interface of agriculture that will require basic knowledge of the human-designed agri-food system. As we move toward using renewable resources, improving health, and feeding the world's growing population—which is expected to exceed 9 billion people by 2050—society needs to be educated about the importance of agriculture. Focusing on the 2016-2020 National Research Agenda's Priority Area 4: Meaningful, Engaged Learning in all Environments (Roberts, Harder, & Brashears, 2016), this study adds to the knowledge base of agricultural literacy.

Conceptual Framework

Much of science education research has been built around cognitive psychologist Piaget (1950), who viewed learning as integration of new ideas into existing schemata. A schemata is constructed, deconstructed, and reconstructed in the mind, and it represents a mental pattern about a topic. Learning will occur when an individual constructs, expands, and reinforces a schemata. This results in new knowledge and understanding. Frick et al. (1991) identified 11 areas of agriculture that individuals with agricultural literacy must understand: (a) agriculture's important relationship with the environment, (b) processing of agricultural products, (c) public agricultural policy, (d) agriculture's important relationship with natural resources, (e) production of animal products, (f) societal significance of agriculture, (g) production of plant products, (h) economic impact of agriculture, (i) marketing of agricultural products, (j) distribution of agricultural products, and (k) global significance of agriculture. The purpose of this qualitative study was to help Boys and Girls Club educators in three area clubs address agricultural literacy by developing and implementing curricula that were easy to deliver, used engaging materials, and had a high impact for students.

Methodology

The population for this study was six education coordinators and three program educators from three area Boys and Girls Club centers ([TOWN 1], [TOWN 2], and [TOWN 3], [STATE]) who educate youth from preschool to grade 12; most of who are at risk. Two of the three centers are in Native American reservation communities. One center is in a suburban, university-based community. The Boys and Girls Clubs in this study serve youth from underserved and underrepresented groups. Children ages four through 18 participated in the lessons, with an average overall attendance of 60 children per lesson per week across the combined age ranges. University researchers met with the education coordinators for one half-day retreat to plan six lessons (two lessons a week for 3 weeks) as well as lesson pre and post assessment. The director of operations reviewed the lessons for consistency in goals, student outcomes, and adherence to the Boys and Girls Club overall programming goal of healthy lifestyles. University researchers guided the coordinators to resources as they planned their lessons; created the overall program assessment, parent survey, and teacher survey; and lead the final focus group to evaluate overall program effectiveness. The pre and post assessments were done in the form of concept maps created by the children, supported by the teachers. In addition, some children chose to draw pictures of what they knew before and after each lesson.

Results

Youth Enrichment

Because literacy increases over time, results were gathered through pre and post concept map assessments from each classroom. Children's knowledge increased with each lesson Of 75 children (pre-K through grade 12) who participated in the lessons, 97% saw gains in knowledge of the food product studied (carrots, spinach and strawberries). Those whose data were flat (no knowledge gain) were children who had prior experiences with agriculture in their personal lives.

Teacher Development

Teacher surveys were given at the end of the 3-week experience. Teachers' prior knowledge of agricultural content ranged from none to quite a bit. In the focus group, even teachers with agriculture backgrounds noted that they felt they limited themselves and their students to only what they themselves knew or were familiar with. They did speak of a desire to educate themselves and their students about global agriculture. The most startling data from the survey were the responses of "not at all" to "a little bit" in terms of giving students opportunities to interact with people in agricultural related careers. Even from a teacher who indicated "quite a bit" of ag-related knowledge, this wasn't a priority in terms of content learning. However, all teachers selected "definitely will" in terms of being more engaged in supporting students' interest in agriculture.

Discussion

Through this curriculum development and research process, it became evident that Boys and Girls Club educators and students may live and work in a rural area, but have limited to no exposure to agriculture. In our experience working with the staff, it was clear they learned a significant amount about agriculture from the research they conducted, the questions they asked, and the guidance they sought throughout the development and delivery process. It is interesting that staff who indicated they had "a little bit" and "quite a bit" of agriculture background did not consider infusing agriculture into their curriculum. Though several factors might contribute to this, it likely begins with educators not feeling comfortable or confident with the content.

This study also has implications for agricultural literacy education programs in out-of-school settings. Educators in Boys and Girls Clubs or similar organizations can incorporate agricultural topics into their existing teachings and lessons to provide awareness. Facilitating discussion on agricultural literacy with these educators will provide an opportunity for them to reflect on and discuss strategies for implementing agricultural literacy into their programs. Additionally, the professional development may help club educators self-evaluate how they implement curriculum in their own programs, which can serve as part of a comprehensive program evaluation.

We recommend additional research in several related areas. A longitudinal study of these Boys and Girls club participants over time would allow more comprehensive evaluation of their agricultural literacy and knowledge. Replicating this study across more Boys and Girls clubs—regionally or statewide—would increase understanding of how students' backgrounds and lifestyles affect their agricultural literacy. Additional research on how club or classroom agricultural literacy activities can influence family activities or food purchasing decisions would be valuable.

References

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