Principals' Perceptions of and Perceived Barriers to Implementing Agricultural Literacy in Pennsylvania Grades K-8

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Introduction and Theoretical Framework

Due to urban sprawl and the advancement of crop production, less of Pennsylvania's population lives and works in rural areas than in the past. As people move away from agriculture, so do school systems. With fewer youth exposed to agriculture, our society is becoming detached from its food and fiber systems, exacerbating an employment gap in the agricultural workforce (Burrows et al., 2020; NAITC, n.d.b: Riedel, 2006). Implementing agricultural literacy into school classrooms involves "applying authentic, agricultural-based content as the context to teach core curriculum concepts in science, social studies, language arts, and nutrition" (NAITC, n.d.a). Because research has shown that children begin to make choices regarding their career paths before secondary school (Tai et al., 2006; Wyss et al., 2012), engaging elementary and middle school students in agricultural literacy could lead to an increase in students that are interested in agriculture as a career before they begin high school. In turn, an interest in the agricultural industry could prevent an impending employment shortage. Exposing all youth to agricultural literacy could cultivate a more agriculturally literate population that makes informed choices regarding food, fiber, agriculture, and natural resources (Kovar & Ball, 2013). The researchers conducted this study using the theoretical lens of Fishbein and Ajzen's (1975) Theory of Reasoned Action, which proposes that a person's behavior is consistent with their attitudes and behavioral intentions.

Methodology

The purpose of this study was to assess principals' and vice principals' perceptions of and barriers to implementing agricultural literacy in their public elementary and middle schools. This quantitative study employed survey methods using Qualtrics, contacting principals (N=113) in a seven-county area of central Pennsylvania. This area was selected as a precursor to an intended larger study that surveys a broader state population and presents the regional uniqueness of the central part of the state. The questionnaire contained three target areas: (1) principals' perceptions of agriculture (Knobloch, 2008), (2) barriers to implementing agricultural literacy as perceived by principals (adapted from Hammack & Ivey, 2019), and (3) demographics, measured by items created by the researchers. These questions included a mix of five-point summative scales (Likert, 1932), a ranking question, multiple choice, and open-ended styles.

Results

24 of the 113 principals contacted completed the survey, yielding a 21% response rate. All respondents were white, and a majority (58%) were male with an average age of 45.96 years old (SD = 7.42). The average respondent has been in education for 20.06 years, was a teacher for 12.50 years, has been a principal for 6.35 years, and has been at their current school for 6.89 years. To aid in answering the first research question, means and standard deviations were calculated to analyze principals' perceptions (Knobloch, 2008) that were measured on a five-point summative scale (Likert, 1932) where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree. Principals had a contemporary view of agriculture (M = 1.65, SD = 0.66), believed that agriculture would fit in current academic subjects (M = 1.47, SD = 0.48), valued the educational benefits of implementing agriculture in the curriculum (M = 2.28,

SD = 0.63), and had a positive attitude of agricultural careers and the industry *(M* = 1.65, *SD* = 0.51). To answer the second research question, the researchers identified principals' perceived barriers to implementing agricultural literacy. This data is expressed in Table 1.

Table 1

Principal's Perceived Barriers to Implementing Agricultural Literacy

Item	*n*	*M*	*SD*
Increased accountability through standardized testing	24	4.17	0.96
Lack of time for teachers to learn about agricultural literacy	24	4.08	0.97
Lack of funding	24	4.04	0.91
Lack of training	24	3.96	0.86
Lack of teacher knowledge	24	3.63	0.88
Lack of flexibility in curriculum	24	3.54	1.02
Lack of teacher interest	24	3.25	0.90
Lack if administrative support	24	2.58	1.21

Note. Scale: 1 = Not Strong At All; 5 = Very Strong

Conclusions & Recommendations for Future Research

The findings regarding principals' perceptions were consistent with Knobloch's (2008) study and the following conclusions can be drawn: principals hold positive perceptions of agriculture, and principals believe that agriculture can be implemented in their schools. Additionally, principals' top perceived barriers to implementing agricultural literacy are increased accountability through standardized testing, lack of time for teachers to learn about agricultural literacy, and lack of funding, respectively. These results imply that principals would be likely to make decisions to support the implementation of agricultural literacy in their schools (Fishbein & Ajzen, 1975). To address principals' top perceived barrier, state staff could work to include agriculture in Pennsylvania standardized testing, which would add priority to teaching agriculture. The Pennsylvania Friends of Agriculture Foundation provides teachers with access to agricultural literacy curriculum and teacher training. Principals' second and third strongest perceived barriers suggest that schools are unaware of this organization. To address these barriers, state staff could create links between this organization and schools to catalyze communication for collaboration. For future research, the researchers recommend expanding this study to additional counties in the state and conducting qualitative research with survey respondents. This study lacks specificity regarding why principals perceive certain barriers as barriers. Qualitative data would help the researchers expand on the implications that perceived barriers have on implementing agricultural literacy.

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