Examining Agricultural Literacy and the Perceptions of Being Literate in Agriculture

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The purpose of this Delphi research study was to identify the characteristics of being agriculturally literate and the understanding of literacy by agricultural professionals in the United States. Shanahan and Shanahan (2012) note a difference between content and disciplinary literacy. Content literacy, also referred to as general literacy, focuses on broad subject areas such as science, technology, engineer, mathematics, and agriculture (Wolsey & Lapp, 2017), while disciplinary literacy focuses on specialized content within subject areas (e.g. animal reproduction, genetically modified field crops, agricultural communications, and agriculture education). Meischen and Trexler (2003), defined agricultural literacy as entailing "… knowledge and understanding of agriculturally related scientific and technologically based concepts and processes required for personal decision making, participating in civic and cultural affairs, and economic productivity…" (p. 44). The concept of literacy implies content knowledge in a field of study and application of knowledge to make reasonable judgments related to concepts, content, and practices. It is also important to distinguish between the terms "literate" and "literacy" in order to better understand and communicate about agriculture. Harris and Hodges (1995) define being literate as an individual's skill to read and write. The term literate can also be described as basic literacy skills. Mercier (2015) notes a lack of research on agricultural literacy prevents educational programs from expanding and recommends additional research to better understand this problem. This research study addresses Research Priority 1, "What methods, models, and programs are effective for informing public opinions about agricultural and natural resources issues?" (Enns, Martin, & Spielmaker, 2016).

Conceptual Framework

The conceptual framework for this study is bound by disciplinary literacy, content literacy, agricultural literacy, and the Pillars of Agricultural Literacy (Frick, Kahler, & Miller, 1991; Meischen &Trexler, 2003; Shanahan & Shanahan, 2012; American Farm Bureau, 2013). In addition to defining agricultural literacy, Frick, Kahler, and Miller (1991) identified eleven concepts which encompass agricultural literacy: environment, processing, policy, natural resources, animal production, societal significance, plant production, economic impact, marketing, distribution, and globalization. Frick et al. (1991) further noted "an individual possessing such knowledge would be able to synthesize, analyze, and communicate basic information about agriculture."(p.52). Frick et al. (1991) concepts of agricultural literacy are operationally defined as disciplinary literacy. Based on this assumption of disciplinary literacy, a person would need to be literate and possess content literacy in order to learn through reading and writing in the discipline (Shanahan & Shanahan, 2008).

Methods

The Delphi process consisted of four rounds. The instrument was developed using statements constructed from existing research in the field of agriscience education, disciplinary literature, and literacy research outside of agriscience education. The first-round instrument consisted of two statements: *"How do you define the term "Agricultural Literacy,"* and *"What does it mean to be agriculturally literate?"* Using a series of selection processes, 15 purposively

chosen panelists participated in the study and used established Delphi techniques as reported by Rayfield and Croom (2010) and supported by Conner and Roberts (2013). Qualifications for inclusion in the study required participants to be employed in the agriculture industry, serve in a capacity in which their employment provided opportunity for interacting with the public, and employed in the same or similar position equal to or greater than five years. The composition of the expert panel included participants from seven states. Participants possessed at minimum a bachelor's degree in an agriculture area of study and predominately resided in rural locations. Participants represented a wide range of agricultural careers including political and policy, education, for profit advocacy centers, agribusiness/industry, agriculture communications, and FFA/Professional Organizations. Fifteen agricultural professionals indicated their desire to participate in the study.

Results

The first-round instrument was comprised of 24 unique responses and were developed into 11 statements to measure the level of agreement of the participants in round two. Agreement levels of eighty percent (Dalkey, 1969) were used to determine consensus for each question in each of the four rounds. Round two statements were presented using a five-point scale: 1) Strongly Agree, 2) Agree, 3) Neither Agree or Disagree, 4) Disagree, 5) Strongly Disagree. The third-round instrument consisted of 19 new statements and asked participants to indicate their level of agreement using a two-point scale: 1) Agree or 2) Disagree. The fourth-round instrument asked participants what it means to be agriculturally literate and what agricultural literacy is. Participants indicated their perceptions of being agriculturally literate and defining agricultural literacy with the intended purpose of determining if a knowledge and application gap existed between being literate and understanding literacy. The interpretation of the participant responses reinforced the gap between content knowledge and literacy while extending the definition of agricultural literacy.

Conclusions and Implications

This study describes the need for a closer analysis of the differences between being literate and understanding literacy to address the issues of agriculture to the greater society. Participants demonstrated deep understanding for agriculture when explaining advocacy for producers, teachers, other professional fields, displaying appreciation for the cultivation of livestock and crops, and sharing information regarding production and scientific agriculture as related to defining agricultural literacy. The findings indicated that the participants did not recognize the depth of literacy as related to reading, writing, and speaking efficiently. The conclusions indicated a traditional approach to answering the question, "What does it mean to be agriculturally literate?" The final definition provided to the participants did not include attributes of being literate: reading, writing, and communicating about the discipline. Those who would learn in the discipline of agriculture today need specialized reading and writing skills, the skills employed by expert agriculturalists in learning from agricultural texts. The implication of this observation is that there is a gap in understanding agricultural literacy and its implications for current educational practices and ultimately, the education of future generations.

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