Perceptions of Wisconsin Agricultural Education Teachers Towards Integration Of Science Into The Agricultural Education Curriculum

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Introduction/need for research

Secondary agricultural education programs in the state of Wisconsin are being pushed toward integrating higher levels of science content and process into the curriculum (J. Hicken, personal communication, May 13, 2009). No formal research has been conducted to determine how the teachers in the state perceive this change. The purpose of this study was to look at agricultural education teachers' perceptions towards the integration of science into the agricultural education curriculum. The study looked at agricultural education teacher demographics, barriers to science integration, perceived support from outside organizations, collaboration possibilities with science teachers, and earning science credit for graduation.

Conceptual framework

Balschweid and Thompson, G. W. (2002) and Warnick and Thompson (2007) established the importance of agricultural education teacher perceptions to the integration of science. This information is critical to state level efforts to develop inservice programs, review teacher preparation programs, and create materials to support teachers integration of science concepts and processes into the secondary agricultural education curriculum.

Methodology

The instrument used in this study was based on that used by Warnick and Thompson in 2007 where it was found to be valid and reliable. No changes were made in the formatting of the questions. Question text was edited to use terms appropriate to Wisconsin teachers. A link to a web based informed consent statement and the instrument was sent by email to all 275 agricultural education teachers for which a valid email address was available. Usable responses were received from 149 teachers for an overall response of 54%.

Results/findings

The demographic information data showed that the average participant in the study had been teaching 16.8 years (SD 10.09) and was 34.3 years old (SD=11.02). Out of the teachers that completed the survey, 62.7% were male while 37.3% were female. The teachers reported that 31% of the schools offered at least one agricultural education courses that carried science credit and 19.3% of the teachers held a science license.

Teachers responded to statements regarding science integration using a five-point Likert-type scale where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. As shown in Table 1, there was a high level agreement on the importance of science in agriculture and the benefits to students when science is integrated into agricultural education courses. Teachers agreed that barriers limited their ability to successfully integrate science. The lack of appropriate equipment (Mean 3.86, SD 0.898) and the lack of adequate federal, state, or local funding (Mean 3.50, SD 0.970) were the highest rated barriers.

Table 1
Wisconsin Agricultural Education Teachers' Perceptions Toward Science Integration (N=149)

Science Integration Item	Mean	Standard Deviation
Agriculture is an applied science.	4.78	0.531
People pursing a career in agriculture must have a greater understanding of science than ten years ago.	4.48	0.724
Students are better prepared in science after they completed a course in agricultural education that integrates science.	4.41	0.692
Science concepts are easier to understand for students when science is integrated into the agricultural education curriculum.	4.35	0.700
Students are more aware of the connection between scientific principles and agriculture when science concepts are an integral part of their instruction in agricultural education.	4.28	0.718
Students are more motivated to learn scientific concepts when they are integrated into the agricultural education curriculum.	4.26	0.760

Answers to the open ended question regarding the state process of science equivalency were given by 94 teachers. Comments ranged from very positive "I think it is great" to negative "difficult process. Several suggestions were offered for how to improve the process.

Conclusions

Results indicated that Wisconsin agricultural education teachers have an overall positive attitude towards integrating science into their curriculum. Several barriers were identified that teachers perceive as limiting further integration of science. The current system for gaining science equivalency received mixed reviews from this group of teachers. Results of this study were very similar to those in other states (Balschweid & Thompson, 2002; Warnick and Thompson, 2007).

Implications/recommendations/impact

Agricultural education leaders in the state of Wisconsin should use this information to support current teachers and prepare new teachers. Teachers identified several challenges with the current system of gaining science equivalency for agricultural education courses. State leaders should develop ways to limit the barriers to teachers working to gain science equivalency for their courses.

References

Balschweid, M. A. & Thompson, G. W. (2002). Integrating science in agricultural education: attitudes of Indiana agricultural education and business teachers. *Journal of Agricultural Education,* 43(2), 1-10.

Warnick, B. K. and Thompson G. W. (2007) Barriers, Support, and Collaboration: A Comparison of Science and Agriculture Teachers' Perceptions Regarding Integration of Science into the Agricultural Education Curriculum. *Journal of Agricultural Education,48(1), 75-85.*