Conclusions

This study supports the importance of using a standard set of guidelines to “aggregate, validate, test, and refine a contemporary list of professional competencies” (Joerger, 2002, p. 22). Texas mandates such standards in eight competency areas for all subjects in the agricultural science discipline. As expected, bivariate analyses of these eight areas indicated a substantial positive relationship between pre-service teachers’ knowledge and teaching comfort. As pre-service teachers’ knowledge increased, so did their teaching comfort and vice versa, supporting Pajares and Miller’s (1994) self-efficacy research. However, for seven of the eight comprehensive high school knowledge and skill areas, pre-service teachers felt, on average, that they had only adequate knowledge and teaching comfort, with low knowledge and comfort in the soils and soil formation area.

Although we expected respondents’ knowledge and teaching comfort to be highly correlated, we also expected that pre-service teachers still in college would have high knowledge and teaching comfort for the state-mandated objectives. After all, they are expected to meet the state standards in their first teaching job. Thus, there is much concern about the respondents’ preparatory programs because of their adequate to low knowledge and comfort for “general agricultural science and technology” areas. The findings indicate that pre-service teachers, in this study, need more preparation in the eight areas essential to every agricultural education classroom. In order to increase their knowledge, pre-service teachers should be provided more practice teaching opportunities to increase their teaching comfort levels. Additional research in the concepts of pre-service teacher self-efficacy, confidence, and competence is needed to identify causal factors affecting the “less-than-desirable” knowledge and teaching comfort levels for the state-mandated general agricultural science and technology objectives.
Pre-service teachers indicated they felt highly comfortable teaching the same objectives for which they felt highly knowledgeable (employers’ expectations, appropriate work habits, and good citizenship skills). Analyses revealed positive relationships between knowledge and teaching comfort for similar knowledge and skill areas, such as in teaching animal science objectives. These findings support the self-efficacy research of Bandura (1986) and Pajares and Miller (1994): as self-perceived competence increases, so too increases the belief about one’s capability to perform related tasks.

Researchers found positive relationships between dissimilar skill areas, such as between environment and agricultural business, food science and environment, and environment and agricultural mechanization. Additional research into the relationships between these particular areas should be conducted on a similar population of pre-service teachers from all major universities to determine what factors affect these relationships.

Recommendations

Response rates might have been higher had a larger population been available. Although valid e-mail addresses were secured, resulting in a 62.9% response rate, a greater response rate could have been achieved had our population been offered a social exchange incentive (1-2 dollars) sent by U.S. mail with a cover letter and the introductory e-mail survey hyperlink, versus the lottery incentive offered in this study (Dillman, 2000). However, the 62.9% response rate is much higher than that published by Fraze et al. (2003), in which a 27.4% e-mail response rate was obtained from Texas agricultural science teachers after 22 days. Future studies employing true mixed methods (Fraze, et al., 2003; Ladner, et al., 2002) using U.S. mail and online survey techniques should be conducted to determine the most effective means for increasing social science survey response rates.
The researchers recommend repeating this study to identify knowledge and teaching comfort levels for all teaching specialization areas in Texas. This line of inquiry provides statistical evaluation of pre-service teachers’ preparedness in all disciplines. Such new information could be used in crafting guidelines to implement teacher education programmatic changes, allowing such programs to better address teachers’ knowledge and/or teaching comfort in each topical area.