

ISSUES FACING URBAN AGRISCIENCE TEACHERS: A DELPHI STUDY

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Abstract

This national study used the Delphi technique to identify the issues facing urban agriscience teachers. The first round of the study used a questionnaire with one open-ended question to generate responses from the expert panel. In the second round, respondents were asked to rate their level of agreement with 72 issues identified in round one using a Likert-type scale. In round three, participants were asked to indicate their agreement or disagreement with 49 statements retained from round two. Consensus was reached on 17 issues facing agriscience teachers in urban areas which were identified as: challenges presented by the No Child Left Behind legislation; lack of awareness of agriculture by parents, faculty, community and students; lack of parental involvement; budgets and school funding; and time management.

Introduction/Theoretical Framework

“All students have access to seamless, lifelong instruction in agriculture, food, fiber and natural resources systems through a wide variety of delivery systems and educational settings” (National Council for Agricultural Education, 1999, p. 4). This goal is one of four that resulted from the nationwide effort known as Reinventing Agricultural Education for the Year 2020. One of the identified objectives of this goal stated “all students in urban, suburban, and rural schools have access to high-quality agricultural education programs” (p. 4). Eight years after the publication of this report, are we on our way to accomplishing this goal? More specifically, can we say that even a majority of urban, suburban, or rural schools have access to an agricultural education program? Although the answers to these questions may seem rather obvious, the solution to the inherent challenge is considerably more complicated. If we are to accomplish this goal, research is warranted to identify threats to its accomplishment. Specific to this study is the burgeoning need to explore how agricultural education programs can be expanded to serve an increasing urban student population.

Although the literature fails to provide a clear definition of an urban school, the National Center for Education Statistics (NCES; 2000) defined a large city as, “the central city of a metropolitan statistical area with a population of 400,000 or more or a population density of 6,000 or more persons per square mile” (Footnote 3). Of particular relevance to this study, the NCES (2000) reported that the majority (57%) of American schools are in large or midsize cities or their accompanying urban fringe areas. Furthermore, these schools accounted for more than two-thirds (69%) of all public school students. The National FFA Organization (2004) estimated that approximately 162,000 FFA members reside in urban or suburban areas. Considering that there are 172,000 students enrolled in 10th-12th grade in the New York City Public School District alone (Sable & Young, 2003), it can be concluded that agricultural education is being offered to a minute proportion of potential urban agriculture students.

The Reinventing Agricultural Education goal referenced previously also recommended that student enrollments in agricultural education represent the diversity of the school-age population. Statistics from

the National FFA Organization (2004) indicated that approximately 77% of FFA members are Caucasian. The inclusion of agricultural education in urban schools offers the prospect of reaching a more culturally diverse group of students than is currently enrolled in agriculture programs. Schools located in large cities have a higher percentage of minority student enrollments. Approximately 39% of U.S. public school students are members of minority groups. Comparatively, 63% of students in large or midsize city schools are minority students (Hoffman, 2003).

The theoretical frame for the study is the Theoretical Model for the Study of Classroom Teaching (Dunkin & Biddle, 1974). With their model, Dunkin and Biddle suggested that the study of teaching and learning involves four categories of variables: presage, context, process, and product variables. Presage variables, such as teacher formative experiences, teacher-training experiences, and teacher properties, concern the characteristics of teachers that may influence the teaching process. Context variables concern the conditions to which the teachers must adjust and include characteristics of the environment about which teachers, school administrators, and teacher-educators can do very little. Process variables include the actual activities in which teachers and pupils engage in while classroom teaching is taking place. Product variables focus on the outcomes of teaching, specifically the changes that result in the students (Dunkin & Biddle). Although the interaction of presage, context, process, and product variables undoubtedly has an impact on an individual's decision to teach and remain teaching in an urban area, the focus of this study is primarily on the contextual influences that may or may not create unique issues for agriscience teachers in urban schools.

Specific to the urban school context, the literature pool reveals multiple challenges facing teachers in urban settings. Urban educators have identified issues such as poverty, fragmented family structures, and limited English proficiency (Lippman, Burns, & McArthur, 1996). The challenges created by large student enrollments and limited resource availability also have an

inevitable impact on the school environment.

Urban schools are faced with large numbers of immigrant and limited English proficient students who require bilingual or ESOL education (Montero-Sieburth, 1989). Public education serves an increasingly ethnically diverse student population and the number of native languages spoken by students is on the rise. It is estimated that urban schools nationwide educate almost half of the students who are not proficient in English (Urban Teacher Collaborative, 2000). According to Pallas, Natriello, and McDill (1989), the number of students who speak a primary language other than English will triple by the year 2020.

Nontraditional family structures are more common in today's society. The National Educational Longitudinal Study of 1988 (NCES, 1992) reported a lack of traditional family structure among urban eighth grade students. Approximately 44% of the urban students resided with their biological parents, whereas 62% of students in other communities lived with both parents. Thirty-one percent of students in inner-city schools resided with only their mother (Peng, Wang, & Walberg, 1992).

In addition to the challenges presented by student demographic issues, large student enrollments present additional challenges to urban schools. In a study of rural and urban schools in Ohio, it was reported that the average senior class in rural schools consisted of 74 students compared with urban schools, which had an average of 333 senior class members (McCracken & Barcinas, 1991). This study also reflected a lower student to teacher/administrator ratio in rural schools compared with urban schools. Rural schools averaged 24 teachers and one administrator, whereas urban schools had an average of 79 teachers and 5 administrators (McCracken & Barcinas). A lack of connection with teachers often leads to a feeling of anonymity among students (Carnegie Foundation, 1988). Students are not the only ones to feel the repercussions of large school populations. According to Corcoran, Walker, and White (1988), urban teachers report that administrators become less effective as school size increases.

Compounding the obstacles that come with large student populations, urban teachers have reported that they are expected to teach in neglected facilities with minimal supplies. A study by Corcoran et al. (1988) found many school buildings to be deteriorating as a result of insufficient repairs and maintenance. Also, teachers are expected to provide instruction without resources and technology that are common in most public schools (Corcoran et al.). Additionally, teachers in urban schools perceived they had less control over their curriculum compared with teachers in other locations (Lippman et al., 1996).

With the number of contextual barriers presented by teaching in an urban setting, it should come as no surprise that teacher recruitment and retention problems result for urban schools. While agricultural education is faced with a shortage of new teachers (Kantrovich, 2007) and urban schools struggle with a similar dilemma. The urban teacher shortage persisted through periods of general teacher oversupply (Haberman, 1987). Additionally, teacher retention is an obstacle that afflicts urban schools, which are faced with high rates of teacher turnover (Bruno & Negrete, 1983). Nationally, nearly half of beginning teachers leave the classroom in their first six years of teaching. Comparatively, in urban districts, this turnover occurs in five years. In a few urban districts, half of the beginners leave in a 3- to 4-year period. As a result, many urban classrooms host multiple teachers in a single school year (Haberman & Rickards, 1990).

Prospective teachers are often reluctant to teach students with backgrounds different than their own (Zeichner, 1993), so many will be unwilling to teach in an urban program. Prospective teachers plan on returning to small towns to teach middle-income children of average ability in traditional classrooms (Zimpher, 1989). Urban schools find it challenging to recruit new teachers when school districts in surrounding areas offer higher salaries, better facilities, and a less challenging student body and are perceived as less stressful working environments (Snipes, Doolittle, & Herlihy, 2002). As a result, the prospect of expanding agricultural education programs in urban areas is threatened by the

backgrounds of the majority of prospective agriculture teachers and their lack of familiarity with urban programs and settings.

Purpose and Objective

The shortage of agriculture teachers is a problem that permeates many regions throughout the nation, but this problem is magnified by the additional challenges presented to teachers in urban areas. The purpose of this study is to identify problems that may potentially serve as obstacles to prospective teachers' entry into urban agriscience teaching positions. The objective of the study was to identify the major issues facing agriscience teachers in urban programs.

Procedures

The Delphi technique is designed to obtain group consensus among a purposively selected group of experts (Stufflebeam, McCormick, Binkerhoff, & Nelson, 1985). This national study was conducted by using the Delphi technique to identify the major issues facing agriscience teachers in urban areas.

The population for this study consisted of agriscience teachers in urban agriculture programs. In selecting teachers to participate in the study, state staff members and teacher educators from 16 researcher selected states with known urban agricultural education programs were asked to identify three effective urban agriscience educators in their state. State staff were asked to nominate only teachers employed in a public high school that was located in a community with a population of at least 50,000 or a metropolitan area with a minimum population of 100,000. A total of 41 nominations were received from 14 states: Arizona, California, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Michigan, New York, Ohio, Oregon, Pennsylvania, and Texas. Thirty-nine teachers were selected to participate in the study. Two of the nominees were identified as school administrators and were therefore not included in the study. The researchers made the determination to utilize all teachers

nominated. Nineteen of the selected participants agreed to participate. Dalkey (1969) stated that the reliability was greater than .80 when Delphi group size was larger than 13.

The common methodology of the Delphi technique consists of a series of mailed questionnaires (Moore, 1987). During the first round of the study, a questionnaire was distributed to the participants using mail and electronic communication. The questionnaire included one open-ended question: "What are the major issues facing agriscience teachers in urban areas?" This question was used to identify a wide array of response categories. Respondents were asked to react to this question with a list of the issues they deemed important. One week after mailing the first-round questionnaire, a reminder was sent via e-mail to all nonrespondents. An additional letter and replacement questionnaire were mailed to the nonresponding participants 3 weeks after the electronic reminder. Nineteen teachers returned the first-round questionnaire, citing specific issues facing urban teachers. The resulting issues were categorized by the researchers and included on a questionnaire for the second round of the study.

During the second round of the study, a questionnaire was mailed to each of the participants. The teachers were asked to indicate their level of agreement with the issues using a Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree). A second contact was made with nonrespondents through the use of e-mail. Participants who had not completed and returned the questionnaire after the first two contacts were sent an additional letter and replacement questionnaire. Issues that were rated at the agree level ($M = 3.5$ or higher) were retained for inclusion in the third round. During this round, the number of identified issues was reduced from 72 to 49.

In the third round of the study, each participant was asked to indicate whether they agreed or disagreed with each of the 49 statements that were included on a mailed questionnaire. A level of 75% agreement

was used to demonstrate consensus among participants. Consensus was reached on 17 of the 49 items, and the researchers determined that no additional rounds were required.

Findings

This study sought to identify the major issues facing agriscience teachers in urban areas. The first round of the study used a questionnaire with one open-ended question to solicit responses from the expert panel. Nineteen of the 39 teachers returned the first-round questionnaire either by mail or e-mail. Seventy-two discrete issues were identified in the first round.

Eighteen of the 39 teachers responded in round two. In this round, respondents were asked to rate their level of agreement with the 72 issues identified in round one on a Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, 5 = strongly agree). Means and standard deviations were calculated for each of the 72 issues. Analysis of this data revealed that 49 of the first-round issues were rated by the respondents at the agree level ($M = 3.5$ or higher). The 49 items with means at the agree level are presented in Table 1.

Statements with the highest means related to school faculty and administration awareness of agriculture, community and parental awareness of agriculture and support for agricultural education, and the image of agriculture among students. Mean responses indicated an uncertain level of agreement with 21 issues and disagreement with two statements. Items with means within the uncertain range included parent and student acceptance of a diverse student population, curriculum modification to meet the expectations of students and community and to incorporate science, administrator expectations and/or concerns, and challenges presented by managing a land lab in an urban setting. The two items with means in the range of disagree reflected the teacher's ability to relate to a diverse student population and the program being a target of animal rights protests.

Table 1
Delphi Round Two: Level of Agreement with Issues Facing Urban Agriscience Teachers
 (n = 18)

Issues	<i>M</i>	<i>SD</i>
Faculty members unaware of importance of agriculture to economy	4.44	.62
Parental lack of understanding about possible careers in agriculture	4.33	.77
No Child Left Behind Act does not acknowledge career and technical education	4.28	.67
Difficult to overcome “farming” stereotype	4.17	.99
Level of parental involvement	4.17	.92
Obtaining financial support from community members	4.17	1.10
Parental lack of understanding about production agriculture	4.12	.93
Balancing work and family	4.11	.90
Guidance counselors lack understanding of agricultural careers	4.11	.96
Difficult to overcome perception that there is no future in agriculture	4.11	.96
Competition with work for student time and involvement	4.06	.56
Promoting the agricultural education program in the community	4.06	.87
Difficult to encourage students to get involved in FFA	4.06	.80
Not enough equipment for hands-on activities	4.06	.87
Having enough time to cover diversity of topics in agriculture	4.00	1.08
Guidance counselors do not recognize benefits of program to students	4.00	.91
Responsibility of establishing business partnerships	3.94	.87
Administration unaware of importance of agriculture to economy	3.94	1.30
Educating community members about importance of agriculture	3.89	1.02
Administrators lack understanding of many responsibilities of agriculture teachers	3.89	1.32
Lack of school-wide recognition for outstanding achievements	3.83	1.29
Administration unaware of value of agriscience to entire school curriculum	3.83	1.25
Emphasis placed only on academic instructional areas	3.83	1.20
Use of communication channels that effectively reach parents	3.82	.64
Maintaining an active alumni	3.81	1.17
Increased graduation requirements limit agriculture enrollment	3.78	1.22
Inadequate funding from state	3.78	1.17

Table 1
Delphi Round Two: Level of Agreement with Issues Facing Urban Agriscience Teachers
 (n = 18)

Issues	M	SD
Managing public relations efforts	3.78	1.00
Public unaware of value of FFA to students	3.76	1.20
Families have difficulty making accommodations for student activities	3.72	1.02
Students' lack of knowledge about agriculture	3.72	1.02
Competition with extracurricular clubs for student time and involvement	3.72	.75
Competition with sports for student time and involvement	3.72	.83
Managing numerous student programs and events	3.72	.96
Inadequate spaces for large class sizes	3.72	1.18
Inadequate federal funding	3.72	1.23
Recruitment of middle school/junior high students	3.66	.97
Making connection between agriculture/students' daily lives	3.61	.85
Lack of program support from guidance counselors	3.61	1.29
Student testing is overwhelming	3.61	1.04
Nonurban student acceptance of minority students at regional/state FFA events	3.56	1.10
Collaboration with other curriculum departments	3.56	.98
Program used as "dumping ground" for low achieving students	3.56	1.30
School overcrowding	3.56	.98
Working with a lower budget than in previous years	3.56	1.34
Inadequate local funding	3.56	1.20
Development of communication channels that effectively reach students	3.50	.92
Administration expects teacher(s) to raise funds to support program	3.50	1.25
Inadequate school facilities to support classroom activities	3.50	1.25

Note. Rating Scale: 1.00 – 1.49 = strongly disagree, 1.50 – 2.49 = disagree, 2.50 – 3.49 = uncertain, 3.50 – 4.49 = agree, 4.50 – 5.00 = strongly agree.

Participants in round three were asked to indicate whether they agreed or disagreed with each of the 49 statements retained from round two. Eighteen of the 39 teachers participated in the final round of the study. Using an *a priori* level of 75% agreement indicating consensus, 17 items were retained. Those items are presented in Table

2. As presented in Table 2, the items for which consensus was reached are related to challenges presented by the No Child Left Behind legislation; lack of awareness of agriculture by parents, faculty, community and students; lack of parental involvement; budgets and school funding; and time management.

Table 2
Delphi Round Three: Level of Agreement with Issues Facing Urban Agriscience Teachers
 (n = 18)

Issue	f	Agree (%)
No Child Left Behind does not acknowledge career and technical education	17	94.4
Managing numerous student programs and events	17	94.4
Parental lack of understanding about possible careers in agriculture	16	88.9
Use of communication channels that effectively reach parents	16	88.9
Competition with work for student time and involvement	16	88.9
Balancing work and family	16	88.9
Parental lack of understanding about production agriculture	15	83.3
Level of parental involvement	15	83.3
Administration is unaware of importance of agriculture to the economy	15	83.3
Difficult to overcome perception that there is no future in agriculture	15	83.3
Having enough time to cover diversity of topics in agriculture curriculum	14	77.8
Managing public relations efforts	14	77.8
Guidance counselors do not recognize benefits of program to students	14	77.8
Faculty members are unaware of importance of agriculture to the economy	14	77.8
Public is unaware of value of FFA to students	14	77.8
Working with a lower budget than in previous years	14	77.8
Inadequate funding from the state	14	77.8

Conclusions

Nineteen effective urban agriculture teachers identified by state staff disclosed the major issues facing urban agriscience teachers in the first round of this study. These individuals identified 72 different issues of concern. The obvious conclusion which can be drawn from this finding is that urban agriscience teachers face many issues. While several issues were identified by two to four teachers, most of the items were reported by only one teacher, indicating a tremendous diversity in the issues urban agriculture teachers face.

Although round two responses resulted in agreement on 49 issues, they also indicated disagreement with two of the original statements. The respondents

disagreed that teacher ability to relate to a culturally diverse population is an issue for urban agriscience teachers. We can conclude from this disagreement that the effective teachers nominated for the study do not believe that relating to a culturally diverse population is an issue.

Disagreement was also found with the issue that urban programs are a target for animal rights or animal welfare protests. Although anecdotal evidence would suggest this is a regular occurrence for urban agriculture programs, it appears to be a minimal issue for the participants in this study.

The final round of the study provided consensus on a total of 17 issues facing urban agriculture teachers. Although several of these issues would not be a surprise

among the perceptions of a more heterogeneous teacher group, many also support previous research related to challenges facing urban schools.

The participants nearly unanimously agreed that the No Child Left Behind Act does not acknowledge career and technical education (CTE) programs. Though schools across the nation are feeling the impact of the mandates of NCLB, urban schools may endure increased pressures and urban CTE programs may face additional challenges as a result of this legislation. Standardized testing used to measure student achievement in math and reading can be very challenging for the increased ratios of minority and limited English proficient students who are enrolled in urban schools (Jencks & Phillips, 1998). In some states, low student performance on standardized testing can result in the addition of remedial math, reading, and English courses, quite possibly at the expense of CTE courses.

Of the 10 issues with the highest level of participant agreement, four were related to parents. Specifically, respondents identified parental lack of understanding of agricultural careers and of production agriculture, communication channels that effectively reach parents, and lack of parental involvement. Prior research related to the challenges created by the family structure of urban students is supported by these findings. Urban students have been shown to be less likely to reside in two-parent homes compared with students in suburban and rural schools (Lippman et al., 1996). The increased demands of single-parent households may hinder parental involvement in the school. A non-static family structure can also hamper communication efforts between school and home. As noted by Ascher (1988), "the daily struggle to survive may at times make it impossible for parents to reach out to an educational institution that cannot provide relief for immediate needs" (p. 111). The conclusion can therefore be drawn that agriculture programs in urban schools are not isolated from the issues related to family that are faced by general education in urban areas.

Consensus was reached on six items that reflected a lack of understanding or lack of

awareness among parents, administrators, guidance counselors, faculty, and the public. These stakeholder groups are perceived to be unaware of careers in agriculture and about production agriculture, about FFA, and about the benefits of agricultural education. These findings support previous research that suggests students have misperceptions of agriculture (Bechtold & Hoover, 1997; Betts & Newcomb, 1986; Nichols, Jimmerson, & Nelson, 1993). However, this study contradicts the findings of Thompson and Russell (1993), who reported guidance counselors in large urban areas held favorable beliefs about agricultural careers. As the U.S. population grows increasingly removed from the farm, issues related to lack of awareness and understanding, as this study would suggest, are likely to be magnified in urban settings, where residents have fewer opportunities to be exposed to the agricultural industry.

Problems with school funding have been well publicized, and participants in this study are certainly cognizant of the issues presented by tightening budgets for public education. Funding has continually been recognized as a problem facing agricultural education (Connors, 1998; Stewart, Moore, & Flowers, 2004; Stewart & Shinn, 1979). Large student enrollments can strain resources allocated to urban agriscience programs. In times of declining school budgets, many agricultural education programs may turn to the community for financial and resource support. However, in urban communities where awareness of the significance of agriculture may be mediocre, the prospect of obtaining additional community support is further complicated.

Recommendations/Implications

Urban schools offer a field ripe for the development of agricultural education programs and hold tremendous potential for reaching a diverse student population with the agricultural education message. This will only be possible with the placement of well-prepared teachers into urban agricultural education programs. Because prospective urban teachers must be prepared for the unique challenges they will face in an urban school setting, teacher educators should

continue to examine the issues present in urban agriscience programs. The issues identified in this study should serve useful as a base for future research and practitioner development.

Urban agriscience programs can be strengthened with the support of parents. To address the lack of parental involvement, research is warranted to identify the most effective methods of increasing the communication with and participation of parents. Practicing teachers need assistance in creating communication channels effective at reaching single parents or parents who may work unconventional hours. Additionally, dissemination of successful approaches to creating and maintaining agriculture awareness among stakeholder groups should be shared among the agricultural education community. In particular, urban teachers who have successfully developed inroads for community and parental support should be encouraged to share their approaches with their urban agriscience colleagues.

The No Child Left Behind legislation has impacted all segments of public education. Research is needed to examine the specific impact of the No Child Left Behind legislation on agricultural education. Teacher education can assist CTE teachers in making their programs have a meaningful influence on students' standardized examination preparedness by developing strategies and disseminating best practices for improved integration of academic content. The best practices that are promoted should consider resource availability and accessibility in light of declining education budgets.

Research is also needed that empirically examines the basis for teacher perceptions that education budgets are declining. If this perception is shown to be a reality in practice with the distribution of federal, state, and local funds, such evidence may lend ammunition to the continuing effort to garner political support for CTE funding.

Although research is needed to support this notion, agriscience teachers need assistance in dealing with the real problem that their program allocations may not provide all needed resources. Professional

development opportunities are needed for urban teachers related to securing external funding via grants and other means. At a minimum, such efforts have promise in empowering teachers frustrated by the level of financial support they receive to operate their programs.

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