

A Comparison of the Professional Development Needs of Kansas and Missouri Teachers of Agriculture

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Abstract

Professional development programs are needed to provide teachers of agriculture with the technical information and skills required to successfully meet the demands of a changing educational environment and advances in technology. Therefore, the purpose of this study was to analyze and compare the professional development needs of secondary agriculture teachers in the states of Kansas and Missouri. Specific research objectives were to identify similarities and differences in the professional development needs of secondary agriculture teachers in those states, and to compare the professional development needs of secondary agriculture teachers in Kansas and Missouri based on years of teaching experience.

Three items: writing grant proposals for external funding, modifying the curriculum to meet changes in technology, and designing and modifying curriculum and course offerings to attract high quality students, were rated among the five items of greatest need for teachers in both states. An additional seven items were included among the top fifteen items for each group of teachers. In contrast, teachers in the two states ranked eleven of the 52 items considerably differently. Beginning teachers were found to have greater needs for professional development in technical agriculture areas than had been found in previous research. The most experienced group of teachers from each state identified strong needs for professional development in topics pertaining to computers, related technology, and applications. Although needs assessment findings from other states can definitely assist state leaders in refining their own potential lists of professional development topics, sufficient differences existed between these two states to warrant individual periodic needs assessments in each individual state.

Introduction/Theoretical Framework

State leaders of agricultural education in the public schools face many challenges. Supervisory personnel in state departments of education have the responsibility of securing new, and maintaining current program funding. They plan and deliver a plethora of FFA, Alumni, and adult education activities. They work with school administrators to develop new relationships and find ways to meet the growing demand for agriculture instructors. In addition, they conduct local program evaluations, and provide guidance in the administration of programs. Teacher educators have commitments to teaching, advising, research, recruitment, securing external grant funding, and other administrative duties. They handle these commitments with the pressures of downsizing in higher education. Agriculture teachers are expected to teach a dynamic and changing curriculum to a rapidly changing student population in their local programs. They conduct Supervised Agricultural Experience visits, oversee countless FFA activities, deal with administrative matters, and they work to build positive relationships within the communities where they teach. Among these three groups, the responsibility to plan and deliver professional

development activities for teachers is commonly shared. With all the demands of state leaders' time, planning quality professional development activities for teachers may not always receive the attention it deserves. However, professional development is a necessity to provide agriculture teachers the knowledge and skills needed to successfully meet the demands of a changing educational environment and advances in technology (Niven, 1993).

Professional development programs for teachers of agriculture are often established reflecting the current trends in education or new developments in the agriculture, food, fiber, and natural resource industry. Although some states have conducted separate beginning teacher sessions, professional development programs typically are designed for all agriculture teachers in a particular state without regard to years of teaching experience. Many times, professional development activities are planned and conducted by university faculty and/or state supervisory staff without teacher input. Sofranko and Khan (1988) established that the individuals likely to be involved in, or affected by, an educational program should be the starting point from which programs emerge. Like any effective educational experience, professional development activities should be meaningful to teachers and should reflect areas in which they have a felt need for professional growth. Individuals are more motivated to learn when they are actively involved in planning learning activities (Newcomb, et. al., 1993, p. 32).

A growing pool of research has been conducted identifying the professional development needs of agriculture teachers within selected states. Gamon, et al. (1994) found that Iowa agriculture teachers needed inservice in agricultural environmental impact, natural resource management, government policy, impact of the global market, and the processing of agricultural products. King and Garton (2000) identified the use of computers, writing grant proposals, attracting quality students, biotechnology applications, and landscaping as areas of high professional development need for teachers in Missouri. Agriculture teachers in South Carolina desired up-dates and assistance with using computers and related technology, preparing award applications, record keeping, public relations, adult education, and developing Supervised Agricultural Experience opportunities (Layfield & Dobbins, 2000). Though commonalities exist between the findings of studies conducted in other states, the question remains, do teachers in states with comparable agricultural enterprises and similar student populations have the same professional development needs?

Although not difficult to conduct, assessments of professional development needs require organization and a substantial commitment of time (Caffarella, 1982). Additionally, needs assessments should be conducted at regular intervals to accurately reflect the changing needs of teachers, students, and the agriculture, food, fiber, and natural resource industry. Gamon, et al. (1994) concluded that needs of instructors for inservice education should be periodically assessed before planners contract to develop materials and training plans. If needs assessments in agriculturally and geographically similar states produce consistently similar results, professional development planners in those states could potentially share the burden of conducting regularly scheduled assessments. Furthermore, the responsibility for planning and delivering quality professional development activities could be performed on a reciprocal basis between states. Research is warranted that can identify commonalities and differences between teachers in similar states.

Purpose and Objectives

The purpose of this study was to analyze and compare the professional development needs of secondary agriculture teachers in Kansas and Missouri. The specific objectives of the study were to:

1. Identify similarities and differences in the professional development needs of secondary agriculture teachers in the states of Kansas and Missouri.
2. Compare the professional development needs of secondary agriculture teachers in the states of Kansas and Missouri based on years of teaching experience.

Methods/Procedures

The target population for this descriptive study was secondary agriculture teachers in Kansas ($N = 175$) and Missouri ($N = 385$). The accessible population in Kansas consisted of teachers who participated in the annual state teachers' conference or who responded to a follow-up mailed questionnaire ($n = 139$). The accessible population in Missouri consisted of teachers who participated in the annual state teachers' conference or statewide fall workshop ($n = 348$).

An instrument to assess the professional development needs of agriculture teachers was developed based upon a review of the literature (Neason, 1992; Garton & Chung, 1996; Briers & Edwards, 1998). The instrument was reviewed by a panel of experts consisting of teacher educators, state supervisors, and agriculture teachers for face and content validity. After suggestions by the panel of experts were taken into account, modifications resulted in a 52-item instrument. The items were grouped into four categories: 1) student and teacher development, 2) instruction and curriculum, 3) technical agriculture, and 4) program management and planning. Internal consistency for each of the four sections was established and ranged from .80 to .89 (Cronbach's alpha).

The professional development needs instrument was administered at the respective state teachers' summer professional conferences. Respondents signed a card indicating they had completed and returned the instrument, therefore providing anonymity to respondents.

Kansas teachers not attending the summer conference were contacted by mail and were requested to complete the instrument. Data from the two collection points were compared and found to be comparable and consistent. The total number of usable questionnaires was 139, resulting in a response rate of 79.4%. In Missouri, teachers that did not attend the summer conference were given the opportunity to complete the questionnaire during a fall statewide workshop. Data from the two collection points were compared and found to be comparable and consistent. The total number of usable questionnaires was 348, resulting in a response rate of 90.3%.

Results/Findings

The first objective sought to compare the professional development needs of secondary agriculture teachers in the states of Kansas and Missouri. The professional development items were grouped into four categories: 1) student and teacher development, 2) instruction and curriculum, 3) technical agriculture, and 4) program management and planning. In the area of student and teacher development (Table 1), teachers in both states identified preparing proficiency and degree applications, preparing for career development events, and developing SAE opportunities for students as the three most important items. A comparison of these items in terms of their overall rank with the items in the three remaining categories revealed that Kansas teachers identified preparing proficiency and degree applications as the item of greatest need for professional development. The ranking of mean responses for Missouri teachers however, placed this item 22nd overall. Comparison of the remaining eight items in this category reflects strong similarities between teachers in the two states.

Table 1

Student and Teacher Development

Item	Kansas (<u>n</u> = 139)				Missouri (<u>n</u> = 339)			
	CR ^a	OR ^b	<u>M</u>	<u>SD</u>	CR ^a	OR ^b	<u>M</u>	<u>SD</u>
Preparing proficiency and degree applications	1	1	3.94	.93	3	22	3.29	1.11
Preparing for career development events	2	11	3.50	.95	1	19	3.30	1.08
Developing SAE opportunities for students	3	19	3.32	1.12	1	19	3.30	1.06
Supervising SAE programs – traditional and non-traditional	4	31	3.17	1.04	4	29	3.19	1.08
Managing and reducing work-related stress	5	35	3.15	1.16	7	44	2.98	1.18
Planning and conducting FFA chapter activities	6	37	3.09	.92	6	43	3.02	1.05
Time management tips and techniques	6	37	3.09	1.08	5	38	3.07	1.18
Developing professionally	8	41	3.03	.98	8	49	2.86	1.12
Organizing an alumni association	9	51	2.79	1.16	9	52	2.71	1.17

Note. Items rated on 5 point scale (1 = No Need, 2 = Some Need, 3 = Moderate Need, 4 = Strong Need, 5 = Extreme Need). Grand mean for all 52 items in Kansas = 3.25, Grand mean for all 52 items in Missouri = 3.24

^aRank within the category, ^bOverall rank on the 52 items

In the category of instruction and curriculum strong similarities were found between Kansas and Missouri teachers of agriculture. Teachers in both states identified the same four items as most important within the category (Table 2).

Additionally, the top three items for each state in instruction and curriculum were among the top ten for both states overall. These items included: designing and modifying curriculum and course offerings to attract high quality students, modifying the curriculum to meet changes in technology, and using computer technology and computer applications (spreadsheets,

presentation software, etc.). Furthermore, Missouri teachers identified using computer technology and computer applications (spreadsheets, presentation software, etc.) as the item with their overall greatest need for professional development training.

Table 2

Item	Kansas ($n = 139$)				Missouri ($n = 339$)			
	CR ^a	OR ^b	<u>M</u>	<u>SD</u>	CR ^a	OR ^b	<u>M</u>	<u>SD</u>
Designing and modifying curriculum and course offerings to attract high quality students	1	3	3.78	.93	3	5	3.69	.93
Modifying the curriculum to meet changes in technology	2	4	3.76	.88	2	3	3.75	.94
Using computer technology and computer applications (spreadsheets, presentation software, etc.)	3	7	3.60	1.01	1	1	3.79	1.10
Motivating students – teaching techniques and ideas	4	14	3.40	1.03	4	13	3.45	1.06
Integrating agriscience into the curriculum	5	19	3.32	.92	6	18	3.34	1.01
Managing learning laboratories	6	23	3.25	1.06	5	16	3.37	1.09
Teaching students problem solving and decision making skills	7	30	3.18	.95	7	25	3.25	1.05
Managing student behavior	8	49	2.83	1.01	8	47	2.90	1.02

Note. Items rated on 5 point scale (1 = No Need, 2 = Some Need, 3 = Moderate Need, 4 = Strong Need, 5 = Extreme Need). Grand mean for all 52 items in Kansas = 3.25, Grand mean for all 52 items in Missouri = 3.24

^aRank within the category, ^bOverall rank on the 52 items

Several differences and similarities of note surfaced in the category of technical agriculture (Table 3). Advances in biotechnology and computer applications in agriculture were identified as the two most important items within the category to teachers in both states, and both items were included in the ten highest ranking items overall. In addition, animal reproduction and embryo transfer, and genetic engineering were included among the top fifteen items for teachers in each state. Furthermore, three items were among the fifteen items ranked lowest for teachers in both states. Those items included: water quality, waste management, and oxy-acetylene welding and plasma cutting.

Further analysis revealed that six of the technical agriculture topics received noticeably different rankings from teachers in their respective states. Record keeping skills were the 10th overall item of professional growth need for Kansas teachers and 33rd for teachers in Missouri. Landscaping was ranked 7th in Missouri and 28th in Kansas. Missouri teachers also ranked greenhouse operation and management, agricultural mechanics project construction, food science and food safety, and small engine technology noticeably higher than did Kansas teachers.

Table 3

Technical Agriculture

Item	Kansas (<u>n</u> = 139)				Missouri (<u>n</u> = 339)			
	CR ^a	OR ^b	<u>M</u>	<u>SD</u>	CR ^a	OR ^b	<u>M</u>	<u>SD</u>
Advances in biotechnology	1	6	3.63	.99	2	6	3.58	1.05
Computer applications in agriculture	2	9	3.56	1.01	1	4	3.70	1.12
Record keeping skills	3	10	3.52	1.04	17	33	3.10	1.14
Animal reproduction and embryo transfer	4	12	3.43	1.03	4	8	3.52	1.20
Genetic engineering	4	12	3.43	1.00	7	14	3.42	1.11
Agricultural sales and marketing	6	14	3.40	.98	10	19	3.30	1.12
Financial management	7	16	3.37	.93	12	24	3.26	1.09
Meat science	8	17	3.35	.96	6	11	3.49	1.05
Greenhouse operation and management	9	18	3.33	1.13	5	10	3.50	1.19
Global Positioning Systems (GPS)	10	22	3.29	1.08	14	27	3.20	1.26
Animal nutrition	11	25	3.23	.97	20	36	3.09	1.10
Soil Science	12	27	3.22	.96	21	38	3.07	1.08
Landscaping	13	28	3.20	1.10	3	7	3.54	1.13
Electricity and controls	13	28	3.20	1.04	17	33	3.10	1.12
Natural resource management	15	31	3.17	1.07	11	22	3.29	1.11
Ag mechanics project construction	15	31	3.17	1.23	8	15	3.41	1.18
Tissue culture	17	36	3.12	1.08	13	27	3.21	1.18
Water quality	18	39	3.08	.96	22	41	3.04	1.10
Food science and food safety	19	40	3.06	1.01	9	17	3.35	1.09
Tool and machine conditioning and repair	20	45	2.95	1.14	16	31	3.12	1.16
Floriculture	21	47	2.92	1.12	15	30	3.15	1.19
Waste management	22	48	2.86	.98	24	47	2.90	1.10
Oxy-Acetylene welding and plasma cutting	23	50	2.80	1.12	23	45	2.97	1.16
Small engine technology	24	52	2.65	1.19	19	33	3.10	1.24

Note. Items rated on 5 point scale (1 = No Need, 2 = Some Need, 3 = Moderate Need, 4 = Strong Need, 5 = Extreme Need). Grand mean for all 52 items in Kansas = 3.25, Grand mean for all 52 items in Missouri = 3.24

^aRank within the category, ^bOverall rank on the 52 items

Analysis of responses in the program management and planning category revealed similar findings between the teachers in Kansas and Missouri (Table 4). Three items: writing grant proposals for external funding, recruiting and retaining quality students, and building the image of agriculture programs and courses, were among the highest ranking 15 items in both states. Completing reports for local and state administrators, evaluating the local agriculture program, and utilizing a local advisory committee were ranked noticeably higher for teachers in

Kansas than in Missouri. Conversely, Missouri teachers found planning and maintaining a school land lab to be a greater professional development need than did Kansas teachers.

Table 4

Program Management and Planning

Item	Kansas (<u>n</u> = 139)				Missouri (<u>n</u> = 339)			
	CR ^a	OR ^b	<u>M</u>	<u>SD</u>	CR ^a	OR ^b	<u>M</u>	<u>SD</u>
Writing grant proposals for external funding	1	2	3.80	1.16	1	2	3.78	1.15
Recruiting and retaining quality students	2	5	3.68	1.02	3	12	3.49	1.09
Building the image of agriculture programs and courses	3	7	3.60	.99	2	8	3.52	1.03
Completing reports for local and state administrators	4	21	3.30	1.10	10	50	2.84	1.14
Evaluating the local agriculture program	5	23	3.25	.99	8	41	3.04	.99
Utilizing a local advisory committee	6	25	3.23	.98	7	40	3.06	1.09
Developing business/community relations	7	31	3.17	.97	5	32	3.11	1.03
Planning and effective use of block scheduling	8	42	2.99	1.30	11	51	2.81	1.31
Conducting needs assessments and surveys to assist in planning the secondary and/or adult program	9	43	2.98	.97	9	46	2.95	1.04
Establishing a working relationship with local media	10	44	2.96	.92	6	36	3.09	1.05
Planning and maintaining a school land lab	11	46	2.93	1.15	4	26	3.24	1.15

Note. Items rated on 5 point scale (1 = No Need, 2 = Some Need, 3 = Moderate Need, 4 = Strong Need, 5 = Extreme Need). Grand mean for all 52 items in Kansas = 3.25, Grand mean for all 52 items in Missouri = 3.24

^aRank within the category, ^bOverall rank on the 52 items

The second objective sought to compare the professional development needs of secondary agriculture teachers in the states of Kansas and Missouri based on years of teaching experience. Teachers were divided into three categories: Five years or less, six to 15 years, and 16 or more years of teaching experience.

An examination of the top 15 items for teachers with five years of teaching experience or less indicated beginning teachers in both states identified nine of the same items (Table 5). Among these items, writing grant proposals for external funding was ranked first by both groups of teachers, while recruiting and retaining quality students was 2nd in Missouri and 3rd in Kansas. Interesting contrasts were the inclusion of preparing proficiency and degree applications and developing SAE opportunities for students by Kansas teachers only, and the inclusion of animal reproduction, landscaping, and motivating students by Missouri teachers only.

Of the fifteen items with the greatest professional development need, Missouri's least experienced teachers included eight technical agriculture items, four instruction and curriculum

items, three items pertaining to program management and planning, and none in the area of student and teacher development. Kansas teachers included five technical agriculture items, five program management and planning items, three items related to student and teacher development, and two items in the instruction and curriculum category.

Table 5

Top 15 Items for Teachers With Five Years Experience or Less

Item	Kansas ($n = 42$)			Missouri ($n = 116$)		
	Rank	<u>M</u>	<u>SD</u>	Rank	<u>M</u>	<u>SD</u>
Writing grant proposals for external funding	1	4.15	.96	1	3.98	1.05
Preparing proficiency and degree applications	2	4.05	1.03			
Recruiting and retaining quality students	3	3.98	.99	2	3.72	1.05
Designing and modifying curriculum and course offerings to attract high quality students	4	3.90	.96	6	3.66	.95
Modifying the curriculum to meet changes in technology	5	3.76	.91	4	3.67	.90
Building the image of agriculture programs and courses	6	3.73	.90	8	3.63	1.08
Developing SAE opportunities for students	7	3.69	1.09			
Computer applications in agriculture	7	3.69	1.07	4	3.67	1.13
Ag Mechanics project construction	9	3.67	1.14	15	3.44	1.30
Greenhouse operation and management	9	3.67	1.05	9	3.62	1.18
Advances in biotechnology	11	3.64	.93	12	3.50	1.06
Completing reports for local and state administrators	12	3.63	.99			
Agricultural sales and marketing	13	3.60	.83			
Evaluating the local agriculture program	14	3.56	.87			
Preparing for Career Development Events	15	3.55	.94			
Animal reproduction A.I. and embryo transfer				3	3.68	1.19
Landscaping				7	3.65	1.07
Motivating students – teaching techniques and ideas				9	3.62	.99
Using computer technology and computer applications (spreadsheets, presentation software, etc.)				11	3.57	1.17
Genetic engineering				13	3.47	1.04
Meat science				13	3.47	1.12

Note. Grand mean for all 52 items in Kansas = 3.39. Grand mean for all 52 items in Missouri = 3.37

In the group of teachers with six to 15 years of experience, ten items were identified among the top 15 by teachers in both states (Table 6). Teachers in both states included writing grant proposals for external funding, designing and modifying curriculum and course offerings to attract high quality students, and modifying the curriculum to meet changes in technology in the top five. Kansas teachers ranked preparing proficiency and degree applications, and recruiting and retaining quality students first and second respectively while Missouri teachers omitted these

two items from their top 15. Furthermore, Missouri teachers included ten technical agriculture topics in the top ten compared to only six for Kansas teachers.

Table 6

Top 15 Items for Teachers With 6 to 15 Years of Experience

Item	Kansas (<u>n</u> = 41)			Missouri (<u>n</u> = 94)		
	Rank	<u>M</u>	<u>SD</u>	Rank	<u>M</u>	<u>SD</u>
Preparing proficiency and degree applications	1	4.00	.81			
Writing grant proposals for external funding	2	3.78	1.17	5	3.59	1.28
Recruiting and retaining quality students	2	3.78	1.04			
Designing and modifying curriculum and course offerings to attract high quality students	4	3.71	.78	4	3.62	.95
Building the image of agriculture programs and courses	5	3.66	1.04	11	3.42	.91
Modifying the curriculum to meet changes in technology	5	3.66	.85	2	3.74	.99
Preparing for Career Development Events	7	3.63	.86			
Advances in biotechnology	8	3.59	1.07	6	3.54	1.04
Meat science	9	3.51	.93	8	3.48	1.07
Motivating students – teaching techniques and ideas	10	3.44	1.10			
Using computer technology and computer applications (spreadsheets, presentation software, etc.)	10	3.44	.74	1	3.88	1.05
Record keeping skills	10	3.44	1.21			
Genetic engineering	13	3.39	1.00	15	3.28	1.14
Greenhouse operation and management	13	3.39	1.14	9	3.46	1.20
Computer applications in agriculture	15	3.32	.96	3	3.73	1.17
Animal reproduction and embryo transfer				7	3.49	1.22
Landscaping				10	3.43	1.24
Ag mechanics project construction				12	3.39	1.07
Food science and food safety				13	3.33	1.09
Integrating agriscience into the curriculum				14	3.30	1.07

Note. Grand mean for all 52 items in Kansas = 3.18. Grand mean for all 52 items in Missouri = 3.15

The final group of teachers, those with 16 or more years of experience, included nine of the same items within their respective lists of 15 items with greatest need. These nine items were ranked in similar order between the two states as can be seen in Table 7. Teachers in this most experienced group from both states included three technology related items in their top five. Those items included were: using computer technology and computer applications (spreadsheets, presentation software, etc.), modifying the curriculum to meet changes in technology, and computer applications in agriculture. The most notable difference among teachers with 16 or greater years of experience is the number three ranking of preparing proficiency and degree

applications by Kansas teachers and the exclusion of that item from the top 15 by Missouri teachers.

Table 7

Top 15 Items for Teachers With 16 or More Years of Experience

Item	Kansas (<u>n</u> = 56)			Missouri (<u>n</u> = 100)		
	Rank	<u>M</u>	<u>SD</u>	Rank	<u>M</u>	<u>SD</u>
Using computer technology and computer applications (spreadsheets, presentation software, etc.)	1	3.87	1.01	1	4.00	.99
Modifying the curriculum to meet changes in technology	2	3.82	.88	2	3.77	.96
Preparing proficiency and degree applications	3	3.80	.94			
Designing and modifying curriculum and course offerings to attract high quality students	4	3.73	1.02	5	3.67	.93
Advances in biotechnology	5	3.64	1.00	6	3.64	1.05
Computer applications in agriculture	5	3.64	.98	3	3.71	1.09
Writing grant proposals for external funding	7	3.57	1.25	4	3.70	1.14
Record keeping skills	8	3.55	.87			
Financial management	9	3.52	.91			
Genetic engineering	10	3.50	1.04			
Building the image of agriculture programs and courses	11	3.46	1.03	12	3.37	1.07
Global Positioning Systems (GPS)	12	3.45	1.03			
Animal reproduction and embryo transfer	12	3.45	1.01			
Recruiting and retaining quality students	14	3.39	.97	10	3.39	1.11
Preparing for Career Development Events	15	3.37	1.02	12	3.37	1.03
Landscaping				7	3.54	1.11
Meat science				8	3.51	1.01
Managing learning laboratories (mechanics, horticulture)				9	3.41	1.06
Motivating students – teaching techniques and ideas				10	3.39	1.09
Teaching students problem-solving and decision making skills				12	3.37	1.04
Greenhouse operation and management				12	3.37	1.24

Note. Grand mean for all 52 items in Kansas = 3.20. Grand mean for all 52 items in Missouri = 3.19

Conclusions/Implications/Recommendations

The results indicated many similarities and some differences in the professional development needs between agriculture teachers in the states of Kansas and Missouri. Three items, 1) writing grant proposals for external funding, 2) modifying the curriculum to meet changes in technology, and 3) designing and modifying curriculum and course offerings to attract high quality students, were rated among the five items of greatest need for both states. When evaluating the fifteen items of greatest professional development need in both states, ten

items were identified in both Kansas and Missouri. In addition to the three previously listed items, the ten items included: 4) using computer technology and computer applications, 5) motivating students, 6) computer applications in agriculture, 7) animal reproduction and embryo transfer, 8) genetic engineering, 9) recruiting and retaining quality students, and 10) building the image of agriculture programs and courses. Interestingly, none of the ten needs represented items in the area of student and teacher development.

The similarities between states did not only include those items rated highest. Of the fifteen items ranked lowest by teachers in both states, eight of the same items were identified. These included: 1) developing professionally, 2) organizing an alumni association, 3) managing student behavior, 4) water quality, 5) waste management, 6) oxy-acetylene welding and plasma cutting, 7) planning and effective use of block scheduling, and 8) conducting needs assessments and surveys to assist in planning the secondary and/or adult program.

Of the 52 professional development items, teachers in the two states ranked eleven considerably differently. Kansas teachers rated 1) preparing proficiency and degree applications, 2) record keeping, 3) completing reports for state and local administrators, 4) evaluating the local program, and 5) utilizing the local advisory committee notably higher than did Missouri teachers. Conversely, Missouri teachers ranked 6) landscaping, 7) agriculture mechanics project construction, 8) food science and food safety, 9) floriculture, 10) small engine technology, and 11) planning and maintaining a school land lab, considerably higher than did Kansas teachers.

Comparing the professional development needs based on years of teaching experience produced similarities and differences between the two states, as well as among the three teaching experience groups. Of the fifteen items with the highest overall need for professional development, six were identified by all teachers, regardless of state or years of experience. The six expressed needs were: 1) designing and modifying curriculum and course offerings to attract high quality students, 2) modifying the curriculum to meet changes in technology, 3) advances in biotechnology, 4) computer applications in agriculture, 5) building the image of agriculture programs and courses, and 6) writing grant proposals for external funding. Teachers from all three experience categories in Kansas included preparing proficiency and degree applications among their top three needs while no group of Missouri teachers included this item in their top fifteen items. Missouri teachers however, consistently ranked landscaping in their top ten items while no group of Kansas teachers listed this item higher than 20th.

The increased emphasis for professional development in Kansas relating to proficiency and degree applications as well as record keeping skills most likely is a reflection of the recent development and adoption of a new state financial record keeping system. The higher ranking of landscaping and floriculture by Missouri teachers is likely a reflection of the fact that the Missouri Department of Labor has recently named occupations in horticulture as “high demand occupations,” thereby making enhancement grants pertaining to this area available from the state Department of Education. Other high demand areas in Missouri related to technical agriculture items can likely be attributed to new or revised state-specific curriculum and approved courses.

In the category of teachers with less than five years of teaching experience, Missouri teachers included eight items from the technical agriculture category among their top fifteen needs while Kansas beginning teachers included five technical agriculture items on their highest

ranking items. These results, especially those for young Missouri teachers, somewhat contradict previous findings (Claycomb & Petty, 1983; Garton & Chung 1996) that beginning teachers rated technical agriculture items lower than items related to pedagogy, program planning and evaluation, and program administration. These findings would imply that young teachers in both states have a need for professional development offerings in technical agriculture areas.

The most experienced group of teachers from both states, those with 16 or more years of teaching experience, placed a strong emphasis on the need for professional development pertaining to technology. Teachers from both states included using computer technology and computer applications, modifying the curriculum to meet changes in technology, and computer applications in agriculture among their top five items. The Missouri teachers with 6 to 15 years of teaching experience also included these three items in their top three, while Kansas teachers in that experience group, and beginning teachers in both states placed less emphasis on the need for professional development pertaining to technology. A clear message is being sent by the more veteran groups of teachers that professional development opportunities in computer technology are needed. The decreased emphasis of these items by the youngest group of teachers is likely a result of their greater exposure to such technology during their preservice programs.

Considering the mean scores of the highest rated items for the entire group of teachers, no item had a mean above 4.0, indicating a strong need for professional development in either state. The absence of scores above 4.0 leads one to consider whether the correct items were considered, or were teachers generally prepared in the areas addressed by the items included. On the questionnaire, an open-ended item asked respondents to suggest topics for professional development not included on the instrument. Of the 139 instruments returned in Kansas, only seven other topics were suggested. Three of those seven comments related to modifying the curriculum to meet increasing state academic requirements for college admission. This would imply that an item pertaining to this topic should be included in future needs assessments in Kansas. Seven other topics were also suggested among the 348 instruments returned in Missouri, but none were identified by more than one respondent. Thus implying the instrument adequately represented topics for professional development for Missouri teachers.

When planning professional development activities, state professional development planning teams in each state should use these results to prioritize and plan their professional development offerings for teachers. In determining topics to address, clearly a concern exists among teachers in both states for professional development activities in the areas of: writing grant proposals for external funding, modifying the curriculum to meet changes in technology, and designing and modifying curriculum and course offerings to attract high quality students. These items should be made top priorities for future professional development opportunities for teachers. Additionally, Kansas teachers expressed a clear need for assistance in the area of preparing proficiency and degree applications while Missouri teachers exhibited a stronger need for professional development related to computer technology and computer applications. Certainly, these two number one ranked items in each state deserve immediate attention within their respective states.

Although several of the professional development topics included in this study received similar attention from teachers in the two states, Kansas and Missouri teachers ranked eleven

items considerably differently. This fact alone sufficiently negates the argument that professional development needs assessment findings for teachers in one state can be applied wholesale to teachers in similar states.

Although needs assessment findings from other states can definitely assist state leaders in refining their own potential lists of professional development topics, sufficient differences exist between states to warrant individual periodic needs assessments in each individual state. Differences in the areas of preservice education, inservice programs and delivery systems, curricular topics, agricultural enterprises, funding structures, and teacher backgrounds and demographics within states, necessitate the careful assessment of professional development needs and desires of teachers on a state-by-state basis. To garner the greatest results from the extensive time and resources required to plan and deliver professional development activities, those activities should be made meaningful to teachers within the state by involving them in the process of identifying the most critical topics to be addressed.

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