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Interdisciplinary Professional Development Needs of Cooperative Extension Field Educators

Abstract

The study discussed in this article sought to identify cross-program professional development needs of county-based Extension professionals (field educators). The study instrument was completed by 105 county-based Extension professionals. Interdisciplinary topics, such as program evaluation and volunteer management, were identified as subjects of needed professional development for the Extension professionals whose sole program area was Economic and Community Development. Extension professionals in both the Agriculture and Natural Resources and the Health and Human Sciences program areas tended not to identify topics from each other's program areas as subjects of needed professional development.

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Introduction

With Cooperative Extension budgets shrinking at federal, state, and local levels, it is incumbent on state Extension systems to explore innovative ways of delivering professional development content as efficiently as possible while still providing content relevant to field educator/agent needs.

Online professional development involving emerging technologies has been examined as a means for lessening professional development costs through reduced travel expenses. Many Extension professionals report that they currently receive professional development through online mechanisms, such as webinars, blogs, professional learning environments, and "flipped" learning environments, in which content is introduced through online modules and topics are later discussed in person (Garst, Baughman, & Franz, 2014; Cater, Davis, Leger, Machtmes, & Arcemont, 2013; Senyurekli, Dworkin, & Dickinson, 2006).

Furthermore, Extension professionals not only have been using the above-mentioned mediums for professional development but also have reported that online professional development opportunities have been directly applicable to their programming (Cater et al., 2013; Senyurekli et al., 2006). Additionally, by using alternate learning environments as a means for professional development,

Extension professionals may be better equipped to deliver their own programs through these mediums in the communities they serve (Lobley & Ouellette, 2013).

Senyurekli et al. (2006) found that Extension professionals are more interested in the content of professional development than the ancillary benefits, such as networking opportunities. Most professional development opportunities in Extension focus on content-specific information by program area. However, several studies have shown that Extension professionals perceive their own management abilities as deficient in analytical thinking, personal skills, systematic leadership, and evaluation of program volunteers (Boyd, 2004; Gibson & Brown, 2003; Schmiesing & Safrit, 2007).

Many Extension professionals are unclear about what they are expected to track following completion of a program and have identified program evaluation as an area for which professional development is needed. In a study of over 1,173 county-based Extension professionals, when asked to describe evaluation of the program that they personally define as their "best" program, 82.4% reported keeping participant records, 71.7% tracked gender, less than half collected participant feedback on behavioral change and behavioral change over time, and only 2% reported the use of advanced inferential statistics (Lamm, Israel, & Diehl, 2013).

Program evaluation was identified as the area of greatest need in a study of Nevada field Extension professionals in which the researcher employed a weighted score that included participant perception of topic importance, current topic knowledge, and ability to use the topic regularly in programming (Waters, 1989). Furthermore, Extension professionals use evaluation primarily to assess impact of programs on participants. A study of 510 4-H youth development professionals found that respondents were more interested in evaluating the impact of programs on youth than in evaluating the effectiveness of volunteers or the impact of volunteering on volunteers (Schmiesing & Safrit, 2007).

In addition to professional development in one's subject area content, professional development on topics outside an Extension professional's area of expertise may be useful as local programming needs become more diverse. A case-case comparison of similar farm-to-school (FTS) programs emphasizing locally sourced foods demonstrated that FTS programs are well received in both rural and urban school environments (Bagdonis, Hinrichs, & Schafft, 2009; Ellsworth, Ernst, Snelling, Weare, & Weare, 2015). However, there is evidence that FTS programs are more effective as nutritional interventions, increasing knowledge of fruits and vegetables, than as movements to source local foods in schools because many products are not available locally due to inclement weather and seasonal availability (Bagdonis et al., 2009). An evaluation of a mobile market school program conducted at 14 urban middle schools showed statistically significant learning gains in students with respect to nutrition topics but did not demonstrate similar gains for agricultural and environmental concepts (Ellsworth et al., 2015). This is an example of why agriculture Extension professionals may be well served by learning more about how their programs impact and inform health, as could Extension professionals in other program areas.

Purpose and Objectives

The purpose of the study reported here was to determine whether county-based Extension professionals desire professional development on topics outside their program responsibilities. A

secondary goal was to determine whether interdisciplinary professional development needs varied by program responsibility and years of service among county-based Extension professionals in the Purdue University Cooperative Extension Service (Purdue Extension).

Previous studies have not evaluated Extension professionals' professional development needs across program areas. Previous studies have focused on program-specific topics or general topics, such as program evaluation.

Methods

Participants

According to an internal directory, Purdue Extension employs about 250 field staff in 92 county offices throughout Indiana's 92 counties (<https://extension.purdue.edu/Pages/countyoffices.aspx.2015>).

Surveys were administered at district and area administrative meetings conducted on a quarterly basis throughout Purdue Extension's five administrative districts, and 105 county-based educators provided completed surveys. The distribution of program area designations among survey respondents was similar to that found in the internal directory (see Table 1).

Two-thirds (66.7%) of respondents were females ($n = 70$), and 33.3% were males ($n = 35$). Respondents represented all four programmatic areas of Purdue Extension, with 28.6% ($n = 30$) representing 4-H Youth and Development, 22.9% ($n = 24$) representing Health and Human Sciences (HHS), 20.0% ($n = 21$) representing Agriculture and Natural Resources (ANR), and 1.9% ($n = 2$) representing Economic and Community Development (ECD). In addition, 26.7% of respondents ($n = 28$) had multiple program responsibilities. No statistically significant differences were found between respondents and personnel listed in the internal directory, using chi-square tests of proportions. Just under half the respondents had more than 10 years of service at the time of the survey (42.9%, $n = 45$), whereas 22.9% ($n = 24$) had between 5 and 10 years of service, and 34.3% ($n = 36$) had fewer than 5 years of service. Two of the five districts in the state system (Northwest and Southwest) were not represented in the survey.

Survey Instrument

An instrument was developed to identify content topics that educators felt were strengths of theirs and content topics they felt were areas for which they needed professional development. Specifically, respondents were prompted to select all topic areas that they believed they used regularly in programming and felt comfortable speaking about in front of lay audiences (*strengths*). From the same list of topics on a separate item, participants were asked to select topics that they wanted more information about and felt would be of use in their programming (*needs*). Rather than undergo a forced choice response, participants were allowed to check all topics they felt were relevant for both items. Also, participants were allowed to select the same topic as both a strength and a need.

On the basis of eXtension.org resource areas, which are managed by corresponding communities of

practice (CoPs), 70 topics were identified. The instrument was examined for layout and categorical placement by a reviewer familiar with eXtension's CoPs. Using CoP-based resource areas to identify topics relevant to Extension practice is functional because a CoP is established by Extension professionals across the country only when the topic of interest meets certain criteria, which include the existence of a current knowledge base for the topic, a shared value for the topic across state Extension systems, and motivation among CoP members to perpetuate the CoP (Kelsey & Stafne, 2012).

Procedure

Informed consent was included in the survey, and participants were made aware that they were not required to participate in the survey before data collection. The protocol was approved by the University of Nebraska's Internal Review Board (Protocol 20110811872). Project funding was procured through the eXtension Fellowship Program.

The instrument for the study was distributed at administrative area and district meetings across Indiana. Three out of five district directors agreed to allow distribution of the instrument. The 70 topics were categorized into five topic areas: Health, Youth Development, Agriculture/Horticulture, Economic and Community Development, and Interdisciplinary (item distribution is shown in Table 2). Each item on the survey identified a topic and required a binary response (yes/no). Because there was an unequal distribution of items across topic areas, the proportion of responses by topic area (total items selected in each topic area/total items for topic area) was examined and treated as a continuous variable (see Table 2).

Statistical Analysis

Hierarchical regression models were built to select the categorical variables (program area responsibility, gender, and years of service) that are most related to the proportion of selected items for a given topic area, with respect to strengths and needs (see Table 3). Tests of fixed effects were examined to remove variables from models that were not related to topics selected (alpha value 0.05 set a priori). Least squares means values are presented for explanatory variables that revealed significant effects with respect to topics selected. All analysis was performed in SAS Version 9.3 for Windows (SAS Institute Inc., Cary, NC).

Results

Table 1.
Program Responsibilities and Demographics of County-Based Extension Professionals Surveyed

	Respondents Surveyed	Internal Directory^a
Program	Frequency (%)	%
Health and Human Sciences	24 (22.9)	25.0

Agriculture and Natural Resources	21 (20.0)	21.0
4-H and Youth Development	30 (28.6)	32.0
Economic and Community Development	2 (1.9)	1.0
Multiple Program Designations ^b	28 (26.7)	21.0
Gender		
Male	35 (33.3)	
Female	70 (66.7)	
Years of Service		
<5	36 (34.3)	
5–10	24 (22.9)	
>10	45 (42.9)	
District		
East	45 (42.9)	
Central	36 (34.3)	
Southeast	24 (22.9)	
a Counts for some attributes were unavailable in internal directory.		
b Those with more than 1 program designation.		

Table 2.

Proportions of Strengths and Needs Selected by County-Based Extension Professionals

Variable	<i>N</i>	Mean (SD)	Total Items
Proportion Strengths Health	10 6	0.169 (0.23)	12
Proportion Strengths Interdisciplinary	10 6	0.154 (0.17)	7
Proportion Strengths Youth Development	10 6	0.104 (0.20)	2
Proportion Strengths Economic and Community Development	10 6	0.088 (0.19)	3
Proportion Strengths Agriculture/Horticulture	10 6	0.061 (0.09)	46

Proportion Needs Economic and Community Development	10 6	0.129 (0.22)	3
Proportion Needs Youth Development	10 6	0.127 (0.23)	2
Proportion Needs Interdisciplinary	10 6	0.123 (0.16)	7
Proportion Needs Health	10 6	0.097 (0.17)	12
Proportion Needs Agriculture/Horticulture	10 6	0.059 (0.09)	46

The results show that the topic area with the highest average proportion of strengths selected was Health (mean = 0.169). The Health topic area included topics such as creating healthy communities, family care giving, and food safety. The Interdisciplinary topic area, which included such diverse options as geospatial technology, network literacy, volunteer administration, and program evaluation, had the second highest average proportion of strengths selected (mean = 0.154). The Youth Development topic area involved just two topics, AgZone and Science for Youth, and had the third highest proportion of strengths selected (mean = 0.104). The Economic and Community Development topic area included three topics—community planning and zoning, entrepreneurs and community, and home energy—and had the second to lowest proportion of strengths selected (mean = 0.088). The Agriculture/Horticulture topic area had the lowest proportion of strengths selected (mean = 0.061) and comprised the largest number of topics, including agriculture and food law, bee health, and grain crops, among many others.

Proportions of needs were lower than proportions of strengths for three topic areas (Health, Agriculture/Horticulture, and Economic and Community Development). Economic and Community Development needs were highest (mean = 0.129), followed by Youth Development (mean = 0.127), Interdisciplinary topics (mean = 0.123), Health (mean = 0.097), and Agriculture/Horticulture (mean = 0.059).

Table 3.

Needs and Strengths Generalized Linear Model Least Squares Means Coefficients of Proportions Selected by County-Based Extension Professionals

Program Designation		Professional Development Topic				
		Health	Youth	Ag/Hort	Interdisciplinary	Economic & Community Development
	Strengths					
HHS						

	HHS Only (<i>n</i> = 24)	0.240	0.006	0.010	NS	NS
	Other (<i>n</i> = 81)	0.0428	0.121	0.0677	NS	NS
ANR						
	ANR Only (<i>n</i> = 21)	0.0520	0.0118	0.0583	NS	NS
	Other (<i>n</i> = 84)	0.204	0.0650	0.0116	NS	NS
4-H and Youth						
	4-H Only (<i>n</i> = 73)	NS	NS	NS	0.293	NS
	Other (<i>n</i> = 75)	NS	NS	NS	0.09	NS
ECD						
	ECD Only (<i>n</i> = 2)	NS	NS	NS	0.218	0.410
	Other (<i>n</i> = 104)	NS	NS	NS	0.129	0.0430
Years of Service						
	<5 (<i>n</i> = 36)	NS	NS	NS	NS	NS
	5-10 (<i>n</i> = 24)	NS	NS	NS	NS	NS
	>10 (<i>n</i> = 45)	NS	NS	NS	NS	NS
	Needs					
HHS						
	HHS Only (<i>n</i> = 24)	0.129	NS	0.038	NS	NS
	Other (<i>n</i> = 81)	0.0362	NS	0.0601	NS	NS

ANR						
	ANR Only (<i>n</i> = 21)	0.0395	NS	0.078	0.0515	NS
	Other (<i>n</i> = 84)	0.119	NS	0.0285	0.215	NS
4-H and Youth						
	4-H Only (<i>n</i> = 73)	NS	0.220	NS	NS	NS
	Other (<i>n</i> = 75)	NS	0.0446	NS	NS	NS
ECD						
	ECD Only (<i>n</i> = 2)	NS	NS	NS	0.156	0.359
	Other (<i>n</i> = 104)	NS	NS	NS	0.0747	0.0967
Years of Service						
	<5 (<i>n</i> = 36)	NS	NS	0.0967	NS	NS
	5-10 (<i>n</i> = 24)	NS	NS	0.0286	NS	NS
	>10 (<i>n</i> = 45)	NS	NS	0.0382	NS	NS

Note: NS indicates a statistically nonsignificant difference between the explanatory variable and the alternate classification with respect to predicted mean proportion of topics selected. "Other" encompasses those in a different program designation, including multiple program assignments.

A coefficient indicates a statistically significant difference in the proportion of topics selected in a given topic area among the groups being compared. For example, a 0.239 value for those in the HHS program area indicates that those who are *solely* responsible for the HHS program are likely to select about 24% health-related topics and that the proportion of topics they select related to health is significantly different from the proportion of health-related topics selected by those in any other program designation, which includes ANR, 4-H Youth and Development, ECD, or any combination of two or more program responsibilities.

Survey outcomes for three of the four program areas (HHS, ANR, and ECD) showed a statistically significant relationship relevant to respondents' choosing topics of strength related to their own

program area. Survey outcomes for the 4-H and Youth Development program area showed a nonsignificant coefficient relative to other program areas with respect to respondents' selecting Youth Development–related topics. However, those in the 4-H and Youth Development program showed a propensity for selecting items categorized as Interdisciplinary as strengths at nearly double the rate of those in other programs (0.293 vs. 0.0900), as did those in the ECD program (0.218 vs. 0.129).

Those solely responsible for HHS as well as those in the ANR program showed a tendency away from identifying Youth Development topics as strengths. Those in the HHS program showed a tendency away from Agriculture/Horticulture topics (0.00990 vs. 0.0677), and those in the ANR program showed an extreme tendency away from identifying Health topics as strengths (0.0520 vs. 0.204). No differences with respect to proportion of topics selected as strengths were shown relevant to years of service.

Survey outcomes for all four program areas indicated a statistically significant tendency toward respondents' choosing topics of needed professional development related to their own program area. Respondents having fewer than 5 years of service were most likely to select a higher proportion of topics related to Agriculture/Horticulture as areas of needed professional development compared to respondents having 5–10 or more than 10 years of service (0.0967 vs. 0.0286 and 0.0382, respectively).

Those in the ECD program indicated Interdisciplinary topics as areas of need more often than those in other program designations (0.1555 vs. 0.0747). Those in the HHS program selected a lower proportion of Agriculture/Horticulture–related topics as areas of need than those in other program designations (0.0377 vs. 0.0601). Those in the ANR program selected a lower proportion of Health topics as areas of need than those in other program designations (0.0395 vs. 0.1192).

Conclusions and Discussion

The results show that respondents strongly identify topics related to their program responsibilities as strengths, and a similar trend is seen with respect to what they consider to be their needs for professional development. 4-H Youth and Development was the only program area in which respondents did not identify topics related to their own discipline as areas of strength; however, those in the 4-H Youth and Development program did indicate a need for Youth Development as an area of professional development. This result may be explained by the fact that only two topics in the survey instrument were related to the Youth Development topic area. Surprisingly, those in the 4-H Youth and Development program area did not indicate a need for professional development in topics related to Agriculture/Horticulture, a topic area relevant to many 4-H projects. The findings presented here are consistent with other studies that indicate high proficiencies among 4-H Youth Development educators/agents in interdisciplinary management competencies, such as volunteer orientation, volunteer training, and process training (Gibson & Brown, 2003; Waters, 1989).

The results reported here show that those in the ANR program tend not to identify Health and Youth Development topics as areas of strength. A similar trend is seen with those in the HHS program tending not to identify Agriculture/Horticulture and Youth Development topics as strengths. Furthermore, similar trends were seen when participants were asked to identify topics of needed

professional development. Those in HHS and those in ANR each had strong tendencies not to choose topics related to Agriculture/Horticulture and Health, respectively, as topics of need.

These findings indicate that not only do those in the ANR program feel that Health topics are something they are not strong in but also that Health topics are of little importance with respect to future professional development. However, as mentioned previously, Bagdonis et al. (2009) found that farm-to-school programs were successful in both urban and rural environments as a health intervention that increased fruit and vegetable consumption among students. Those in the ANR program may be able to add value to their current programming by emphasizing the value of their programs as they relate to health.

Those in the HHS program showed similar tendencies away from choosing Agriculture/Horticulture topics for both strengths and needs. However, Agriculture/Horticulture-related information may be useful in food safety and food preservation, both of which are common areas of programming for those in HHS.

Results presented in this study may be limited because educators surveyed were all from a single state's Extension system. Although respondents were representative of educators serving Indiana, results presented in this study may not be generalizable to other states. Topics chosen for the survey instrument used in this study were based on CoPs established by eXtension, which were heavily skewed toward agricultural topics. This characteristic of the survey may have lowered the fraction of agriculture-related topics selected by respondents due to the diversity of topics in the Agriculture/Horticulture topic area as compared to the other topic areas. Additionally, responses were not forced, and respondents were allowed to select as many items as they felt appropriate. Using a check-all format rather than forced choice may lead to satisficing by respondents and may reduce response reliability (Dillman, Smyth, & Christian, 2014).

As indicated by the study results, Extension should continue to emphasize program-specific trainings for professional development activities. The tendency away from selecting topics outside one's program area for professional development needs among educators in certain program areas may stem from the educators' desire not to duplicate colleagues' programming in other program areas. However, Extension programs such as Annie's Project, which empowers farm women to manage information systems on the farm (Dill & Rhodes, 2012), farm-to-school programs (Bagdonis et al., 2009; Ellsworth et al., 2015), and home food preservation programs all would benefit from personnel having cross-program knowledge. Future studies should examine Extension professionals' ability to work in teams, collaborate, and reconcile differences among program areas to enhance programming.

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