

4-1-2013

An Assessment of Extension Officers' Self-Perceived Programming Competencies in Selected Caribbean Countries

Amy Harder
University of Florida

Wayne Ganpat
The University of the West Indies

Austen Moore
University of Florida

See next page for additional authors

Follow this and additional works at: <https://newprairiepress.org/jiaee>

Recommended Citation

Harder, A., Ganpat, W., Moore, A., Strong, R., & Lindner, J. R. (2013). An Assessment of Extension Officers' Self-Perceived Programming Competencies in Selected Caribbean Countries. *Journal of International Agricultural and Extension Education*, 20(1), 33-46. DOI: <https://doi.org/10.4148/2831-5960.1244>

This Research Article is brought to you for free and open access by New Prairie Press. It has been accepted for inclusion in Journal of International Agricultural and Extension Education by an authorized administrator of New Prairie Press. For more information, please contact cads@k-state.edu.

An Assessment of Extension Officers' Self-Perceived Programming Competencies in Selected Caribbean Countries

Abstract

Developing the human capacity of extension systems is a necessary part of improving services intended to meet the needs of small farmers. The purpose of this study was to determine the competencies for which professional development is needed in the area of programming for extension officers in selected Caribbean countries. A survey was conducted with all extension officers attending in-service trainings in Belize, Grenada, and Saint Lucia, using the Borich method to identify priority training needs. The greatest needs were most frequently observed in the areas of program planning and evaluation, although considerable variation existed across the group. The resulting challenge is to develop professional development resources that can be individualized by country while remaining cost-effective and accessible

Keywords

Extension, Programs, Professional Development, Needs Assessment

Authors

Amy Harder, Wayne Ganpat, Austen Moore, Robert Strong, and James R. Lindner

doi: 10.5191/jiaee.2013.20103

An Assessment of Extension Officers' Self-Perceived Programming Competencies in Selected Caribbean Countries

Amy Harder
University of Florida

Wayne Ganpat
The University of the West Indies

Austen Moore
University of Florida

Robert Strong
Texas A&M University

James R. Lindner
Texas A&M University

P.O. Box 110540
Gainesville, FL 32611-0540
352-273-2569
amharder@ufl.edu

Keywords: Extension, Programs, Professional Development, Needs Assessment

Abstract

Developing the human capacity of extension systems is a necessary part of improving services intended to meet the needs of small farmers. The purpose of this study was to determine the competencies for which professional development is needed in the area of programming for extension officers in selected Caribbean countries. A survey was conducted with all extension officers attending in-service trainings in Belize, Grenada, and Saint Lucia, using the Borich method to identify priority training needs. The greatest needs were most frequently observed in the areas of program planning and evaluation, although considerable variation existed across the group. The resulting challenge is to develop professional development resources that can be individualized by country while remaining cost-effective and accessible.

Introduction & Theoretical Framework

A strong extension system staffed by skilled personnel can play a valuable role in improving rural livelihoods (Swanson & Rajalahti, 2010). Extensionists must possess and be able to use a diverse set of competencies to maintain the strength of extension as an educational leader (Liles, 2004; Moore & Rudd, 2004; Stone & Coppernoll, 2004). As extension has evolved, so have the competencies required of extension personnel at all levels (Cooper & Graham, 2001; Maddy, Niemann, Lindquist, & Bateman, 2002). Understanding competencies in extension is valuable for improving the proficiency of existing personnel (Harder & Wingenbach, 2008; Liles, 2004; Maddy et al., 2002).

Professional competency is broadly defined as the skills and knowledge that allows for the successful performance of specific tasks (Liles, 2004; Silvera, 1999). Stone and Bieber (1997) defined competency as “the application of knowledge, technical skills and personal characteristics leading to outstanding performance” (p. 1). McClellan (1973) is credited with the competency approach, which centers on the belief that individual performance is better assessed through the demonstration of skills and abilities than through measures of intelligence (Athey & Orth, 1999). Buford et al. (1995) noted that competencies establish the qualifications needed by extension personnel to carry out specific duties and responsibilities. Competency behaviors that develop over time and can be linked to “meaningful life outcomes” (Athey & Orth, 1999, p. 216) are more useful for an organization’s success. Although competencies can often overlap (Moore & Rudd, 2004), organizations that identify the core competencies required of their personnel can tailor professional development training specifically to areas

that would “lead to excellence in the workplace” (Liles, 2004, p. 77).

In agricultural extension, core competencies are applied both to preparing entry-level professionals (Harder, Place, & Scheer, 2010; Lindner, Dooley, & Wingenbach, 2003) and to the professional development of existing agents (Ghimire & Martin, 2011; Shim, 2006). Extension research often differs on specific competencies, but the core groups of program planning, teaching, and evaluation are largely consistent across contexts and cultures (Arguelles & Gonczi, 2001; Ghimire & Martin, 2011; Scheer, Cochran, Harder, & Place, 2011). Planning competencies help maximize program effectiveness. Specific foci include understanding stakeholders and context (Cochran, 2009; Maddy et al., 2002), adapting to changing needs and social realities (Arguelles & Gonczi, 2001; Brinkman, Westendorp, Wals, & Mulder (2007), and effective utilization of extension funds (LaMuth & Jackson, 2003) and personnel (Cochran, 2009; Liles, 2004). Competencies and competency models in teaching and program implementation commonly focus on subject knowledge and teaching methods (e.g., Brinkman et al., 2007; Karbasioun, Mulder, & Biemans, 2007; Maddy et al., 2002; Scheer et al., 2011; Shim, 2006), while others (Harder et al., 2010; Lindner et al., 2003) include interpersonal and communication skills competencies. Finally, evaluation competencies are heavily emphasized for determining program impact and areas of improvement in both domestic (North Carolina State University Extension, n.d.; Strong & Harder, 2011b) and international (Pezeshki-Raad, Yoder, & Diamond, 1994) contexts.

Purpose and Objectives

The purpose of this study was to determine the competencies for which professional development is needed in the area of programming for extension officers in selected Caribbean countries. Specific objectives were: to describe officers' perceived levels of proficiency for programming competencies, to describe the perceived level of importance assigned by officers to programming competencies, and to compare proficiency and importance levels for each competency to determine priority training needs.

Methods

The study was conducted with extension officers ($N = 163$) attending in-service trainings in three countries in the Caribbean region in 2011. The trainings were arranged by the Food and Agriculture Organization of the United Nations as a part of their assistance to regional governments in capacity building. The major topics were extension program development and contemporary communication and delivery methods. Data was collected prior to the commencement of training in each country.

The survey instrument used to collect data was derived from the Essential Competencies for Program Evaluators model (Ghere, King, Stevahn, & Minnema, 2006), Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001), and researcher-developed statements. The instrument included four sections: (a) program planning, (b) interacting with learners, (c) teaching tools and methods, and (d) program evaluation areas.

A Borich (1980) model of needs assessment was used to measure participants' perceptions of 38 programming competency statements. With a Borich model, participants rate each competency statement on their own personal proficiency and their perceptions of how important a

competency is for their work. Participants in this study used two four-point scales to rate proficiency and importance: 1 = *No Proficiency/Importance*, 2 = *Low Proficiency/Importance*, 3 = *Average Proficiency/Importance*, and 4 = *High Proficiency/Importance*. The scales were interpreted as follows: *No Proficiency/Importance* = 1.00–1.50, *Low Proficiency/Importance* = 1.51–2.49, *Average Proficiency/Importance* = 2.50–3.49, and *High Proficiency/Importance* = 3.50–4.00. The study is limited by the use of self-reported levels of proficiency.

Items from the Essential Competencies model (Ghere et al., 2006) and the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) were demonstrated to be valid and reliable when used to survey extension volunteers and professionals (Lamm & Israel, 2011; Strong & Harder, 2011a). The instruments were reviewed by Caribbean extension professionals to determine their internal validity for officers in the participating countries. An *ex post facto* analysis of the four constructs using Cronbach's alpha within the survey instrument yielded reliability coefficients ranging from .78 (Interacting with Learners – Perceived Importance) to .96 (Program Planning – Perceived Importance).

Data were collected in person by one of the researchers at a mandatory in-service training held in each country. Fifty-five ($n = 55$) extension officers were surveyed in Grenada, thirty-five officers ($n = 35$) in Belize, and twenty-nine officers ($n = 29$) in Saint Lucia.

Descriptive statistics were used to address the first two objectives by country and the overall group. The ranking procedure described by Edwards and Briers (1999) was used to address the third objective by country and overall group. Data were analyzed according to procedures

established by Borich (1980). A discrepancy score was obtained for each participant by subtracting his/her perceived level of proficiency from the perceived level of importance reported for a specific programming competency. Each discrepancy score was then multiplied by the mean importance level for that competency, resulting in a weighted discrepancy score for each participant. The weighted discrepancy scores were summed and divided by the total number of usable observations to yield a mean weighted discrepancy score for the competency. The mean weighted discrepancy scores for all the competencies were ranked to determine the priorities for addressing the programming needs of respondents.

Findings/Results

The first objective was to describe the respondents' self-perceived levels of proficiency for each competency, according to country and overall group. Due to space limitations, only the competencies with the

five highest means for each country and the overall group have been presented in Table 1. The competencies with the five lowest means for each country and the overall group are presented in Table 2. Interested readers may contact the authors for complete results.

Diversity across the group resulted in ten competencies being identified as those for which extension officers perceived themselves to be most proficient. The only competency for which all extension officers, regardless of country, considered themselves to be highly proficient was *Conducting individual farm visits*. Extension officers in at least two countries had similarly positive perceptions of their proficiency for three other competencies: *Conducting field days*, *Providing an alternative explanation or example when clientele are confused*, and *Identifying target (groups) audiences for my programs*. Extension officers in Saint Lucia tended to have higher levels of self-perceived proficiency than their counterparts in Grenada and Belize.

Table 1. Highest Self-Perceived Levels of Proficiency by Country and Overall Group

Competency	Belize	Grenada	Saint Lucia	Group
	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>
Conducting individual farm visits	3.50 .61	3.73 .64	3.77 .43	3.67 .59
Conducting field days	3.42 .65	--	3.70 .47	3.36 .80
Teaching with PowerPoint presentations	3.36 .59	--	--	--
Conducting workshops	3.31 .75	--	--	--
Providing an alternative explanation or example when clientele are confused	3.31 .67	3.37 .66	--	3.37 .64

Motivating clients to participate in programs	--	3.38 .88	--	3.39 .82
Developing a program of work	--	3.31 .68	--	--
Identifying target (groups) audiences for my programs	--	3.28 .95	3.70 .47	3.38 .81
Conducting result demonstrations	--	--	3.70 .54	--
Adjusting lessons to the proper level for individual clientele	--	--	3.67 .48	--

Note. No Proficiency = 1, Low Proficiency = 2, Average Proficiency = 3, High Proficiency = 4.

Eleven competencies were identified as those which officers in one or more of the surveyed countries felt they had the lowest proficiency. Universally, *Conducting Nominal Group techniques to identify community needs* was identified as a competency for which officers felt they had average proficiency. Extension officers in at least two countries had similar perceptions of their proficiency for three other competencies: (a) *Using quantitative evaluation methods (e.g., number-based*

surveys, tests, reports) to measure the effectiveness of my programs, (b) *Conducting key stakeholder discussions to identify community needs*, and (c) *Involving stakeholders in program planning*. Officers in Grenada were the only respondents who perceived they had low proficiency for any of the competencies; they indicated *Teaching with slides* ($M = 2.41$, $SD = 1.06$) was a competency for which they had low proficiency.

Table 2. Lowest Self-Perceived Levels of Proficiency by Country and Overall Group

Competency	Belize	Grenada	Saint Lucia	Group
	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>
Using quantitative evaluation methods (e.g. number-based surveys, tests, reports) to measure the effectiveness of my programs.	2.67 .79	2.67 .89	--	2.82 .84
Conducting Nominal Group techniques to identify community needs.	2.68 .84	2.74 .92	2.97 .89	2.78 .89
Conducting key stakeholder discussions to identify community needs	2.75 .73	--	3.07 .74	--
Using ranking procedures for prioritizing issues identified during a needs assessment	2.75 .84	--	--	--

Involving stakeholders in program planning	2.75 .69	--	3.13 .73	--
Teaching with slides	--	2.41 1.06	--	2.83 .99
Teaching with PowerPoint presentations	--	2.61 1.06	--	--
Promoting linkages between producers and processors	--	2.73 .95	--	--
Using rating procedures for prioritizing issues identified during a needs assessment	--	--	3.13 .78	2.87 .85
Conducting focus groups to identify community needs	--	--	3.17 .75	--
Using qualitative evaluation methods (e.g. interviews, focus groups, observations) to measure the effectiveness of my programs	--	--	--	2.88 .85

Note. No Proficiency = 1, Low Proficiency = 2, Average Proficiency = 3, High Proficiency = 4.

The second objective was to describe the perceived level of importance assigned by officers to programming competencies by country and the overall group. As with the first objective, only the competencies with the five highest means for each country and the overall group have been presented in Table 3. The competencies with the five lowest means for each country and the overall group are presented in Table 4.

Nine competencies were identified by officers as the most important for their jobs. *Conducting individual farm visits* was identified as a competency of high

importance by officers in all three countries, and it was the highest rated competency for the group overall ($M = 3.78$, $SD = .49$). Extension officers in at least two countries had similarly high perceptions of the importance of four other competencies: (a) *Conducting field days*, (b) *Motivating clients to participate in programs*, (c) *Developing a program of work*, and (d) *Conducting result demonstrations*. Less variation in perceptions within and between countries was observed in the officers' ratings of the most important competencies as compared to their self-perceptions of proficiency.

Table 3. Highest Perceived Levels of Importance by Country and Overall Group

Competency	Belize	Grenada	Saint Lucia	Group
	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>
Conducting field days	3.86 .36	3.56 .85	-- --	3.70 .65
Motivating clients to participate in programs	3.75 .44	-- --	3.80 .41	-- --
Developing a program of work	3.75 .60	3.69 .61	-- --	3.68 .61
Conducting result demonstrations	3.74 .56	-- --	3.87 .35	-- --
Conducting individual farm visits	3.74 .56	3.78 .50	3.83 .38	3.78 .49
Providing an alternative explanation or example when clientele are confused	-- --	3.80 .41	-- --	3.70 .50
Responding well to difficult questions from clientele	-- --	3.67 .59	-- --	3.66 .58
Developing a Calendar of activities to guide my Annual Program of Work	-- --	-- --	3.80 .48	-- --
Adjusting lessons to the proper level for individual clientele	-- --	-- --	3.80 .41	-- --

Note. No Importance = 1, Low Importance = 2, Average Importance = 3, High Importance = 4.

There were nine competencies that were identified as the least important across the three countries and the overall group. No competency received a rating lower than average importance. However, *Conducting Nominal Group techniques to identify community needs* was identified as less important by officers in all three countries, and it was the lowest rated competency for the group overall ($M = 3.10$, $SD = .88$). Officers in all three countries also agreed that *Using rating procedures for prioritizing*

issues identified during a needs assessment was one of the least important competencies. Extension officers in at least two countries shared similar perceptions of the importance of two other competencies: *Teaching with slides* and *Using ranking procedures for prioritizing issues identified during a needs assessment*. The variation in officers' perceptions of the least important competencies was greater than was observed for their perceptions of the most important competencies.

Table 4. Lowest Perceived Levels of Importance by Country and Overall Group

Competency	Belize	Grenada	Saint Lucia	Group
	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>	<i>M</i> <i>SD</i>
Lecturing	3.03 .86	--	--	3.23 .87
Using rating procedures for prioritizing issues identified during a needs assessment	3.11 .71	3.06 .92	3.27 .74	3.13 .81
Teaching with slides	3.11 .93	3.13 .95	--	3.20 .89
Conducting Nominal Group techniques to identify community needs	3.14 .76	3.06 .97	3.13 .86	3.10 .88
Using ranking procedures for prioritizing issues identified during a needs assessment	3.22 .64	3.10 .92	--	3.22 .80
Teaching with PowerPoint presentations	--	3.17 .90	--	--
Conducting key stakeholder discussions to identify community needs	--	--	3.27 .87	--
Using qualitative evaluation methods (e.g. interviews, focus groups, observations) to measure the effectiveness of my programs	--	--	3.30 .79	--
Conducting semi-structured interviews to identify community needs	--	--	3.37 .77	--

Note. No Importance = 1, Low Importance = 2, Average Importance = 3, High Importance = 4.

The third and final objective of the study was to compare proficiency and importance levels for each competency to determine priority training needs by country and the overall group. The five highest priority training needs for each country and the overall group as determined by mean weighted discrepancy scores are presented in Table 6. Identifying the five highest priority training needs by country and for the overall group resulted in 14 competencies being selected. Unlike in prior objectives, there was no single competency

for which all three countries had a highest priority training need. While five competencies were shared as highest priorities for at least one country and the overall group, only one competency – *Using quantitative evaluation methods* – was a shared priority for two countries. There was no overlap between the highest priority training needs of Saint Lucia with either Belize or Grenada. Also, the MWDS for Saint Lucia were the lowest of the groups that responded while Belize had the highest MWDS.

Table 5. Highest Priority Training Needs by Country and Overall Group

Competency	Belize	Grenada	Saint Lucia	Group
	MWDS	MWDS	MWDS	MWDS
Involving stakeholders in program planning	3.29	--	--	--
Developing a program of work	3.10	--	--	--
Using quantitative evaluation methods (e.g. number-based surveys, tests, reports) to measure the effectiveness of my programs	3.02	2.51	--	2.10
Conducting result demonstrations	2.97	--	--	1.97
Developing recommendations for future programming based the findings of my evaluation	2.81	--	--	1.84
Teaching with slides	--	2.46	--	--
Using qualitative evaluation methods (e.g. interviews, focus groups, observations) to measure the effectiveness of my programs	--	2.33	--	--
Identifying necessary resources (e.g., money, time, materials) for my programs	--	2.25	--	--
Establishing and managing demonstration plots	--	2.22	--	1.89
Promoting linkages between producers and processors	--	--	1.53	2.10
Clearly stating the intended program outcomes of programs	--	--	1.52	--
Developing a Calendar of activities to guide my Annual Program of Work	--	--	1.47	--
Providing an alternative explanation or example when clientele are confused	--	--	1.38	--
Determining what content is needed to achieve intended program outcomes	--	--	1.16	--

Diversity among respondents existed when identifying the lowest priority training needs. Fourteen competencies were identified when examining the five lowest priority training needs by country and for the overall group. Three of the lowest priority training needs for the overall group

were shared as lowest priorities by at least one country, while two were unique to the group alone. Belize and Grenada had similarly low MWDS for *Identifying target (groups) audiences for my programs*. Grenada and Saint Lucia also shared a low need for training on *Conducting individual*

farm visits. Teaching with slides was a low priority for training for Belize and Saint Lucia. Only one negative MWDS was observed for the Belizean officers whose

responses strongly indicated that there was no need for training on *Teaching with PowerPoint presentations*.

Table 6. Lowest Priority Training Needs by Country and Overall Group

Competency	Belize	Grenada	Saint Lucia	Group
	MWDS	MWDS	MWDS	MWDS
Teaching with PowerPoint presentations	-.19	--	--	--
Teaching with slides	.29	--	.22	--
Lecturing	.29	--	--	--
Identifying target (groups) audiences for my programs	.72	.84	--	.66
Providing an alternative explanation or example when clientele are confused	.73		--	--
Conducting individual farm visits	--	.38	.26	.53
Motivating clients to participate in programs	--	.46	--	--
Using rating procedures for prioritizing issues identified during a needs assessment	--	.79	--	.76
Conducting key stakeholder discussions to identify community needs	--	.97	--	--
Conducting on-farm trials	--	--	.12	--
Using the results of a needs assessment to plan my programs	--	--	.25	--
Conducting field days	--	--	.25	--
Using ranking procedures for prioritizing issues identified during a needs assessment	--	--	--	.97
Conducting semi-structured interviews to identify community needs	--	--	--	.97

Conclusions/Implications/ Recommendations

Several key areas of extension program development need immediate attention if a quality education service is to be provided. Planning and evaluation methods are the competency areas for which professional development is most urgently needed, as demonstrated by the frequency with which specific competencies within those areas were included in the list of priority training needs. The results suggest that extension officers in the surveyed countries felt very confident in their teaching abilities but were less prepared to design and evaluate extension programs. The lack of planning and evaluation competencies limits the ability of extension to conduct focused programming that leads to measurable educational outcomes, a key factor in demonstrating accountability to stakeholders and funding agencies.

The lowest self-perceived levels of proficiency were in alternative needs assessment methods, qualitative evaluation methods, and participatory methods (nominal group and ranking techniques). Similar areas were identified as lowest importance in program development. This tends to suggest that staff may not know the value of these methods and their usefulness in program development. As such, it highlights the need to expose staff to a variety of needs assessment methods and their usefulness. Individual farm visits by staff to farmers' holdings is the main method of dealing with problems, identifying needs, and transferring technology to farmers in the surveyed countries. This teaching methodology is confirmed as the area of highest proficiency by staff across the three countries, and it is closely associated with the other highly proficient area of *providing an alternative explanation or example when clientele are confused*. Further, all staff confirmed this as

the highest area of importance for them as they plan and deliver programs. While meeting with farmers and assessing their needs is most effective, it is highly inefficient. Given the high number of farmers and the small staff sizes in each country, limited service is provided. Knowledge and skills to use alternative needs assessment and delivery methods must be acquired by staff.

The extent of variation in highest priority training needs determined by the study points to the present need to consider the development of modular training tailored to the needs of each country. Belizean extension officers could benefit from training that focuses on participatory programming methods, constructing programs of work, doing quantitative needs assessment, and facilitating demonstrations. Training for extension officers in Grenada should focus on improved qualitative needs assessment methods, strategies to access improved funding, use of modern teaching and learning aids, and managing demonstration plots. St. Lucia extension officers could build their competencies in the areas of setting clear outcomes, constructing calendars of activities, and choosing appropriate content to meet training goals. Modular training, however, could be expensive to deliver, given the expense of air travel required to travel between most Caribbean countries. Distance learning methods, where possible, may prove to be a more cost-efficient means of delivering focused professional development for each of the surveyed countries.

The wide diversity that is apparent in both the identified highest priority training needs and lowest areas of needs raises a larger issue. The regional extension staff in the Caribbean is too small, and the food production system too similar, to have such a wide variation in an area of competencies as important as programming. There is need

for the harmonization of extension program approaches and methods across the region. At the governance level, perhaps through the agriculture office in the Caribbean Community (CARICOM) secretariat, a plan for the modernization of extension across member countries could go a long way in streamlining approaches, methods, and techniques to be used. Given the commonalities that exist in the nature and objectives of food production in the region, a regional plan that will improve extension education should be developed that still recognizes the individual needs of each country.

Liles (2004) suggested that organizations need to identify core competencies required by staff and develop training programs to improve capacity. Buford, Bedeian, and Lindner (1995) indicated that competencies should be viewed as qualifications necessary for performing essential job functions – such as programming. If extension officers do not perceive themselves to have the necessary qualifications, then certainly a strong training program for developing them must exist in order for extension to flourish.

This study was limited to three countries, which is an insufficient

foundation for any future regional planning efforts. A needs assessment should be done to assess the current situation of all extension officers in the CARICOM region and to more comprehensively assess training needs in programming, but also competency areas beyond programming, including technical knowledge. Such a needs assessment would inform the construction of a regional training project that would enable the development of technical capacities equally across the region.

Not since the 1970s when the Caribbean Agricultural Extension Project (CAEP) was underway has there been a regional effort to focus extension. Since then, countries have had to develop extension on their own, resulting in different focuses, methods, and techniques among countries. Swanson and Rajalathi (2010) indicated that a system staffed by skilled personnel is essential if the desired impact of improving the livelihoods of most of the region's food producers is to be achieved. For increased food production and increased exportation, extension officers must be competently prepared to provide the necessary educational interventions needed by food producers.

References

- Athey, T. R., & Orth, M. S. (1999). Emerging competency methods for the future. *Human Resource Management, 38*(3), 215–226.
- Arguelles, A., & Gonczi, A. (2001). *Competency-based education and training: a world perspective*. Mexico City, Mexico: Editorial Limusa.
- Brinkman, D., Westendorp, A., Wals, A., & Mulder, M. (2007). Competencies for rural development professionals in the era of HIV/AIDS. *Compare: A Journal of Comparative and International Education, 37*(4), 493–511. doi: 10.1080/03057920701366069
- Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education, 31*(3), 39–42.
- Buford, J. A., Jr., Bedeian, A. G., & Lindner, J. R. (1995). *Management in extension* (3rd ed.) Ohio State University Extension: Columbus Ohio.
- Cochran, G. R. (2009). *Ohio State University Extension competency study: developing a competency*

- model for a 21st century extension organization* (Doctoral dissertation). Retrieved from ProQuest. (AAT 3375730).
- Edwards, M. C., & Briers, G. E. (1999). Assessing the inservice needs of entry-phase agriculture teachers in Texas: A discrepancy model versus direct assessment. *Journal of Agricultural Education*, 40(3), 40–49.
- Ghere, G., King, J. A., Stevahn, L., & Minnema, J. (2006). A professional development unit for reflecting on program evaluator competencies. *American Journal of Evaluation*, 27, 108–123.
- Ghimire, N., & Martin, R. (2011). A professional competency development model: Implications for extension educators. *Journal of International Agricultural and Extension Education*, 18(2), 5–17.
- Harder, A., Place, N. T., & Scheer, S. D. (2010). Towards a competency-based extension education curriculum: A Delphi study. *Journal of Agricultural Education*, 51(3), 44–52. doi: 10.5032/jae2010.03044
- Harder, A., & Wingenbach, G. (2008). Texas 4-H agents' perceptions of selected competencies in the 4-H professional research, knowledge, and competencies model. *Journal of Agricultural Education*, 49(2), 64–74. doi: 10.5032/jae.2008.02064
- International Food Policy Research Institute. (n.d.). *Agricultural extension and advisory services worldwide*. Retrieved from <http://www.worldwide-extension.org/the-americas/belize>
- Karbasioun, M., Mulder, M., & Biemans, H. (2007). Towards a job competency profile for agricultural extension instructors: a survey of views of experts. *Human Resource Development International*, 10(2), 137–152.
- Lamm, A. J., & Israel, G. D. (2011). *An organizational approach to understanding evaluation in Extension*, 52(4), 136–149. doi: 10.5032/jae.2011.04136
- LaMuth, J., & Jackson, D. (2003). The devastating cost of undervaluing people. *Proceedings of the Association for International and Agricultural Education*, 228–233. Durban, South Africa.
- Liles, R. T. (2004). Core competencies: A systems approach for training and organizational development in extension. *Journal of Agricultural Education and Extension*, 10(2), 77–82.
- Lindner, J., Dooley, K., & Wingenbach, G. (2003). A cross-national study of agricultural and extension education competencies. *Journal of International Agricultural and Extension Education*, 10(1), 51–59.
- Maddy, D. J., Niemann, K., Lindquist, J., & Bateman, K. (2002). *Core competencies for the Cooperative Extension System*. Retrieved from http://www.msuxextension.org/jobs/forums/Core_Competencies.pdf
- McClelland, D. (1973). Testing for competence rather than intelligence. *American Psychologist*, 28, 1–14.
- Moore, L. L., & Rudd, R. D. (2004). Leadership skills and competencies for extension directors and administrators. *Journal of Agricultural Education*, 45(3), 22–33.
- National Human Development Advisory Committee, Government of Belize. (2004). *2002 poverty assessment report*. Retrieved from the International Fund for Agricultural

- Development's Rural Poverty Portal website:
<http://www.ruralpovertyportal.org/web/guest/country/home/tags/belize>
- North Carolina State University Cooperative Extension (n.d.). *Core competencies*. Retrieved from
<http://www.ces.ncsu.edu/pods/comps.shtml>
- Pezeshki-Raad, G., Yoder, E. P., & Diamond, J. E. (1994). Professional competencies needed by extension specialists and agents in Iran. *Journal of International Agricultural and Extension Education*, 1(1), 45–53.
- Scheer, S. D., Cochran, G. R., Harder, A., & Place, N. T. (2011). Competency modeling in extension education: integrating an academic extension education model with an extension human resource management model. *Journal of Agricultural Education*, 52(3), 64–74. doi: 10.5032/jae.2011.03064
- Shim, M. (2006). *The development of a competency model for Korean extension professionals*. (Unpublished doctoral dissertation, Seoul National University, Seoul, Korea).
- Silvera, T. (1999). Competency based pay: Coventry Healthcare's story. *Proceedings of the Sixth International Conference and Exposition on Using Competency Based Tools and Applications to Drive Organizational Performance*. Conference presented by Linkage, Inc., Lexington, ME.
- Stone, B., & Bieber, S. (1997). Competencies: A new language for our work. *Journal of Extension*, 35(1). Retrieved from
<http://www.joe.org/joe/1997february/comm1.php>
- Stone, B., & Coppernoll, S. (2004). You, extension, and success: a competency-based professional development system. *Journal of Extension*, 42(2). Retrieved from
<http://www.joe.org/joe/2004april/iw1.shtml>
- Strong, R., & Harder, A. (2011a). Interactions among instructional efficacy, motivational orientations, and adult characteristics on Master Gardener tenure. *Journal of Agricultural Education*, 52(4), 65–75. doi: 10.5032/jae.2011.04065
- Strong, R. & Harder, A. (2011b). Recommended competencies needed for teaching in international extension settings. *Journal of International Agricultural and Extension Education*, 18(3), 72–83.
- Swanson, B. E., & Rajalahti, R. (2010). *Strengthening agricultural extension and advisory systems: Procedures for assessing, transforming, and evaluating extension systems*. Washington, DC: The International Bank for Reconstruction and Development/The World Bank.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783–805.
- United Nations Development Programme. (2010). *International human development indicators*. Retrieved from
<http://hdrstats.undp.org/en/countries/profiles/BLZ.html>