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Allison Nichols
West Virginia University Extension, ahnichols@mail.wvu.edu

Stephanie M. Blake
National Institute of Food and Agriculture

Scott Chazdon
University of Minnesota Extension

Rama Radhakrishna
Pennsylvania State University Extension

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From Farm Results Demonstrations to Multistate Impact Designs: Cooperative Extension Navigates its Way Through Evaluation Pathways

Allison Nichols

West Virginia University Extension

Stephanie M. Blake

National Institute of Food and Agriculture

Scott Chazdon

University of Minnesota Extension

Rama Radhakrishna

Pennsylvania State University Extension

This article explores how evaluation has been developed and expanded within the Cooperative Extension system, from the beginning of agricultural education in America in 1800 to the present day. Important periods across the history of Extension evaluation have been identified and categorized according to major themes and significant contributions of Extension individuals and organizations. Challenges for the future of evaluation within Extension are discussed.

Keywords: evaluation, Cooperative Extension, Extension, National Institute of Food and Agriculture, NIFA, Smith-Lever Act, Food and Agriculture Act, Governance and Performance Results Act, Agricultural Research Extension and Education Reform Act

Evaluation is essential at every stage of Extension's educational program efforts (Seevers & Graham, 2012). In a 2008 article in *New Directions for Evaluation*, Michael Quinn Patton, author of many books on evaluation methodology, compares the principles of Extension work with the principles of evaluation. According to Patton (2008), both Extension work and evaluation work contain these mutual elements:

- Determining who the clients are or should be,
- Determining the program (or evaluation) needs of the clients,
- Gathering the needed information,

Direct correspondence to Allison Nichols at ahnichols@mail.wvu.edu

- Presenting information (or findings) to the clients, and
- Working with clients (decision makers) to apply the information or findings.

In this article, we first used two methods to develop themes related to evaluation in the Cooperative Extension (Extension) system. One method examined the requirements for data collection and reporting in several pieces of federal legislation, including the Smith-Lever Act in 1914; the Food and Agriculture Act in 1977; the Governance and Performance Results Act in 1993; and the Agricultural Research, Extension and Education Reform Act in 1998. The second method included a content analysis of articles published in the *Journal of Extension* from 1965 to 2014 that used the words *evaluate*, *evaluation*, or *evaluating* in the title. These two methods are combined in this article to create a framework for examining Extension evaluation across time.

A Timeline of Themes Related to Extension’s Journey in Evaluation

1800 to 1913 – Experimental Design and Results Demonstration

Early experimental agricultural studies were conducted by agricultural societies interested in adopting new methods to improve American farm conditions (Seevers & Graham, 2012). Agriculture publications began to appear in 1821 and included *The American Agriculturist* and *American Farmer* (Seevers & Graham, 2012). In 1862, the Organic Act created the U.S. Department of Agriculture (USDA), and by 1889, the new organization was publishing research for farmers in *Farmers’ Bulletins* (Seevers & Graham, 2012). In 1875, Land-Grant Universities (LGUs) established experimental agricultural stations. The stations provided information to farmers on topics such as which crops were the most profitable, how to control disease, and how to produce superior livestock (Seevers & Graham, 2012). A bill to support these experimental stations, called the Hatch Act, was passed in 1887.

The earliest evaluation efforts have been called *result demonstrations* “conducted under direct supervision of an Extension professional to show the advantages of a recommended practice” (Seevers & Graham, 2012, p. 158). Seaman Knapp found that farmers would not change their methods of farming unless they conducted the demonstration themselves on their own farms under ordinary conditions (Seevers & Graham, 2012). In 1902, under Knapp’s direction, Walter C. Porter farmed about 70 acres and kept records of costs and yields. As a result, Mr. Porter reported making \$700 more. The demonstration farms yielded, on average, two times as much as farms in the same localities where the demonstrations were not followed (Seevers & Graham, 2012). Other Extension professionals also used the demonstration method. The first home demonstration agents, who began their work around 1910, established measurable objectives that included improving home sanitation, eliminating contagious diseases, and encouraging thrift (Seevers & Graham, 2012).

1914 to 1976 – Operations, Activity, and Participation

The Smith-Lever Act was passed in 1914 establishing the Extension system (Association of Public and Land-Grant Universities [APLU], 2012). In this legislation, Congress wanted “a full and detailed report of its operations” – not a report of its impact. It would be a long while before Extension created policies to make impact reporting mandatory; however, some people within the system were beginning to advocate for it. In 1971, Boone, Dolan, and Shearon wrote:

A major challenge confronting the educational institution is that of determining the impact of its planned programming efforts in effecting desired behavioral changes in its publics. To achieve this end every subsystem within the organization must perfect and utilize tested and valid methods for pinpointing evidences in relation to their program objectives and for collecting such evidences. (p. 18)

1977 to 1989 – Accountability

In their 2008 article, Rennekamp and Engle offered a quote illustrating the new attitudes that prevailed in the 1980s, which brought about a new era for program evaluation in Extension (Rennekamp & Engle, 2008, p. 22):

No longer can it be taken for granted that programs are good and appropriate. Extension is operating in a new environment—an environment of more open criticism and demands for justification of actions. All publicly funded agencies, not just Extension, are vulnerable in these times. In an era of accountability, Extension must be able to defend who and how people are being served. It also needs to document that programs are achieving positive results (Andrews, 1983, p. 8).

The important legislation in this time period was Section 1459 of the Food and Agriculture Act, passed in 1977. It “ushered in a new era of evaluation activity” (Seevers, Graham, & Conklin, 2007, p. 178). The Secretary of Agriculture was directed to transmit to Congress “an evaluation of the economic and social consequences of...programs” (U.S. Department of Agriculture, 1977, Section 1459). A 1980 report by the Secretary of Agriculture found Extension’s accountability work to be “short on impacts” and long on documenting participation and activity levels of programs (Warner & Christenson, 1984, p. 17). In 1981, an assessment of Extension issued by the U.S. General Accounting Office, cited a need for improved evaluation and accountability. Also, the Extension Committee on Organization and Policy (ECOP) appointed a national task force that called for system-wide accomplishment data and evaluation of high priority programs, as well as a national staff for planning and accountability (National Task Force, 1981; Rennekamp & Engle, 2008).

During this time period, there were efforts to create a national reporting system. Bennett, in a 1996 article, described various attempts to create a national reporting system:

1. The Extension Management Information System (EMIS), launched in 1970 and discontinued in 1981, collected staff time, program activities, and clientele participation. State Extension staff largely did not use it, and the statistics proved useless.
2. From 1982 to 1991, the Narrative Accomplishment Reporting System (NARS) de-emphasized quantitative indicators and encouraged states to report their program plans and outcomes from their own perspectives. These reports provided anecdotal information; however, the data could not be aggregated across institutions or programs.
3. The system used from 1992 to 1997 was called the Program Planning and Reporting System (PPARS) which focused on the information needs of the Cooperative State Research, Education, and Extension Service (CSREES) rather than on the needs of states. The data were only partially complete and were often inconsistent across states.

Evaluation methods in the 1980s were inspired by the social science academic area associated with Extension work, such as community development, rural sociology, and agricultural economics. Influential writers from these academic areas included Benjamin Bloom, Malcolm Knowles, Everett Rogers, Urie Bronfenbrenner, Claude Bennett, and others (Rennekamp & Engle, 2008). The majority (13) of 21 articles with the words *evaluate*, *evaluation*, or *evaluating* in the title, published in the *Journal of Extension* from 1965 to 1990, focused on how or why Extension, as an organization, should evaluate itself. Some article titles from this time period included *Critique of Evaluation* (Alexander, 1965), *A Practical Look at Evaluation* (Logsdon, 1975), *Evaluation: Extension Needs to Get Serious About It* (Pigg, 1980), and *Making Evaluation Manageable* (McKenna, 1981).

1990 to 2005 – Measureable Outcomes

The move from accountability reporting to outcomes measurement began at the state level around 1990. For example, in 1992, Michigan State University produced a report recommending that the university establish a system for measuring, monitoring, and evaluating outreach (Ilvento, 1997; Michigan State University, 1993). At the same time, evaluation also changed on the federal level when a national task force on accountability and evaluation called for system-wide accomplishment data. In response to this call, the Government Performance and Results Act (GPRA; Office of Management and Budget, 1993) required strategic plans and a numerical assessment of outcomes for measurement of performance of governmental organizations (Rennekamp & Engle, 2008). States also implemented performance-based budgeting initiatives similar to GPRA. For example, Florida Extension instituted an annual measurement of customer

satisfaction (Terry & Israel, 2004). In 1998, the Agricultural Research, Extension and Education Reform Act of 1998 (AREERA) was passed (U.S. Department of Agriculture, 1998a). The AREERA required state Extension programs to submit plans of work and reports of results documenting how formula-funded programs (Smith-Lever Act 3(b) & 3(c)) were achieving outcomes towards five national goals.

During this time period, Extension organizations began to hire evaluation specialists. According to Lambur (2008), their responsibilities included:

- Training others to conduct evaluations,
- Giving technical assistance,
- Being a coach or mentor to program teams,
- Coordinating and reporting on the state plan of work,
- Developing program developers, and
- Conducting evaluations.

These responsibilities describe evaluation capacity builders, rather than evaluation specialists who conduct evaluations (Guion, Boyd, & Rennekamp, 2007; Rennekamp & Arnold, 2009). Technical assistance was cited by evaluators as their most important job responsibility (Guion et al., 2007).

Notable Extension evaluators during this time period were Claude Bennett, Richard Krueger, Michael Patton, Nancy Kiernan, Ellen Taylor-Powell, and Kay Rockwell. From 1991 to 2005, 39 articles with *evaluation*, *evaluate*, or *evaluating* in the title were published in the *Journal of Extension*. The majority of articles published during this time period were, as in the past, about evaluation methods (17), followed closely by articles about evaluation in specific program areas (15). Evaluation methods discussed during this time period included sampling, focus groups, and questionnaire development.

2006 to 2015 – Multistate, Regional, and National Evaluation Collaboration

In reviewing evaluation studies published in the *Journal of Extension* from 1998 to 2007, Duttweiler (2008) concluded that there was evidence of increased state, multicounty or instate regions, and multistate evaluation occurring in Extension. The majority were statewide studies:

- Statewide studies = 52%,
- Restricted venues = 32%,
- Multicounty or instate regions = 10%, and
- Multistate = 6% (Duttweiler, 2008).

A number of national program areas in the National Institute of Food and Agriculture (NIFA) have begun efforts to collect multistate and national data. Examples of these efforts will be discussed later in this paper and include the Expanded Food and Nutrition Education Program (EFNEP), 4-H Youth Development, the Integrated Pest Management program, and Community Resource Economic Development (CRED).

Although in the final time period (2006 to 2014), the majority of articles with *evaluation*, *evaluate*, or *evaluating* in the title were still on methods (24) and evaluation in specific program areas (20), a new category had emerged – evaluation capacity (8). These articles examined ways that Extension evaluators could strengthen evaluation skills of other professionals in the system. Articles about national and multistate programs also began to appear in this time period, such as *Identifying 4-H Camping Outcomes Using a Standardized Evaluation Process Across Multiple 4-H Educational Centers* (Garst & Bruce, 2003), *Designing a Regional System of Social Indicators to Evaluate Nonpoint Source Water Projects* (Prokopy et al., 2009), and *Using Common Evaluation Instruments Across Multi-State Community Programs: A Pilot Study* (Payne & McDonald, 2012). Finally, during those last eight years, the number of evaluation articles grew to 55, almost three times the number in the first, but longer, time period of 1965 to 1990.

Location of Evaluation Within the Structure of Extension

The location of the evaluation function within the structure of Extension makes a difference in its focus. According to Lambur (2008), “What evaluators do is driven by the philosophy or approach of evaluation in the organization” (p. 48). Lambur (2008) provides four possible structural choices for the location of evaluation in Extension:

- (1) A separate evaluation unit,
- (2) Within an administrative unit,
- (3) Within a program area, or
- (4) Within an academic department or school.

Extension evaluators interviewed by Lambur (2008) identified advantages and disadvantages to each structure. If evaluation is located in an administrative unit, evaluation is more likely to be focused on the needs of the organization and on accountability rather than program impact. If evaluation is placed within a program area, the evaluator may better understand the information needs of that unit and tailor training to its members; however, these evaluators may interject more bias into evaluations. Extension professionals, placed within academic units may be less focused on accountability and may draw upon the expertise of applied researchers knowledgeable about related assessments. Extension evaluators in this study concluded that the evaluation function should be associated with a high administrative level in the organization, but

not necessarily located in the administrative department. Locating the evaluation function in program areas seemed to be the option preferred by Extension evaluators (Lambur, 2008).

Evaluation Models in Extension

In 1994, the USDA Planning and Accountability Unit conducted a series of workshops across the country on new performance mandates that included a new input/output/outcome model called a logic model based on the Hierarchy of Evidence model developed by Claude Bennett (1976). In 1995, Claude Bennett and Kay Rockwell at the University of Nebraska Extension published the Targeting Outcomes of Programs model (TOP) (Rockwell & Bennett, 2004). In this model, social, economic, and environmental (SEE) conditions, and knowledge, attitude, skill, and aspirations (KASA) outcomes, plus reaction, participation, activities, and resources are compared for program development and performance.

Ellen Taylor-Powell, who was an evaluation specialist with the University of Wisconsin – Extension, “transformed the logic model from an evaluation framework to a comprehensive program development model” (Taylor-Powell & Boyd, 2008, p. 64). In 1997, the logic model became the basis for the new planning and reporting system at the University of Wisconsin – Extension. The logic model framework was also used to develop a national nutrition education reporting system (Medeiros et al., 2005) and later was available as a public-access, online self-instruction module on the University of Wisconsin – Extension website (Taylor-Powell, Jones, & Henert, 2003). In 2007, CSREES, which is now known as NIFA, adopted a program logic model for each state’s annual plan of work and report of accomplishments (Seevers et al., 2007).

Evaluation Capacity Building in Extension

As long as 45 years ago, Extension professionals asked for evaluation capacity building in Extension:

Since the major responsibility for program evaluation rests with change agents at the operational level, they must be thoroughly equipped with and skilled in the use of evaluative tools that will facilitate continuous evaluation of program outputs and inputs in relation to teaching learner level objectives and to relate these findings to the macro objectives of their long-term programs (Boone et al., 1971, p. 15).

In an article entitled, *A Critique of Evaluation*, Alexander (1965) advocated for 12 levels of evaluation capacity-building trainings as seen in Table 1.

Table 1. Levels of Evaluation Capacity Training (Alexander, 1965)

Levels	Focus of Evaluation
1, 2	Evaluations used by anyone who teaches
3, 4, 5	Evaluations used by individuals or panels with elementary skills
6, 7, 8, 9	Evaluations jointly planned with Extension specialists or similarly qualified researchers
10, 11, 12	Evaluations that include more complex research exercises and require a high degree of skill

Today, Extension evaluators still use a variety of methods to conduct evaluation, but these methods tend to be less rigorous than those used in applied social science studies. In reviewing 675 evaluation studies published in the *Journal of Extension* from 1998 to 2007, Duttweiler (2008) noted the methods mix used in Extension was not very rich. Almost two-thirds of the evaluation studies were single-point-in-time standard survey methodology; 10% used pre- and post-testing; 9% used focus groups; and 8% used qualitative interviews (Duttweiler, 2008).

The Role of Extension Knowledge Areas and Associations

Each of the four major areas of Extension work – 4-H Youth Development, Family and Consumer Science, Agriculture and Natural Resources, and Community Resource and Economic Development – has contributed in distinct ways to the evaluation efforts of Extension. Historically speaking, the agriculture and natural resources area, through its demonstration farm program and other commodity-based grants, has been collecting evaluation data for the longest period of time. 4-H Youth Development, as well as Family and Consumer Science, have improved their evaluation efforts in response to major grant-funded initiatives designed to reach low-resource populations such as Children, Youth, and Families at Risk (CYFAR) Program and Expanded Food and Nutrition Education Program (EFNEP). Community resource and economic development units have entered the Extension evaluation arena more recently and are now contributing greatly to an understanding of how to develop collaborative indicators. In this section, the contribution of each of the program areas to evaluation is described.

4-H Youth Development (4HYD)

In the late 1990s, NIFA's National Children, Youth, and Families at Risk (CYFAR) Program became a pioneer in multistate evaluation of youth and family programs. Its Internet site (<http://www.cyfernet.org> initially and <https://cyfernetsearch.org> currently) provided technical assistance in evaluation to youth program professionals. The 4-H Youth Development program area has been active in designing and implementing evaluation methodologies and tools for its major initiatives. Within the last few years, the 4-H National Headquarters and National 4-H Council have developed 4-H logic models and common measures for 4-H programming. The 4-H Common Measures will be used by 4-H professionals to document if programs are developing responsible citizens, leading healthy and productive lives, and discovering critical

science-focused innovations (National 4-H Council, n.d.a). The 4-H National Headquarters has also developed online databases for collecting data nationwide. To encourage states to follow scientifically acceptable protocols of evaluation, the National 4-H Council developed Programs of Distinction which are peer-reviewed programs that reflect the high quality of Extension youth development programs from across the U.S. and territories (National 4-H Council, n.d.b). The *Journal of Youth Development* (<http://www.nae4ha.com/journal-of-youth-development>) was created to publish Extension articles and evaluation studies in youth development and 4-H.

The National 4-H Council participated in the 4-H Study of Positive Youth Development conducted by Tufts University (<http://ase.tufts.edu/iaryd/partners.htm>). This is a longitudinal study to assess across adolescence the key characteristics of positive youth development, known as the *Five C's* of positive development – competence, confidence, character, connection, and caring (or compassion) (Lerner, Lerner, & Colleagues, 2013). The study distinguished between youth programs that incorporate *Five C's* or positive youth development (PYD) and those who do not (YD). It also evaluated the impact of key ecological assets – found in families, schools, and community-based programs such as 4-H. The study found that factors representing the *Five C's* of PYD lead to a 6th C – Contribution. It also found that both PYD and participation in YD programs independently relate to contribution; however, over the long term, PYD predicts both community contributions and lessens the likelihood of risk/problem behaviors. Analysis is still ongoing.

Family and Consumer Science (FCS)

According to the mission statement on the website of The National Extension Association of Family and Consumer Sciences (NEAFCS; <http://www.neafcs.org/about-neafcs>), members of the organization educate and improve the quality of life for individuals, families, and communities by providing education in:

- Food preparation, food safety, and nutrition;
- Financial management;
- Healthy lifestyles;
- Home and work environment and safety; and
- Relationship and parenting skills.

In Extension, family and consumer science professionals have developed evaluation studies, particularly with nutrition, wellness, parenting education, and other family relations programs. For example, the multistate team that developed the *Just In Time Parenting* program (http://www.parentinginfo.org/team_leadership.php) also developed an extensive online evaluation system to measure the value of program newsletters to consumers. Specific Extension journals also publish evaluation studies related to family and consumer science topics, including

Journal of the National Extension Association of Family and Consumer Sciences (<http://www.neafcs.org/journal-of-neafcs>) and the *Forum for Family and Consumer Science Issues* (<http://ncsu.edu/ffci/index.php>). Some evaluation topics in these journals include studies of afterschool programming, child care providers, financial literacy programs, literacy audiences, and networks and collaborations.

One major program within the family and consumer science area in Extension is the Expanded Food and Nutrition Education Program (EFNEP), which began in 1969 (U.S. Department of Agriculture, n.d.b). It has emerged as an early pioneer in Extension evaluation. Initially, sample data were collected from some counties and used to create national reports. In the mid-1980s, data collection expanded to all program participants, and in 1993, the Evaluation/Reporting System (ERS) was released (U.S. Department of Agriculture, 1998b). ERS allowed individual participant data to be entered electronically and aggregated at the state/territory level and at the federal level. The reporting system included a 15-item participant behavior checklist (later trimmed to 10) and a 24-hour diet recall. Youth program impact was measured through four standard indicators. This was significant because EFNEP could then make statements about positive changes as a result of participation in the program which helped EFNEP maintain and increase its funding levels.

To incorporate technological advances, ERS has been updated every 5 to 6 years. In 2012, NIFA collaborated with Clemson University to release the Web-based Nutrition Education Evaluation and Reporting System (WebNEERS; U.S. Department of Agriculture, n.d.f). This system allowed data to be entered securely from any computer and also incorporated new evaluation elements, including standardized youth evaluation tools for school grade-specific groups of participants. It also captured EFNEP-related activities at the community, organizational, policy, and societal levels, which allowed EFNEP to show impact related to Policy Systems and Environmental Change (PSEs).

In 2011, Scholl and Paster at Penn State University created an online searchable database of research studies containing more than 350 citations using EFNEP data. One of the articles in that database is about a longitudinal study by Wardlaw and Baker (2012) that found participants maintained most of their improved behaviors for up to three years. Other studies demonstrated the public value of EFNEP, including Lambur and Cox (1996), who reported that “for every \$1.00 invested in the program, \$10.64 in benefits from reduced health care costs can be expected” (p. 2). A study by Dollahite, Kenkel, and Thompson (2008) concluded “food and nutrition behavior changes resulting from the program are likely to improve future health and reduce health care costs” (p. 1).

Community Resource and Economic Development (CRED)

Prior to 2006, community development professionals in Extension shared programming ideas primarily through the Community Development Society (CDS). With its practitioner focus, the CDS offered opportunities for learning about program innovation, yet relatively little content related to educational evaluation. The first national CRED program conference, held in 2002, led to a consensus that an organization focused on Extension community development education and affiliated with the Joint Council of Extension Professionals (JCEP) was needed to strengthen the quality of CRED programming across the country. The National Association of Community Development Extension Professionals (NACDEP) was created and held its first conference in 2005 (NACDEP, 2014).

Since that time, both NACDEP and CDS have provided opportunities for sharing programming, as well as program evaluation innovation. In 2006, program leaders in the North Central Region created four distinct program logic models for different types of community development programming: community economic development, community leadership development, organizational development, and participatory community planning (North Central Regional Center for Rural Development [NCRCRD], 2010). The logic models were instrumental in supporting state efforts to develop strategies for measuring program outcomes and impacts.

With these logic models in hand, and in recognition of the need to share program impacts and sustain programming, state CRED program leaders identified and began collecting, reporting, and aggregating data on a few key community development impact indicators that cut across the four program logic models. As of 2014, CRED indicators were being collected in three of the five Extension regions of the country. Some of the common indicators across regions include the dollar value of grants leveraged or generated by communities, the number of jobs created or retained, and/or the number of program participants who reported new leadership roles. The indicators vary somewhat depending on the nature of Extension community development programming in each region (National CRED Indicators Workgroup, 2014). For example, the North Central states report data on the number of community plans adopted or implemented, while the Southern region reports on the number of collaborative activities initiated by organizations or communities (National CRED Indicators Workgroup, 2014). Challenges remain for creating systematic methods to collect data on these indicators, yet the process has elevated the level of attention given to measurement of community development program outcomes and impacts.

Community leadership development has been a particularly rich arena for multistate research and evaluation activity. For example, research on Missouri's Experience in Community Enterprise and Leadership (EXCEL) program found significant program effects for a range of individual-level factors, such as shared future and purpose, or community commitment (Pigg, 2001). In the

EXCEL program, the connection between these strong individual outcomes and community-level impacts was less clear. The need to better understand community-level impacts led to several research efforts, including a large multistate study funded by the USDA's National Research Initiative (NRI; Apaliyah, Martin, Gasteyer, Keating, & Pigg, 2012; Pigg, Gasteyer, Martin, Apaliyah, & Keating, 2015). The NRI study and others have often employed the Community Capitals Framework as a tool for inquiry (Emery, Fernandez, Gutierrez-Montes, & Flora, 2007; Emery & Flora, 2006; Lachapelle, 2011; Rasmussen, Armstrong, & Chazdon, 2011).

A hallmark of much of the most impactful community development work has been engagement between Extension professionals and their communities. The Horizons program, a deeply engaged community leadership program funded by the Northwest Area Foundation and delivered by Extension in nine states, spawned an innovative and highly engaged approach to impact evaluation known as Ripple Effect Mapping (REM) (Chazdon & Paine, 2014; Kollack, Flage, Chazdon, Paine, & Higgins, 2012). Since the Horizons program, REM has been conducted to evaluate Extension and other community development programs across the country. One notable example is the Turning the Tide on Poverty Program led by the Southern Rural Development Center (SRDC, 2015).

Agriculture and Natural Resources (ANR)

Recent studies focusing on ANR program evaluation suggest that much still needs to be done to improve evaluation. In a study of natural resource Extension professionals, Morford, Kozak, Suvedi, and Innes (2006) found that 79% of the professionals conducted some kind of evaluation. Further examination of results indicated that these evaluations were at the lower levels of Bennett's hierarchy (e.g., inputs, activities, participation, reactions). The majority (51%) used reactions, while the minority (32%) measured KASA during the program. Additionally, only 6% conducted a follow-up, only 8% reported measuring behavior change, and a scant 1% measured long-term outcomes (Morford et al., 2006). Morford et al. (2006) also identified several barriers to carrying out systematic evaluation of natural resource Extension programs: lack of skills, lack of time, lack of funding, methodological difficulties, organizational structure and culture, lack of rewards, and skepticism regarding the value of evaluation. Availability of evaluation specialists also influenced the level of evaluation carried out by natural resource educators – Extension county-level professionals who had evaluation specialists in their states conducted higher levels of evaluation (KASA and beyond) than those who did not (Morford et al., 2006). In a related study, Ghimire and Martin (2013) found that ANR professionals indicated their evaluation knowledge and skills were low compared to FCS, 4-H, and CRED professionals, and they expressed a need for training or professional development in evaluation.

In recent years, a number of changes have occurred relative to the evaluation of ANR programs. Extension professionals are using many innovative ways to evaluate programs, especially using computer technology. Examples include implementing stakeholder analyses, involving stakeholders in planning and designing evaluations (Layman, Doll, & Peters, 2013), linking evaluation questions to program outcomes (Radhakrishna & Relado, 2009), conducting cost-benefit analyses of programs (O'Neill & Richardson, 1999), and assessing implementation fidelity. Articles published in the *Journal of Extension* in the last 10 years point to the strides made in assessing ANR programs. For example, advances in information technology have enabled sharing of evaluation resources with all Extension professionals, reducing duplication of evaluation efforts and increasing validation of others who work in Extension program evaluation. Areas of evaluation requiring particular attention include rigorous assessments documenting long-term impacts of ANR, especially in terms of costs and benefits, revenue generation, job creation, and ultimately, improved quality of life.

The Role of Affiliated Organizations in Extension Evaluation

The Cooperative Extension system is supported by a number of organizations and programs that are formally or informally connected to its work. Some of these organizations, such as the National Institute of Food Agriculture and eXtension, are strongly affiliated and fundamental to the functioning of Extension. Others are separate organizations with less formal ties to Extension, such as the American Evaluation Association and certain journals that publish articles of interest to Extension professionals. In this section, the support given to Extension evaluation efforts by each of these organizations is explained.

National Institute of Food and Agriculture (NIFA)

NIFA administers funds to support Extension through Extension Programs for 1890 Institutions, the Renewable Resources Extension Act, and the Smith-Lever Act. These capacity-building grants are based on statutory formulas (U.S. Department of Agriculture, n.d.a). Capacity funds are highly scrutinized, requiring strong evaluation data. NIFA provides programmatic and fiscal oversight and accountability of capacity-building grants through the collection and review of program plans and evaluation and reporting data. Extension Programs for 1890 Institutions and Smith-Lever 3(b) and 3(c) other Extension activities are reported through the Plan of Work (POW; U.S. Department of Agriculture, n.d.c). Outcomes and impacts are documented in the Annual Report of Accomplishments submitted annually. Renewable Resources Extension Act programs are reported through NIFA's Research, Extension, and Education Online Reporting Tool (REEReport; U.S. Department of Agriculture, n.d.d). Extension programs funded through Smith-Lever 3(d) have their own reporting mechanisms. NIFA National Program Leaders review projects/programs relevant to their area of expertise, make sure they are appropriate, and ensure that they achieve results. The Planning, Accountability, and Reporting Staff use

evaluation results to respond to budget inquiries, congressional questions, and reporting requirements from the Office of Management and Budget. NIFA also uses program evaluation data to justify the need for continued and increased funding. Communication staff design National Impact Reports and highlight Extension work through blogs, news releases, etc.; but NIFA also relies on Land-Grant Universities and other organizations, such as the Association of Public and Land-Grant Universities (<http://www.aplu.org/>), to advocate for programs and demonstrate the value of Extension.

In 2004, the Program Assessment Rating Tool (PART), a reporting requirement of President George W. Bush's ExpectMore.gov (n.d.) initiative, led NIFA to develop an external panel review process. NIFA's research, education, and Extension programs were evaluated as portfolios of work within the framework of their strategic plan (U.S. Department of Agriculture, n.d.e). This highlighted the value of NIFA programs, but also suggested the need for greater rigor in data collection and reporting. In 2010, a panel of experts reviewed the POW process and identified a need for national program outcome and impact indicators (Sellers, 2012). The panel concluded using outcome measures for capacity (formerly formula grants) reporting would "help OMB and Congress see the continued value of that funding" (Sellers, 2012, slide 5). In 2011, NIFA convened teams of experts and National Program Leaders to develop national outcomes and indicators for use in progress reports as early as 2012 (Sellers, 2012). This standardization of outcomes and impacts helped strengthen Extension reporting. These national outcomes and indicators can be found at <http://nifa.usda.gov/resource/pow-national-outcomes-and-indicators>. National 4-H indicators can be found at <http://nifa.usda.gov/resource/national-4-h-youth-development-outcomes-indicators>.

ECOP Excellence in Extension Database

The ECOP Excellence in Extension database was initially established to collect output/accountability data on funding sources, human resources factors, and direct contacts. The data were intended to be used primarily by Extension directors and their staffs to compare their unit with other units in their region or nationally. Currently, the database contributes impact statements for Extension education on the new Land-Grant University Impact Internet site. This site, which is growing rapidly, is open to the public and can be accessed at <http://landgrantimpacts.tamu.edu/>.

eXtension Evaluation Community of Practice

The web-based eXtension community of practice is an interactive learning environment that delivers research knowledge from Extension units of Land-Grant Universities to the public. Initially, evaluators participated as consultants to subject area communities of practice to design ways to measure the impact on learners who visited the site. Some evaluators also studied the

process of forming an online community of practice (Sellers, Crocker, Nichols, Kirby, & Brintnall-Peterson, 2009). Later, eXtension evaluators created an Evaluation Community of Practice to provide evaluation technical assistance to all Extension professionals through an Extension Evaluation Facebook page and a blog where articles are posted and discussed.

Extension Education Evaluation Topical Interest Group (EEE-TIG)

According to its website (www.eval.org), the American Evaluation Association (AEA) “is an international professional association of evaluators devoted to the application and exploration of program evaluation, personnel evaluation, technology, and many other forms of evaluation” (American Evaluation Association, n.d.a, para. 1). Members of AEA align with topical interest groups which are organized around specialty interests of evaluators (American Evaluation Association, n.d.c). The Extension Education Evaluation Topical Interest Group (EEE-TIG) has been the professional home for Extension evaluators for over 25 years (American Evaluation Association, n.d.b). At AEA’s annual conference, Extension evaluators organize paper sessions, demonstrations, round tables, and panels that feature Extension’s evaluation work. These workshops are attended by evaluators outside of Extension, too. EEE-TIG also serves as a network for evaluators to share information with each other throughout the year.

Journals

Journals that regularly publish Extension evaluations include *Journal of Extension*, *Journal of Human Sciences and Extension*, *Journal of Agricultural Extension*, *Journal of Youth Development*, *The Forum for Family and Consumer Science Issues*, as well as other journals associated with all of the Extension professional associations. Currently, *Journal of Extension* best reflects Extension’s historic and current efforts in evaluation. Duttweiler (2008) categorized studies published in the *Journal of Extension* according to the following criteria: (1) needs assessment, (2) program documentation, (3) program fidelity, (4) program improvement, and (5) evidence of effectiveness. Forty-eight states were represented in the study; however, two institutions accounted for 29% of all articles selected (Duttweiler, 2008). Ten institutions accounted for nearly 50% of all articles selected. The typical evaluation study was situated in either youth development or agriculture and food systems program areas, had the dual purpose of outcome documentation and educational process improvement, was statewide in scope, and employed simple survey methodology.

Implications and Recommendations

After reviewing Extension’s program evaluation journey, it becomes clear that we could repeat our mistakes unless we learn from the lessons of the past. We have known for a long time that it is not sufficient to report only statistics on activities conducted and the number of people reached. Even the results demonstrations conducted since the early days of agriculture education

are not enough evidence of program impact because they fail to illustrate an effect on people and communities. An emerging focus within Extension is the impact of our work in creating public value – the value to those who do not participate in our programs (Kalambokidis, 2004). Before we can document Extension’s public value, we must continue to produce strong research on Extension’s private value.

Based on our study of Extension evaluation history, we offer suggestions for making Extension’s future evaluation even more successful.

Incorporate Systems-Based Theories into Extension Work

Rennekamp and Arnold (2009), in their 20-year review of Extension evaluation, called for new action. They said Extension professionals should think about program theory more and about filling out forms less (Rennekamp & Arnold, 2009). They asked Extension professionals to put logic into logic models. Patton (2008) proposed that the logic model may not work in the simple, linear, direct cause-and-effect chain that we envision and that systems-based theories of change may be needed. Moving from logic to systems-based approaches requires collaboration with academic faculty who can share theories of change from specific fields of study that impact Extension work. It means finding validated assessments to measure change, rather than using our tried and true tools. *Umbrella models* as proposed by Arnold (2015) have the potential to connect research to Extension practice if they are included as a part of program planning and capacity building. They could also be the basis for multi-state evaluation studies that support the impact of Extension regionally and nationally. According to contemporary Extension evaluation scholars, if we fail to incorporate system-based theories of change into Extension work, we will fail to prove to our supporters and critics that Extension is making a difference.

Often our goal in evaluation is to give funders the information they want to maintain the programs and staff that we have, even if evidence suggests that our programs are ineffective. This was true 50 years ago when Alexander (1965) wrote, “Many, perhaps most Extension people, who want their program evaluated, make an unconscious assumption that evaluation findings will be favorable” (p. 206). Over the years, organizational learning has taken a back seat because evaluation was used to counter the criticism levied against Extension that it was not articulating impacts. The evaluation of organizational learning supports Extension work in the following ways: (1) it helps to establish program direction, (2) it improves existing educational practice, (3) it informs public policy, (4) it establishes or sustains program support, (5) it offers a basis for resource allocation decisions, (6) it influences relationships with stakeholders, and (7) it strengthens evaluation practice itself (Rennekamp & Arnold, 2009).

Provide Appropriate Resources for Conducting Multistate and National Evaluations Using Appropriate and Rigorous Methodologies

The call to evaluate Extension programs on a multistate, regional, and/or national level, to create a fuller picture of the impacts of Extension work, has been heard for many years. There are, however, many competing realities and needs that keep Extension professionals focused on their states. In instances where multistate evaluation is conducted, it usually reflects the directives of the funding agent or occurs because program organizers or evaluators agree to work together. Franz and Townson (2008) listed organizational factors in Extension that may make multistate and national evaluations become a reality. These factors include (1) directing resources to hire external evaluators when the occasion demands; (2) enhancing understanding of and ability to work within complicated organizational functions at each level – community, county, regional, state, multistate, and national; and (3) convincing Extension professionals who have a high degree of autonomy to collaborate in planning, implementing, and evaluating their educational programming.

Stop Apologizing

Throughout the history of Extension, evaluators and other professionals have written about evaluation methods and tools used in Extension programs; however, these methods were not always highly sophisticated or rigorous (Braverman & Arnold, 2008; Duttweiler, 2008). In 2002, the White House encouraged all federal agencies to support evidence-based programs and to discontinue programs without evidence of effectiveness (Office of Management and Budget, 2002). Today, there are registries available that list so-called evidence-based programs – randomized controlled trials (RCTs) and/or evidence of sustained impact and replication (Coalition for Evidence-Based Policy, 2014; Elliot, 2013; Milhalic & Elliot, 2015). One such registry is *Blueprints for Healthy Youth Development* hosted at the University of Colorado – Boulder (<http://www.blueprintsprograms.com>). Extension has begun to adopt non-Extension evidence-based programs. The *PROSPER* Project (<http://www.prosper.ppsi.iastate.edu>), directed by Iowa State University Extension, is one example. This Extension and research program allows communities to choose from a menu of evidence-based substance abuse prevention programs.

Patton (2008) encouraged Extension evaluators to stop apologizing for not using the so-called *gold standard of evaluation*, and instead adopt the standard of appropriateness. Patton (2008) argues that instead of apologizing, Extension evaluators should explain how and why the methods used are appropriate for their purpose, resources, timeline, and intended use. That does not mean, however, that Extension evaluators should make excuses or avoid rigor. Nor should they apologize for using evidence-based programs that others have developed.

Measure Social Capital Creation

Across all the areas of programming, there is a consistent theme that Extension builds relationships in organizations and communities, and that these relationships lead to important accomplishments. Social capital is defined as the “features of social organization, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1993, p. 35). Extension has a long history of building social capital through the role of the county Extension professional. Yet, Extension also has a long history of not documenting to what this relationship building activity has led. The Ripple Effect Mapping approach described earlier is one tool that can be employed to document the chain of effects resulting from relationships built or strengthened by Extension professionals or programs. In addition, Social Network Analysis (Bartholomay, Chazdon, Marczak, & Walker, 2011; Fredericks & Durland, 2005) can be employed as a pre-post tool to document changes in personal or organizational networks over time.

Conclusion

The history of evaluation in Extension reflects the significant progress made over time in pursuit of good, purposeful, and useful program evaluations. Extension cannot abandon any of the ways we have conducted evaluation in the past. We must continue to collect statistics that show we use public and private funds appropriately; we must continue to use change theory and logic models to connect what we do with the outcomes of our work; and we must work together on multistate and national evaluation initiatives. Today, Extension faces the challenge of learning state-of-the-art digital tools, as well as using new and yet-to-be-developed methodologies. Extension evaluators must continue to innovate, collaborate, and incorporate the most appropriate methods for showing evidence of Extension’s good work and improving programs for the benefit of Extension’s clients.

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Allison Nichols, Ed.D., is an Extension Clinical Professor and Evaluation Specialist at West Virginia University Extension. Dr. Nichols provides training and technical assistance to Extension professionals at the state and county level.

Stephanie M. Blake, M.A., serves as the Program Coordinator for EFNEP at USDA-NIFA. She provides leadership and oversight to 1862 and 1890 Land-Grant Universities related to programming, evaluation, and reporting.

Scott Chazdon, Ph.D., is an Evaluation and Research Specialist with the Extension Center for Community Vitality at the University of Minnesota. Dr. Chazdon oversees program evaluation for the Center and conducts applied research activities on rural community development topics.

Rama Radhakrishna, Ph.D., is a professor and Extension Specialist in the Department of Agricultural Economics, Sociology and Education at Penn State and is currently serving as an Administrative Fellow in the Office of Research and Graduate Education.