Shifting from Technology Transfer to Learning Facilitation in Extension: An Empirical Analysis

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Extension has traditionally been recognized as a leader in delivering research-based information from universities and research centers to meet the needs of local farmers and their communities, often through a linear model commonly referred to as the transfer of technology (Cook et al., 2021). However, in certain contexts, such as the U.S. extension system, these activities may be organized differently or follow alternative approaches (Inwood et al., 2019; National Institute of Food and Agriculture, n.d.; National Research Council, 1996; North Carolina Cooperative Extension, 2019; Rafie et al., 2021). In many cases, this transfer of skills and knowledge is carried from experts or teacher (researchers, specialists, or program area leaders) to local county extension professionals to be disseminated to their respective communities (Jernigan et al., 2015). Timely and effective transfer of these skills and information can improve extension as an organization and improve the livelihood of stakeholders (Rafie et al., 2021).

For many reasons, linear extension has been criticized for its top-down approach, which focuses on the transfer of technology while neglecting client involvement and participation (Cahyono & Agunga, 2016; Klerkx, 2020). Critics have called for reforms in extension systems globally, particularly in developing nations, to make them more farmer-driven and accountable to farmers through new institutional arrangements (Barman & Kumar, 2012; Davis et al., 2018; Koutsouris, 2014; Ochieng et al., 2022, Wise, 2017). Addressing complex challenges cannot be effectively managed through a linear model. These challenges require more than traditional methods of technology transfer and advisory services (Davis, 2016; Norton & Alwang, 2020). Additionally, Cristóvão et al. (2012) emphasize the urgent need to reimagine extension services in today's rapidly changing and increasingly complex environment. Key concepts such as self-direction, empowerment, collaboration, and negotiation are critical, especially when engaging with farmers and other stakeholders on agricultural matters. Moving away from a top-down, technology-centric approach towards more collaborative extension systems calls for the adoption of new frameworks and organizational structures that involve a diverse range of actors (Yazdanpanah & Feyzabad, 2017).

Advocates call for an extension system that follows a group-based approach, fostering self-reliance and sustainability in the development process (Davis, 2016). This shift moves away from traditional methods, such as instructing and making decisions for farmers, toward a more facilitative role, where farmers are empowered to achieve their own goals with support from extension workers. For example, farmers now identify their needs independently, while the extension worker facilitates the process, ensuring support without influencing the outcomes (Omotesho et al., 2021). Indeed, the extension agent is now viewed as a facilitator rather than solely an expert or teacher (Belay & Abebaw, 2004). In the past, their primary role centered on transferring information and technology through teaching (Cook et al., 2021). In their new capacity, extension professionals are responsible for facilitating knowledge sharing among various stakeholders (Omotesho et al., 2021). Suvedi and Ghimire (2015) further note that the role of extension has evolved beyond technology transfer; it now emphasizes facilitation and shifts the focus from training to fostering learning and creativity (Fleming, 2010).

Facilitation involves assisting in the process of accomplishing something, or the act of guiding participants in creating, uncovering, and applying learning insights (BAEN, 2020). Facilitation is a tool often used in the education and professional worlds to help participants engage in learning in a way that encourages them to apply knowledge and skills (Thorpe, 2016). Thompson et al. (2006) describe the facilitator's main role as assisting individuals or groups in navigating the process of implementing changes in practice. Their unique contribution lies in utilizing group dynamics and facilitation skills to guide participants toward adopting new practices (Koutsouris, 2014). In sum, a facilitator has multidimensional roles to play.

Within extension, facilitation takes place in a variety of contexts and environments, such as during in-service trainings led by specialists/program area leaders (Gentry et al., 2017), by county extension professionals leading educational programs with citizens from the local communities they serve (Corp et al., 2013), and extension professionals leading advisory committee meetings in programmatic decision making (Scholl, 1989). This paradigm shifts highlights the critical role that facilitation skills play for extension professionals (Omotesho et al., 2021). However, despite the acknowledged need for effective facilitation skills amongst extension professionals, there remains a notable gap in the literature focused on identifying the needs of specific audiences. Ritchie et al. (2020) noted, “Although there is consensus that facilitators need a wide range of skills, few empirical studies have identified or described facilitation skills” (p. 2). Nevertheless, there are studies that have sought to better define the facilitation domain. For example, Farrington et al. (1998) argued that to act as facilitators, extension personnel need not only technical skills but also various social science skills.

Research associated with effective facilitation has generally tended to focus on in-person characteristics and skills (Thorpe, 2016). However, the COVID-19 pandemic resulted in a shift towards more diverse programming methods (including online); these trends may have the potential to impact the need for specialized and contemporary facilitation skills to meet the needs of stakeholders now and in the future (Isreal et al., 2021). This trend is particularly evident within extension-based programming and facilitation activities which were transitioned to online environments in response to health and safety directives (Comito et al., 2021) as well as the spread of information and communication technologies to facilitate extension programs in international contexts and the Global South (Lamm et al., 2021).

Despite the existing research and literature related to facilitation skills, including both in-person and online, there is a noteworthy gap in the literature specifically analyzing the facilitation needs of extension personnel in the new professional context in which programs and facilitation activities may be conducted either in-person or online (Eck et al., 2022). The entire extension process relies on extension personnel, who are critical to all extension activities. The effectiveness of these personnel often determines the success or failure of an extension program (Israel et al., 2021). Therefore, understanding facilitation competency perceptions and needs of extension personnel is an important area for further investigation.

Conceptual Framework

The current study was grounded in two primary theories: first, facilitation theory, stemming from Rogers's (1983) work emphasizing the student-centered approach to learning; and second, Knowles's (1980) adult learning theory. These frameworks were chosen with the fundamental idea that proficient facilitators enable learners to actively engage in the learning process (Burgess et al., 2020). Additionally, based on the study context, specifically extension personnel and their professional development, it is also important to acknowledge adult learners have unique characteristics which affect how and why they engage in the learning process (Knowles, 1980).

It is important to note, that for the purposes of the study and associated conceptual framework, a more inclusive definition of facilitation was adopted. Specifically, Harvey et al. (2002) proposed, "the facilitator role is about supporting people to change their practice" (p. 585). Additionally, "the role is about helping and enabling rather than telling or persuading" (p. 585), and "given the broad focus of the facilitation concept, a wide range of facilitator roles are possible, with corresponding skills and attributes needed to fulfil the role effectively" (p. 586). Therefore, within an extension context, the role of extension personnel as facilitator may be considered from a traditional educational perspective within non-formal learning environments (Heck et al., 2012), as well a more formal organizational

facilitation roles including the facilitation of activities such as needs assessments (Teuteberg & Cummins, 2017), strategic initiatives (Downey, 2022), and evaluations (Fox & Cater, 2011).

Facilitation Theory

Facilitation theory, or the theory of facilitative learning, considers the educator as a guide through the learning experience, not necessarily a content area expert providing one-way instruction (Rogers, 1983). Successful facilitation is dependent upon more than just the content knowledge of the facilitator. Facilitative teachers as those who see value in both the relationship with learners and the content being learned. The highest level of learning occurs when learners actively participate in setting goals, identifying and resolving their own challenges and charting their own path of action (Patterson, 1977).

Rogers (1977) identified three core conditions necessary for successful facilitation: (1) congruence, (2) unconditional positive regard and (3) empathy. Congruence implies the facilitator is genuine and authentic with learners. The second core condition is unconditional positive regard which means the facilitator should display attitudes of caring, prizing, accepting and valuing towards learners. Finally, empathy refers to the facilitator's ability to understand the experiences and feelings of the participants without judging or evaluating them.

Theory of Adult Learning

Malcolm Knowles (1980) is generally credited with the creation of the contemporary concept of adult learning theory, building upon previous scholarship (Lindeman, 1926; Dewey, 1938). Knowles (1980) identified four key assumptions about adult learners related to (1) self-concept, (2) experience, (3) readiness to learn, and (4) orientation to learning; later adding a fifth and sixth assumptions regarding (5) motivation and the (6) learner's need to know (Knowles, 1984). Self-concept recognizes adults as being self-directed rather than more dependent such as youth learners. Second, as a person matures, they gain more experiences which become resources for learning. Third, readiness to learn, assumes as a person matures, their readiness to learn becomes oriented increasingly to the developmental tasks of social roles. A person's time perspective changes from one of postponed application of knowledge to immediacy of application. This causes the orientation toward learning to shift from subject-centeredness to problem centeredness. Fifth, as a person matures, their motivation to learn is internal rather than external (Knowles, 1984). Lastly, before an adult decides to engage in a learning experience, they must know why they need to know the information or skills they are setting out to learn. Previous research has proposed, "Agricultural extension should institute instructional design that features demonstrations,

experiential learning, and sharing of fellow producer experiences to help bolster adult learning theory principles" (Velardi et al., 2020, p. 3).

Integration of Facilitation Theory & Adult Learning Theory

By integrating the principles of facilitation theory and adult learning theory, the intent of the present study is to propose a framework which links the underlying facilitation skill development needs of extension personnel with an appropriate adult learning centered program to support such skill development. Specifically, the present study uses Rogers (1983) facilitation theory as a heuristic lens through which to consider a discrete set of facilitation competencies proposed by Ritchie et al. (2020). Furthermore, the facilitation competencies are examined relative to their practical development potential according to the adult learning theory criteria proposed by Knowles (1984), including (1) learner's need to know, (2) self-concept, (3) experience, (4) readiness to learn, (5) orientation to learning and (6) motivation.

Purpose & Research Objectives

The purpose of this study was to examine University of Georgia Extension Leadership Team (ELT) members' insights regarding perceived importance and skill level related to a discrete set of facilitation competency items. The study was driven by the following research objectives:

1. Determine the self-perceived level of importance that University of Georgia ELT members place upon selected facilitation competencies.
2. Determine the University of Georgia ELT members' perceived level of skill of Georgia Extension personnel regarding selected facilitation competencies.
3. Determine the professional development needs of University of Georgia Extension personnel.

Methodology

To achieve the objectives of this study, a quantitative descriptive research design was used. Data for this study were collected from members of the University of Georgia Extension organization.

Study Participants

The 19 survey respondents were representatives from the state's ELT and were selected to participate as experts within the organization. The team is comprised of general organization administrators as well as program area leaders for Agricultural and Natural Resources (ANR), 4-H and Youth Development, and Family and Consumer Sciences (FACS). In Georgia, Extension is divided into four geographical districts within the state – Northeast, Northwest, Southeast and

Southwest. Representatives from all four districts were included in the team. Respondents included 6 males and 13 females and served in positions with titles such as: Associate Dean for Extension, Director of Extension County Operations, Assistant Dean for Extension, FACS Associate Dean for Extension and Outreach, State 4-H Leader, District Extension Director, and Program Development Coordinator.

Instrument Development & Data Collection

The survey was administered using the Qualtrics online survey tool in conjunction with the Tailored Design Method (Dillman et al., 2014). To increase survey response rate, participants were sent a pre-notice message before being invited to respond to the survey. Participants received the official invitation to respond to the survey three days after the pre-notice was sent. Participants had the opportunity to respond to the instrument during a two-week window. 19 of the 21 members of the ELT responded to the instrument, giving a 90.5% response rate.

Respondents were asked to identify their role within the organization along with other demographic data. To address the research questions, the instrument included a list of 22 facilitation competencies identified and described in the article *From Novice to Expert: A Qualitative Study of Implementation Facilitation Skills* (Ritchie et al., 2020). Examples of competencies included: stakeholder engagement, political skills (such as assessing, understanding, navigating and leveraging the political dynamics of the setting), communication skills, leading/managing team processes and helping integrate the program into other programs/services.

Following the Borich (1980) needs assessment model, the instrument asked participants to identify how important each competency was and give their perceived importance of that competency for Georgia extension personnel. The Borich model was deemed appropriate based on the extensive application of the approach within the literature, such as determining training needs for extension personnel (Hall & Broyles, 2016; Harder & Narine, 2019; Ochieng et al., 2022). Respondents were first asked to indicate their perceptions of the level of importance associated with each of the 22 items using a five-point Likert-type scale: 1 = *Not at all important*, 2 = *Somewhat important*, 3 = *Important,* 4 = *Very important,* and 5 = *Extremely important*. Next, respondents were asked to indicate their perceptions of the skill level of the facilitation items amongst each of the facilitation items utilizing a five-point Likert-type scale: 1 = *Not at all skilled*, 2 = *Slightly skilled*, 3 = *Moderately skilled*, 4 = *Very skilled,* and 5 = *Extremely skilled*.

Data Analysis

Results were analyzed using the Statistical Package for Social Sciences (SPSS) version 26 and the Mean Weighted Discrepancy Scores (MWDS)

Calculator in Excel (McKim & Saucier, 2011). Discrepancy scores were calculated by subtracting the skill level from the importance rating. This was completed for all 22 of facilitation competencies for each respondent. Discrepancy scores were then multiplied by the mean importance rating to calculate the weighted discrepancy score for each respondent and competency. The sum of weighted discrepancy scores was divided by the number of responses to each competency to determine the mean weighted discrepancy scores. Following MWDS calculation, the 22 facilitation competencies were ranked from highest (7.21) to lowest (3.13).

Limitations

One limitation of this study is its small population. While the ELT covers all program areas within the state's extension organization, it is a very small percentage of the overall state organization. Furthermore, the leadership team does not reflect the local (county) level perspective as members tend to have more administrative and supervisory responsibilities, not necessarily programmatic responsibilities directly. Although extension programs throughout the country often address similar issues at the local level, the results from this study cannot be readily generalized to other extension organizations, either in the United States or internationally. These data are specific to Georgia Extension professionals as they go through a specific track of trainings.

An additional limitation of the present study is the list of facilitation competencies included. While the list included 22 facilitation competencies identified and described in *From novice to expert: a qualitative study of implementation facilitation skills* (Ritchie et al., 2020), it is not necessarily a comprehensive list of competencies that may be used by extension professionals in a facilitation role.

Results

Responses regarding the perceived importance of each of the 22 facilitation competencies to Georgia Extension personnel are displayed in Table 1. Fifteen competencies had a mean value of 4.00 or higher while the other 7 competencies had means ranging between 3.68 and 3.95. The competency item with the highest mean (4.74) and largest percentage of 5 (Extremely important) responses was *communication skills*. *Developing a program monitoring system* had the lowest mean (3.68) and smallest percentage of 5 (Extremely important) responses.

Table 1

Perceived Importance of Facilitation Competency Items

Competency Item	*n*	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	*Mean*	*S.D.*
Communication skills	19	0.0	0.0	0.0	26.3	73.7	4.74	0.45
Interpersonal skills	19	0.0	0.0	0.0	1.6	68.4	4.68	0.48
Helping to design/adapt a program to meet local needs	19	0.0	0.0	0.0	2.1	57.9	4.58	0.51
Problem identification & solving skills	19	0.0	0.0	0.5	1.6	57.9	4.47	0.70
Stakeholder engagement	19	0.0	0.0	0.5	6.8	52.6	4.42	0.69
Education/marketing skills	19	0.0	0.0	5.8	6.3	57.9	4.42	0.77
Interacting & working with leaders	19	0.0	0.0	5.8	1.6	52.6	4.37	0.76
Presenting/using data to improve the program	19	0.0	0.0	5.8	1.6	52.6	4.37	0.76
Meeting facilities/individuals where they are	19	0.0	0.0	0.5	2.1	47.4	4.37	0.68
Training, mentoring, & coaching skills	19	0.0	0.0	0.5	7.4	42.1	4.32	0.67
Thinking strategically & planning	19	0.0	0.0	5.8	6.8	47.4	4.32	0.75
Learning & fostering learning skills	19	0.0	0.0	6.3	6.3	47.4	4.21	0.85
Organizational & individual assessment skills	19	0.0	0.0	5.8	7.9	26.3	4.11	0.66
Building learning collaboratives	19	0.0	10.5	6.3	5.8	47.4	4.00	1.11
Leading/managing team processes	19	0.0	10.5	0.3	7.9	26.3	4.00	0.88
Motivating/building confidence	19	0.0	5.3	1.1	7.4	26.3	3.95	0.85
Helping integrate the program into other services	19	0.0	0.0	6.8	1.6	31.6	3.95	0.85
Administrative & project management skills	19	0.0	0.0	1.6	2.1	26.3	3.95	0.78

Pulling back and disengaging (such as deferring decision-making to leaders, helping stakeholders explore options, etc.)	19	0.0	5.3	6.3	6.8	31.6	3.95	0.91
Political skills (such as assessing, understanding, navigating, etc.)	19	0.0	10.5	6.3	6.8	26.3	3.79	0.98
Monitoring program implementation status	18	0.0	0.0	4.4	3.3	22.2	3.78	0.81
Developing a program monitoring system	19	0.0	5.3	1.6	2.6	10.5	3.68	0.75

Note. 1 = Not at all important, 2 = Somewhat important, 3 = Important, 4 = Very important, 5 = Extremely important

Responses regarding the perceived skill level of each of the 22 facilitation competencies to Georgia Extension personnel are displayed in Table 2. Overall, the mean perceived skill level for each item was lower than that for importance. None of the items received a mean of 4.00 or higher. Ten competencies had a mean value of 3.05 or higher while the other 12 competencies had means ranging between 2.32 and 2.94. The competency item with the highest mean (3.89) and largest percentage of 5 (Extremely skilled) responses was *helping to design/adapt a program to meet local needs skills*. *Developing a program monitoring system* again had the lowest mean (2.32) and percentage of 5 (Extremely skilled) responses.

Table 2

Perceived Skill Level of Facilitation Competency Items

Competency Item	*n*	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	*Mean*	*S.D.*
Helping to design/adapt a program for local needs	19	0.0	0.0	26.3	57.9	15.8	3.89	0.66
Meeting facilities & individuals where they are	19	0.0	10.5	31.6	52.6	5.3	3.53	0.77
Communication skills	19	0.0	0.0	57.9	42.1	0.0	3.42	0.51
Interpersonal skills	19	0.0	5.3	52.6	42.1	0.0	3.37	0.60
Problem identification & solving skills	19	0.0	21.1	31.6	47.4	0.0	3.26	0.81

Interacting and working with leaders	19	0.0	15.8	52.6	31.6	0.0	3.16	0.69
Learning and fostering learning skills	19	5.3	10.5	47.4	36.8	0.0	3.16	0.83
Presenting/using data to improve the program	19	0.0	26.3	36.8	36.8	0.0	3.11	0.81
Education/marketing skills	19	0.0	21.1	52.6	26.3	0.0	3.05	0.71
Thinking strategically & planning	19	0.0	10.5	78.9	5.3	5.3	3.05	0.62
Administrative & project management skills	18	5.6	11.1	66.7	16.7	0.0	2.94	0.73
Helping integrate the program into other programs/services	19	5.3	21.1	57.9	10.5	5.3	2.89	0.88
Leading/managing team processes	19	5.3	15.8	68.4	10.5	0.0	2.84	0.69
Stakeholder engagement	19	0.0	31.6	57.9	10.5	0.0	2.79	0.63
Organizational & individual assessment skills	19	5.3	31.6	42.1	21.1	0.0	2.79	0.85
Motivating/building confidence	19	5.3	26.3	63.2	5.3	0.0	2.68	0.67
Training, mentoring, & coaching skills	19	10.5	21.1	63.2	0.0	5.3	2.68	0.89
Building learning collaboratives	19	15.8	26.3	47.4	10.5	0.0	2.53	0.90
Monitoring program implementation status	19	5.3	47.4	36.8	10.5	0.0	2.53	0.77
Political skills (such as assessing, understanding, navigating, etc.)	19	5.3	57.9	31.6	5.3	0.0	2.37	0.68
Pulling back & disengaging (such as deferring decision-making to leaders, helping stakeholders come to consensus, etc.)	19	5.3	52.6	42.1	0.0	0.0	2.37	0.60
Developing a program monitoring system	19	15.8	42.1	36.8	5.3	0.0	2.32	0.82

Note. 1 = Not at all skilled, 2 = Slightly skilled, 3 = Moderately skilled, 4 = Very skilled, 5 = Extremely skilled

Table 3 displays the facilitation competency analysis output of Georgia Extension personnel using the Borich model, including rank and MWDS. All items had a positive MWDS indicating at least some level of need related to each competency. The two items with the highest MWDS scores, at 7.04 or above, included *stakeholder engagement* (MWDS = 7.21) and *training, mentoring, and coaching skills* (MWDS = 7.04). The two lowest competencies, with MWDS scores at 3.68 or below, included *meeting facilities and individuals where they are* (MWDS = 3.68) and *helping to design/adapt a program to meet local needs* (MWDS = 3.13).

Table 3

Extension Facilitation Professional Development Needs by MWDS

Competency Item	*n*	*Rank*	*MWDS*
Stakeholder engagement	19	1	7.21
Training, mentoring, & coaching skills	19	2	7.04
Communication skills	19	3	6.23
Pulling back & disengaging (such as deferring decision-making to leaders, helping stakeholders explore options, etc.)	19	4	6.23
Interpersonal skills	19	5	6.16
Education/marketing skills	19	6	6.05
Building learning collaboratives	19	7	5.89
Presenting/using data to improve the program	19	8	5.52
Thinking strategically & planning	19	9	5.45
Problem identification & solving skills	19	10	5.42
Organizational/individual assessment skills	19	11	5.40
Political skills (such as assessing, understanding, navigating, etc.)	19	12	5.39
Interacting/working with leaders	19	13	5.29
Developing a program monitoring system	19	14	5.04
Motivating/building confidence	19	15	4.99
Leading/managing team processes	19	16	4.63
Monitoring program implementation status	18	17	4.62
Learning and fostering learning skills	19	18	4.43
Helping integrate the program into other programs/services	19	19	4.16
Administrative/project management skills	18	20	3.94

Meeting facilities/individuals where they are	19	21	3.68
Helping to design/adapt a program to meet local needs	19	22	3.13

Note. MWDS = Mean Weighted Discrepancy Score

Conclusion, Discussion & Implications

The primary purpose of this research was to examine University of Georgia ELT members' insights regarding perceived importance and skill level related to a discrete set of facilitation competency items in the hopes of informing the professional development needs of University of Georgia Extension personnel. This study has been guided by the Borich needs assessment model and is grounded in the principles of facilitation theory and adult learning theory. This model has been extensively used by researchers worldwide, including in countries such as Iran (Zarafshani & Ali Baygi, 2008), Pakistan (Ashraf et al., 2020), Egypt (Elhamoly et al., 2014), South Africa (Oladele et al., 2015), South Korea (Lee et al., 2021), Nigeria (Olorunfemi et al., 2020), Moldova (Black, 2014), and Swaziland (Perez-Dlamini et al., 2003).

Implications & Recommendations for Practice

Facilitation skills are crucial for extension because extension professionals an important role bridging the gap between academic research and the communities and clientele they serve; this is particularly relevant in international contexts where access to research-based information can sometimes be limited (Cristóvão et al., 2012; Darnhofer et al., 2012). Effective facilitation skills enable extension professionals to create an inclusive and participatory learning environment where community members feel empowered to engage in the learning process actively (Allahyari et al., 2009). This approach fosters a sense of ownership and relevance as it allows individuals to contribute their experiences and perspectives, making the educational process more meaningful and effective. Facilitation skills empower extension professionals to facilitate group discussions, workshops and community meetings that encourage dialogue, problem-solving and decision-making (BAEN, 2020). These skills help extension professionals adapt to the unique needs of their audiences, across a wide range of needs and geographies – whether it's farmers seeking agricultural advice or communities addressing social and environmental issues (Sasmita et al., 2021). Facilitation skills can be the cornerstone of effective extension work, as they enable extension professionals to be not just conduits of information but facilitators of transformative learning experiences that empower communities and stakeholder to direct their development and make informed decisions (see BAEN, 2020; Darnhofer et al., 2012; Ishom et al., 2021).

ELT members identified many facilitation competencies important to the work of extension professionals. The three most important facilitation competencies according to the research were *communication skills, interpersonal skills and helping to design/ adapt a program to meet local needs.* Respondents also identified their perceived level of skill of extension agents in regard to the identified competencies. Respondents ranked *helping to design/adapt a program to meet local needs, meeting facilities and individuals where they are and communication skills* among the top skills of agents. Additionally, the results of the study showed the most critical training needs as *stakeholder engagement*, *training, mentoring, and coaching skills*, and *communication skills*. These items were identified as the most critical training needs based on their high MWDS scores.

The findings from this study present several insights into the facilitation competencies considered crucial by extension leadership, offering practical recommendations to enhance the effectiveness and impact of both United States based and international extension professionals' work. The literature documents a positive relationship between interpersonal communication and professionalism (Dart et al., 2019). Effective communication enables both parties to send and receive messages, establish mutual relationships, understand each other, and coordinate their goals (Afful & Mudzanani, 2024). Extension professionals should be competent working with and leading people (Harder & Narine, 2019; Busindeli et al., 2024).

Given that communication skills and interpersonal skills emerged as the top-priority competencies, a recommendation is for extension organizations to prioritize training and development in these areas. Effective communication and building strong interpersonal relationships (such as stakeholder engagement) are at the core of successful facilitation and investment in honing these skills should be a central focus for both new and experienced extension professionals (Benge et al., 2011). Linking these developmental opportunities to extension professionals need to know (Knowles, 1984) may help to improve the efficacy of such developmental programs.

The importance attributed to helping design/adapt programs to meet local needs underscores the significance of tailoring extension initiatives to the unique contexts of the communities served, this is particularly relevant to international extension professionals (Klerkx, 2020). An associated recommendation is for extension organizations to continue to provide resources and training that enable extension professionals to be adaptable and responsive to local requirements, ensuring that programs are relevant and impactful. This strength has the potential to address extension professionals' self-concept and experience (Knowles, 1984) by acknowledging these existing areas of strength.

From a somewhat unexpected perspective, the importance, and developmental gap associated with, *pulling back and disengaging* was

unanticipated. The desire for extension professionals to help support stakeholders must be balanced with the ability for empower stakeholders to be independent as well. A recommendation would be to training on this delicate process of guiding without imposing, fostering stakeholder autonomy in decision-making processes. Linking the development from a subject-centered (delivery of content) to a problem centered (supporting stakeholders) perspective may help to improve adoption based on adult learning principles (Knowles, 1984).

The results from the present study indicate a need for additional professional development of several facilitation competencies based on the MWDS of importance and skill level. An additional recommendation is to compare the results of this study to the current training curriculum for extension professionals in various systems, both in the United States and internationally. This process would help to identify whether there are gaps which exist locally, as well as any patterns which may emerge.

The recommendations associated with this research indicate the need for extension organizations to invest in the professional growth and effectiveness of their professionals, ultimately improving the quality and impact of extension services amongst the communities and stakeholders they serve. By focusing on core competencies and providing targeted training and support, extension may be able to foster stronger, more adaptive and responsive facilitators who are better equipped to meet the diverse and evolving needs of their stakeholders (Carroll et al., 2022; Davis, 2016).

Implications & Recommendations for Theory

The results of the present study are intended to provide a foundation within the literature to consider the specific facilitation needs of extension personnel and provide preliminary empirical evidence regarding the prioritization of professional developmental needs amongst this audience. The results are therefore analyzed relative to the theoretical and conceptual foundations of the study, including facilitation theory (Rogers, 1983) and theory of adult learning (Knowles, 1980).

A recommendation for future research would be to explore the self-perceived levels of importance and skill of the selected facilitation competencies among other members of the Georgia extension organization beyond the leadership team. Georgia Extension professionals go through a rigorous training and onboarding program. A recommendation would be to investigate whether there are differences between personnel serving in the different Extension program areas (4-H youth, Family and Consumer Sciences [FACS], Agricultural and Natural Resources [ANR], and so forth). Additionally, it may be interesting to examine whether years of experience in extension has any bearing on perceived training needs. A longitudinal study could determine if changes in professional development and training make an impact on facilitation competencies in agents. Finally, some

of the facilitation competencies, communication skills specifically, are very broad. For instance, communication skills may encompass anything from sending professional emails to giving formal presentations to having a one-to-one conversation. It is recommended to define these competencies more specifically in additional studies including these competencies for increased validity. Additionally, a follow-up study specifically focused on communication competencies may provide useful insight for those offering trainings for extension personnel needing to develop their facilitation and communication skills. Furthermore, a replication of the current study in diverse, non-United States based extension environments would provide insights regarding the consistencies, or divergences, between various extension systems.

Conclusions

This study investigated the perceived importance and skill levels of facilitation competencies according to Georgia ELT members to inform the professional development needs of extension personnel. Guided by Borich's (1980) needs assessment model and grounded in facilitation (Rogers, 1983) and adult learning theories (Knowles, 1984), the study identified crucial facilitation skills for extension professionals. Among these were *stakeholder engagement*, *training, mentoring, and coaching skills*, *pulling back and disengaging*, and *education/marketing skills*. This study provides a novel contribution to the international extension education literature focused on an emerging trend and theory base associated with the provision of extension services globally (Cristóvão et al., 2012). Transitioning from linear, top-down education and technology transfer education (Cahyono & Agunga, 2016; Klerkx et al., 2012) to participative and stakeholder engaged practice (Davis, 2016; Yazdanpanah & Feyzabad, 2017) will require fundamental shifts in extension. This research provides a foundation for such efforts and a set of empirical findings to inform future efforts.

References

Afful, D. B. & Mudzanani, F. F. (2024). Professional competence and extension service delivery in Thulamela Municipality, Limpopo Province, South Africa. *Journal of Agricultural Extension and Rural Development, 16*(1), 1-9. https://doi.org/10.5897/JAERD2023.1399

Allahyari, M. S., Chizari, M., & Mirdamadi, S. M. (2009). Extension-education methods to facilitate learning in sustainable agriculture. *Journal of Agriculture & Social Sciences*, *5*(1-2), 27-30.

Ashraf, E., Sarwar, A., Junaid, M., Baig, M. B., Shurjeel, H. K., & Barrick, R. K. (2020). An assessment of in-service training needs for agricultural extension field staff in the scenario of climate change using Borich needs assessment model. *Sarhad Journal of Agriculture*, *36*(2). https://doi.org/10.17582/journal.sja/2020/36.2.427.446

BAEN, (2020). *Training module on facilitation for development*. Society for Bangladesh Agricultural Extension Network.

Barman, U., & Kumar, B. (2012). Knowledge level of extension personnel under ATMA regarding their facilitation skills. *Agricultural Science Digest-A Research Journal*, *32*(2), 145-148.

Belay, K., & Abebaw, D. (2004). Challenges facing agricultural extension agents: A case study from south-western Ethiopia. *African development review*, *16*(1), 139-168. https://doi.org/10.1111/j.1467-8268.2004.00087.x

Benge, M., Harder, A., & Carter, H. (2011). Necessary pre-entry competencies as perceived by Florida Extension agents. *Journal of Extension, 49*(5), 3. https://doi.org/10.34068/joe.49.05.03

Black, M. K. (2014). *Perceptions of agricultural extension agents' inservice training needs within the National Agency for Rural Development in the Republic of Moldova* [Doctoral dissertation, Texas A&M University].

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education, 31*(3), 39-42. https://doi.org/10.1177/002248718003100310

Burgess, A., van Diggele, C., Roberts, C., & Mellis, C. (2020). Facilitating small group learning in the health professions. *BMC Medical Education*, *20*(Suppl 2), 457. https://doi.org/10.1186/s12909-020-02282-3

Busindeli, I. M., Nyamba, S. Y., & Akeredolu, M. (2024). Human capital development programe for mid-career agriculture extension workers: The case of the Sokoine University of Agriculture bsc. agriculture extension and education training programme. *African Journal of Food, Agriculture, Nutrition & Development, 24*(3). https://doi.org/10.18697/ajfand.128.21055

Cahyono, E. D., & Agunga, R. (2016). Policy and practice of participatory extension in Indonesia: A case study of extension agents in East Java province. *Journal of International Agricultural and Extension Education, 23*(3), 38-57. https://doi.org/10.5191/jiaee.2016.23303

Carroll, A. A., Lamm, K. W., & Borron, A. (2022). Finding the right channel: An analysis of communication channel preferences amongst potential extension clientele. *Journal of Agricultural Education*, *63*(2), 131-149. https://doi.org/10.5032/jae.2022.02131

Comito, J., Ripley, E., Licht, M. A., & Janke, A. K. (2021). Effectively conducting field days while responding to unprecedented external restrictions. *Journal of Extension, 58*(5), Article 6. https://doi.org/10.34068/joe.58.05.06

Cook, B. R., Satizabal, P., & Curnow, J. (2021). Humanising agricultural extension: A review. *World Development*, *140*, 105337. https://doi.org/10.1016/j.worlddev.2020.105337

Corp, M., Rondon, S, & Van Vleet, S. (2013). Insect identification educational volunteers created in train-the-trainer workshops in Oregon and Washington. *Journal of Extension, 51*(3), Article 16. https://doi.org/10.34068/joe.51.03.16

Cristóvão, A., Koutsouris, A., Kügler, M. (2012). Extension systems and change facilitation for agricultural and rural development. In: Darnhofer, I., Gibbon, D., Dedieu, B. (eds) Farming Systems Research into the 21st Century: The New Dynamic. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-4503-2_10

Darnhofer, I., Gibbon, D., & Dedieu, B. (2012). Farming systems research: An approach to inquiry. In *Farming systems research into the 21st century: The new dynamic* (pp. 3-31). Springer Netherlands. https://doi.org/10.1007/978-94-007-4503-2_1

Dart, J., McCall, L., Ash, S., Blair, M., Twohig, C., & Palermo, C. (2019). Toward a global definition of professionalism for nutrition and dietetics education: A systematic review of the literature. *Journal of the Academy of Nutrition and Dietetics, 119*(6), 957-971. https://doi.org/10.1016/j.jand.2019.01.007

Davis, K. (2016). How will extension contribute to the sustainable development goals? A global strategy and operational plan. *Journal of International Agricultural and Extension Education, 23*(1), 7-13. https://doi.org/10.5191/jiaee.2016.23101

Davis, K., Dolly, D., Lamm, A. J., & Lamm, K. W. (2018). The future of Extension: A network emergence perspective from the case of the Global Forum for Rural Advisory Services. *Journal of International Agricultural and Extension Education, 25*(4), 40-51. https://doi.org/10.5191/jiaee.2018.25403

Dewey, J. (1938). *Experience and education*. Touchstone.

Dillman, D., Smyth, J., & Christian, L. (2014). *Internet, phone, mail and mixed-mode surveys: The tailored design method* (4th ed.). John Wiley & Sons. https://doi.org/10.1002/9781394260645

Downey, L. (2022). Community engagement and programming models for the 21st century extension professional. *Journal of Extension, 60*(1), Article 2. https://doi.org/10.34068/joe.60.01.02

Eck, C. J., Layfield, K. D., DiBenedetto, C. A., Jordan, J. K., Scott, S. O., Thomas, W., Parisi, M., & Dobbins, T. (2022). Assessing awareness and competence of best practices in synchronous online instruction during the COVID-19 pandemic for Clemson Cooperative Extension professionals. *Journal of Extension, 60(1),* Article 8. https://doi.org/10.34068/joe.60.01.09

Elhamoly, A. I., Koledoye, G. F., & Kamel, A. (2014). Assessment of training needs for Egyptian extension specialists (SMSs) in organic farming field: Use of the Borich needs model. *Journal of Agricultural & Food Information*, *15*(3), 180-190. https://doi.org/10.1080/10496505.2014.921110

Farrington, J. (1998). Organisational roles in farmer participatory research and extension: Lessons from the last decade. *Natural Resource Perspectives*, 27, 1-4.

Fleming, K. D. (2010). How facilitators use affect to help workplace employees learn creativity, *Adult Education Research Conference*. Retrieved from https://newprairiepress.org/aerc/2010/roundtables/5

Fox, J., & Cater, M. (2011). Participatory evaluation: Factors to consider when involving youth. *Journal of Extension, 49*(2), Article 25. https://doi.org/10.34068/joe.49.02.25

Gentry, M., Edgar, L., Graham, D., & Kirkpatrick, T. (2017). Assessing extension agents' nematology knowledge needs and related resource preferences: Implications for trainings on complex agricultural topics. *Journal of Extension, 55*(1), Article 23. https://doi.org/10.34068/joe.55.01.23

Hall, J. L., & Broyles, T. W. (2016). Leadership competencies of Tennessee Extension agents: Implications for professional development. *Journal of Leadership Education,* 15(3), 187- 200. https://doi.org/10.12806/V15/I3/R8

Harder, A., & Narine, L. K. (2019). Interpersonal leadership competencies of Extension agents in Florida. *Journal of Agricultural Education*, *60*(1), 224–233. https://doi.org/10.5032/jae.2019.01224

Harvey, G., Loftus-Hills, A., Rycroft-Malone, J., Titchen, A., Kitson, A., McCormack, B., & Seers, K. (2002). Getting evidence into practice: The role and function of facilitation. *Journal of Advanced Nursing*, *37*(6), 577-588. https://doi.org/10.1046/j.1365-2648.2002.02126.x

Heck, K., Carlos, R., Barnett, C., & Smith, M. (2012). 4-H participation and science interest in youth. *Journal of Extension, 50*(2), Article 61. https://doi.org/10.34068/joe.50.02.61

Inwood, S., Becot, F., Bjornestad, A., Henning-Smith, C., & Alberth, A. (2019). Responding to crisis: Farmer mental health programs in the Extension north central region. *Journal of Extension, 57*(6), Article 20. https://doi.org/10.34068/joe.57.06.20

Ishom, M., Raharjo, K. M., Avrilianda, D., & Fatihin, M. K. (2021). The role of facilitators in community empowerment based on learning community to improve vocational skills. In *International Conference on Information Technology and Education (ICITE 2021)* (pp. 156-159). Atlantis Press. https://doi.org/10.2991/assehr.k.211210.026

Israel, G. D., Diehl, D. C., Galindo, S., Ward, C., Ramos, A. K., Harrington, M., & Kasner, E. J. (2021). Extension professionals' information use,

protective behaviors, and work-life stress during the COVID-19 pandemic. *Journal of Extension, 58*(6), Article 5. https://doi.org/10.34068/joe.58.06.05

Jernigan, H., Edgar, L. D., Miller, J. D., & Cox, C. K. (2015). Communication technology training beyond the university campus: a case study of skill development in the Arkansas Cooperative Extension Service. *NACTA Journal*, *59*(2), 122–129.

Klerkx, L. (2020). Advisory services and transformation, plurality and disruption of agriculture and food systems: Towards a new research agenda for agricultural education and extension studies. *Journal of Agricultural Education and Extension*, *26*(2), 131–140. https://doi.org/10.1080/1389224X.2020.1738046

Knowles, M. S. (1984). *The adult learner: A neglected species* (3rd ed.). Gulf Publishing.

Knowles, M. S. (1980). *The modern practice of adult education from pedagogy to andragogy*. Cambridge.

Koutsouris, A. (2014). Exploring the emerging intermediation roles (facilitation and brokerage) in agricultural extension education. *International Journal of Agricultural Extension, 0*, 21-37. Retrieved from https://journals.esciencepress.net/index.php/IJAE/article/view/641/298

Lamm, K. W., Lamm, A. J., Davis, K., Sanders, C. E., & Powell, A. (2021). Information and communication technology use capacity within extension networks: Development and preliminary validation of an empirical scale. *Journal of International Agricultural and Extension Education, 28*(4), 15-31. https://doi.org/10.4148/2831-5960.1001

Lee, Y., Jeong, S., & Cho, D. (2021). Assessing adult and continuing education needs in South Korea metropolitan areas using Borich's needs assessment model. *European Journal of Training and Development*, *45*(8/9), 832-844. https://doi.org/10.1108/EJTD-08-2020-0133

Lindeman, E. C. (1926). *The meaning of adult education*. New Republic

McKim, B. R., & Saucier, P. R. (2011). An Excel-based mean weighted discrepancy score calculator. *Journal of Extension*, *49*(2), 31. https://doi.org/10.34068/joe.49.02.31

National Institute of Food and Agriculture. Extension | National Institute of Food and Agriculture. (n.d.). Retrieved March 1, 2022, from https://nifa.usda.gov/extension

National Research Council, (1996) *Colleges of agriculture at the land grant universities.* Retrieved from https://nap.nationalacademies.org/read/5133/chapter/1

North Carolina Cooperative Extension. (2019). (rep.). *The economic and functional impact of North Carolina Cooperative Extension*. Retrieved from https://evaluation.ces.ncsu.edu/wp-content/uploads/2019/04/NC-Cooperative-Extension-Impact-Report-secure.pdf?fwd=no

Norton, G. W., & Alwang, J. (2020). Changes in agricultural extension and implications for farmer adoption of new practices. *Applied Economic Perspectives and Policy*, *42*(1), 8-20. https://doi.org/10.1002/aepp.13008

Ochieng, W., Silvert, C. J., & Diaz, J. (2022). Exploring the impacts of lead farmer selection on community social learning: The case of farmer-to-farmer model a review of literature. *Journal of International Agricultural and Extension Education, 29*(3), 7-31. https://doi.org/10.4148/2831-5960.1022

Oladele, I. (2015). Borich needs model analysis of professional competence among extension officers in North West Province, South Africa. *Journal of Agricultural & Food Information*, *16*(2), 151-162. https://doi.org/10.1080/10496505.2015.1013110

Olorunfemi, T. O., Olorunfemi, O. D., & Oladele, O. I. (2020). Borich needs model analysis of extension agents' competence on climate smart agricultural initiatives in South West Nigeria. J*ournal of Agricultural Education and Extension*, *26*(1), 59-73. https://doi.org/10.1080/1389224X.2019.1693406

Omotesho, K. F., Akinola-Soji, B., Adesiji, G. B., & Owojaiye, O. B. (2021). Knowledge and competence of agricultural extension field workers in farmer-group facilitation in Kwara State, Nigeria. *Acta Universitatis*

Agriculturae et Silviculturae Mendelianae Brunensis, *69*(3). 231-239. https://doi.org/10.11118/actaun.2021.020

Patterson, C. H. (1977). *Foundations for a theory of instruction and educational psychology*. Harper & Row.

Perez-Dlamini, M., Mbingo, S. T., & Dlamini, B. M. (2003). Innovations needed in the Swaziland secondary school's agriculture curriculum. *Journal of International Agricultural and Extension Education*, *10*(3), 37-45.

Rafie C., Hosig K., Wenzel S. G., Borowski S., Jiles K. A., & Schlenker E. (2021). Implementation and outcomes of the Balanced Living with Diabetes program conducted by Cooperative Extension in rural communities in Virginia. *Rural and Remote Health*, 21, 6620. https://doi.org/10.22605/RRH6620

Ritchie, M. J., Parker, L. E. & Kirchner, J. E. (2020). From novice to expert: A qualitative study of implementation facilitation skills. *Implementation Science Communications, 1***,** 25. https://doi.org/10.1186/s43058-020-00006-8

Rogers, C. (1983). *Freedom to learn for the 80's*. Bell and Howell.

Rogers, C. (1977). *Carl Rogers on personal power*. Delacorte Press.

Sasmita, K., Kuswantono, S., Hadiyanti, P., & Ikhsanudin, I. (2021). Development of teaching materials for facilitation and management of changes in community empowerment. *Journal of Nonformal Education*, *7*(2), 135-141.

Scholl, J. (1989). Influences on program planning: What determines what you do? *Journal of Extension, 27*, 18–20.

Suvedi, M. & Ghimire, R. (2015). *How competent are agricultural extension agents and extension educators in Nepal?* Innovation for Agricultural Training and Education/Feed the Future/USAID. Retrieved from https://innovate.cired.vt.edu/wp-content/uploads/2015/09/SuvediNepalExtensionFINAL.pdf

Teuteberg, D., & Cummins, M. (2017). Using community assessments to improve 4-H youth development programming efforts. *Journal of Extension, 55*(4), Article 3. https://doi.org/10.34068/joe.55.04.03

Thompson, G.N., Estabrooks, C. A., & Degner, L. F. (2006). Clarifying the concepts in knowledge transfer: A literature review. *Journal of Advanced Nursing, 53*, 691–701. https://doi.org/10.1111/j.1365-2648.2006.03775.x

Thorpe, S. J. (2016). Online facilitator competencies for group facilitators. *Group Facilitation; St. Paul, 13*, 79-90.

Velardi, S., Leahy, J., Collum, K., McGuire, J., & Ladenheim, M. (2020). Adult learning theory principles in knowledge exchange networks among maple syrup producers and beekeepers in Maine. *Journal of Agricultural Education and Extension*, *27*(1), 3–20. https://doi.org/10.1080/1389224x.2020.1773283

Wise, D. (2017). Teaching or facilitating learning? Selecting the optimal approach for your educational objectives and audience. *Journal of Extension*, 55(3), Article 6. https://doi.org/10.34068/joe.55.03.06

Yazdanpanah, M., & Feyzabad, F. R. (2017). Investigating Iranian farmers' satisfaction with agricultural extension programs using the American customer satisfaction index. *Journal of Agricultural & Food Information*, *18*(2), 123-135. https://doi.org/10.1080/10496505.2017.1285240

Zarafshani, K., & Hossein Ali Baygi, A. (2008). What can a Borich needs assessment model tell us about in-service training needs of faculty in a college of agriculture? The case of Iran. *Journal of Agricultural Education and Extension*, *14*(4), 347-357. https://doi.org/10.1080/13892240802416251