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LEADING THROUGH LOGIC MODELING: CAPTURING THE COMPLEXITY

Faculty Article by Ann Sebald and Heidi Frederiksen

Abstract

Logic modeling supports project and program development and implementation through specific design, planning, communication, evaluation and learning considerations and are typically used for the purposes of explanation, resolutions and assessment. Logic modeling was used in one teacher training program in the U.S. experiencing substantial leadership change. Leading change requires the facets of both leadership and management. This paper will discuss leading change through strategic management; logic modeling as a way of supporting program development and evaluation; share two forms of logic modeling (Theory of Change and Program) used to put into focus one teacher preparation program; discuss the methodology used in the development of both models employing participation from impacted stakeholders; and share the results as it relates to the logic models developed, how they are currently being used to communicate with stakeholders, and how the models will be used in program evaluation. Finally, the impact of this process will be discussed for future educator preparation programs as they navigate current challenges in pre-service educator preparation, program development, and evaluation.

Introduction

Being a leader of any organization requires thoughtful decision-making based upon relevant and timely information. Leading change requires intentional reflection and purposeful action applying the relevant and timely information. Planning change requires a map. Understanding current placement is imperative before implementing future trajectories. Before moving forward, taking stock of resources, context, and climate is imperative to those who will be most impacted by the intended changes. Being strategic in this process promotes effective leadership.

Fioravante (2013) discussed effective leadership as having an intentional tone or message. This message must be leveraged through the use of effective communication, strong ethics, and moral reasoning if support of followers is to be

achieved. Having a clear vision and the ability to communicate that vision to others for the purposes of enhanced follower engagement supporting a common, agreed upon goal is vital. Action comes from focusing on identified processes and results, not through dictating and questioning why; but rather, focusing on how the group arrives at decisions. In other words, leadership is deeply rooted in direction and a collective group on a journey towards a common pursuit (Burns, 1978).

Managing such a deeply rooted direction and collective journey requires intentional reflection and purposeful action. Reflection and action cannot occur in isolation. Enlisting the support of people to collaborate from within the organization, as well as stakeholders outside of the organization, aids leaders in making actionable decisions; thus, guiding toward the desired results. Understanding the context of the organization and its sphere of influence is critical to moving an organization forward in a common direction. Finally, having an analytical mindset is imperative to instilling direction (Gosling & Mintzber, 2003). Leading change requires the facets of both leadership and management.

Designing logic models is one way leaders of any organization can manage and guide where they are in establishing next steps for moving forward. According to Wyatt-Knowlton and Phillips (2013), logic models “support design, planning, communication, evaluation and learning. They are often used when explaining an idea, resolving a challenge, or assessing progress. They can untangle and clarify complex relationships among elements or parts” (p. 3). Logic modeling was used in one teacher training program in the U.S. experiencing substantial leadership change. This paper will discuss logic modeling as a way of supporting program development and evaluation as described by Wyatt-Knowlton and Phillips. The authors will share how two forms of logic modeling (Theory of Change and Program) are used to put into focus and guide decision-making for one teacher preparation program, discuss the methodology used in the development of both models, share the results as it relates to the program’s development and evaluation, and finally discuss this process’s impact for future teacher preparation programs as they navigate current challenges in pre-service teacher training.

Literature Review

As stated earlier, logic models are a way to design, plan, monitor, and evaluate the work of any organization. They are graphic representations of thoughts and ideas, providing a roadmap of *expected* and *intended* results. If results achieved are different than expected or intended, having the roadmap established allows leaders and members of the organization to identify potential breakdown areas. Successfully achieving the expected and intended results are easily explained by leaders based upon the roadmap established. Leaders and members of the organization can identify the ‘what and how’ of their project or program to describe why it was successful by reviewing the designed plan, understanding how that plan was communicated with others, and having the evidence collected during any evaluation processes – all resulting in the overall understanding of the organization’s success.

Managing resources to make decisions in a complex environment requires strategic planning. Identification, management, and allocation of resources allows teams to understand what it does and does not have available within the context of their environment to identify needs and next steps for moving forward. Understanding context is key to setting any project or organization up for success (Hudson, English, Dawes, & Macri, 2012; McDermmot & Allen, 2015).

Wyatt-Knowlton and Phillips (2013) identified two forms of logic models: Theory of Change and Program and encourage leaders to consider both as equally important to the overall success of the organization, project or program. Theory of change logic models are constructed using backward design and are helpful in thinking through the overall goals for the organization. Leaders are challenged to think about their intended results (Get), plan strategies leading them to their intended results (Do), define assumptions (Believe) supporting and informing strategies, and understand the overall knowledge base upon which research, practice and theory are important to the unique work being informed (Figure 1).

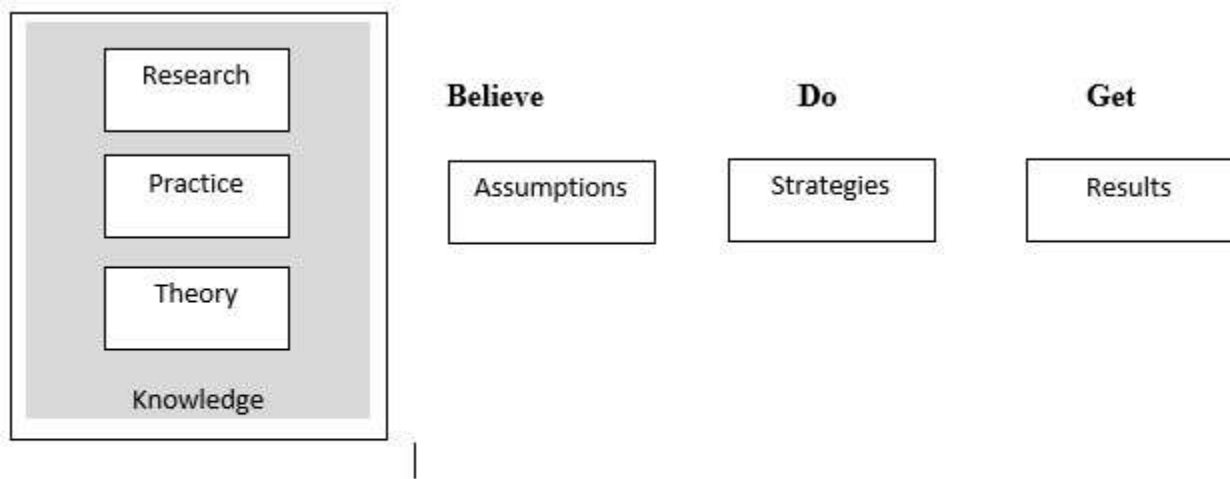


Figure 1. Informing a theory of change.

Note. From *The logic model guidebook: Better strategies for great results*, by Wyatt-Knowlton & Phillips, 2013, p. 22. Copyright 2013 by Sage Publication. Used with permission.

Program logic models are more prevalent in use with project planning and include five components: resources, activities, outputs, outcomes, and impact. The first three aspects of program logic models are considered the planned work, while the outcomes and impact represent intended results of the project (Table 1). Program logic models are often used in grant submissions as visual representations of a project's overall design, taking into consideration the planning, communication, and evaluation of the overall project.

Table 1

Program Logic Model Map

Planned work includes *Resources, Activities, and Outputs*

Resources include human, financial, organizational, community and/or systems

Activities are the intentional actions completed by the people within the organization, program or project.

Outputs are what intentional activities would produce or create

Intended Outcomes include *Outcomes and Impact*

Outcomes are the changes expected as a result of resources used to implement the intentional actions.

Impact ultimate intended change in the organization, program or project as a result of previous intentional efforts.

(adapted from Wyatt-Knowlton & Phillips, 2013)

A final consideration in logic model development is evaluation. Evaluation can support both formative and summative formats when evaluating an organization, project, or program with the goal of a fixed model or result. Developmental evaluation offers an on-going approach to program development and its on-going evolution, and is necessary for some organizations as they continue to evolve to meet the on-going changes occurring both within the unit and within the field. Patton (2011) defined developmental evaluation as supporting a fluid process aimed at searching for ways to be responsive to an ever-changing set of conditions. This format permits evaluators to become part of the design team to aid in monitoring the evaluation process and its outcomes. The process is evolutionary, responding to changing environments, allowing for constant feedback and thus, change (Patton, 2011). Developmental evaluation, when employed with logic model development, allows leaders from within the organization to be part of the design and the evaluation process. When possible, employing external evaluators should be used to promote objectivity from those outside the unit and discussions need to consider the overall goal of evaluation.

Logic Models and Educator Preparation Programs

Historically, colleges and schools of education in the U.S. have been the leaders in pre-service teacher training. Alternative teacher preparation programs have become more prevalent in all of the 50 states as a way to meet the growing need for qualified educators, and make up roughly 20% of new teachers in the U.S. (Woods, 2016). The efficacy of alternative prepared educators in satisfying the need for qualified professionals who remain in the field long term is being questioned by researchers (Redding & Smith, 2016). Teacher shortages, especially in licensure areas such as science, math, and special education, is a growing reality in this country. The latest School and Staffing Survey indicated the two largest groups to leave the classroom in

2012-2013 were those with 20+ years' teaching experience and those with less than 3 years' experience (Goldring, Taie, & Riddles, 2014). Addressing the challenges of teacher recruitment and retention is at the forefront of teacher training programs nationwide, as well as PreK-12 school districts. Current policy changes in U.S. education have replaced No Child Left Behind (2001) with modernized legislation designed to give control back to the states (Every Student Succeeds Act, 2015). Questions of how best to prepare pre-service teachers for the current challenges associated with classroom management and teaching for the most diverse population of learners to date continues to be debated. Testing and assessing the diverse set of learners is a continuous challenge. Debates surrounding the Common Core Curriculum and whether or not to promote it is central to many state school board of education meetings. Employing best practices to support student learning and engagement continue to be researched and incorporated into teacher training programs. Finally, evaluation of teachers in the U.S. takes into account student performance on state assessments, is an important consideration for both those preparing and those employing teachers (Darling-Hammond & Bransford, 2005). Organizations are working to address these and other challenges, and national coalition groups, such as TeachStrong, have appeared as a way to strategically create collective unity and provide a voice among all who prepare and support teachers in all facets of the career path (Nix, 2015). Understanding these challenges and how best to address them when it comes to teacher preparation is complex. One U.S. educator preparation program in one western state experienced substantial leadership changes in 2015 and used this change as an opportunity to retool, rethink, and reinvigorate its organization and work, intentionally considering the challenges stated above through the use of logic modeling.

Educator Preparation in Context

To provide context, the educator preparation program discussed employs a shared leadership model (co-directors) and delivers nine (undergraduate) and 11 (post-bachelor) initial program options in secondary education, four PreK-12 program options in art, music, foreign language, and instructional technology (computing), and one early childhood education (ECE) program option at the undergraduate and post-bachelor levels, graduating approximately 220 teacher candidates annually. Program options at the undergraduate and post-bachelor levels include agricultural education, business education, distributive (marketing) education, home economics (family and consumer sciences), and technology education (engineering). It is the only higher education teacher licensing program within the state to offer all four aspects of STEM (science, technology, engineering, and mathematics) in pre-service teacher preparation. Increasing interest in the STEM fields of has become a national priority (STEM Education Coalition, 2013; U.S. Department of Education, 2015). Post-bachelor teacher candidates are served through the "regular" program that results in a teaching license only, and also through a Master's program specifically designed for post-bachelor candidates. As a result, three possible options for the Teacher Licensure Program include *Undergraduate Licensure with a Content Area Major*, *Licensure Only for Post-Bachelor Candidates*, and *Licensure with a Master's Degree for Post-Bachelor*

Candidates. In addition to teacher licensure, the program also prepares principals for Prek-12 school district leadership.

Programs are delivered in four discrete phases of study and reinforced throughout by a consistent philosophical and programmatic core of learning based on standards (national, state, and institutional), by extensive and intensive partnerships between and within the university and local school communities, and by maximizing the experiential learning opportunities for teacher and leader candidates. This design is based upon the work of the National Council for Accreditation of Teacher Education (NCATE) Professional Development School (PDS) Model (2001, 2014). Prior to combining with the Teacher Education Accreditation Council (TEAC) to form the Council for the Accreditation of Educator Preparation (CAEP), NCATE defined PDS as innovative institutions formed through intentional partnerships between professional education programs and school districts (NCATE, 2014). Teacher training programs in the U. S. have been challenged to be more intentional in how often and when they implement clinical practice within teacher training programs (Hope Street Group, 2016; NCATE, 2010). The PDS model implements a 4-fold mission of 1) educator preparation, 2) faculty development, 3) inquiry directed at the improvement of practices and 4) enhanced student engagement (Figure 2); with the overall intent to create 21st Century *Centers of Pedagogy* (Zimpher & Howey, 2013). Centers of Pedagogy are devoted to the work of supporting practices and innovations necessary for creating high-quality teachers (and leaders). It can be both a laboratory site and a satellite site for clinical classroom placements.



Figure 2. Professional development schools model.

The PDS model is grounded in Goodlad's (1984) original work *A Place Called School*, in which he and colleagues conducted the first ever ethnographic study of public education crossing the U. S. to understand what, how, and when learning takes place. Findings indicated the more teacher and principal training institutions and PreK-12 schools can purposefully collaborate together, instilling a *simultaneous renewal* among all participants, the better it will be for children and youth, as well as to the sustainability of the nation's public educational system. Simultaneous renewal is the intentional improvement of professional practice through pre-service teacher training and attending to what is occurring in the K-12 schools as well as in teacher preparation research, while connecting this understanding with in-service professional development and inquiry designed to think critically of professional practice. All with the focus to improve student learning and enhance student engagement. This seminal work resulted in the National Network for Educational Renewal (NNER), a network of educator preparation, Liberal Arts and Sciences faculty, and PreK-12 school districts partnering to support a four pronged mission to advance U.S. education in a democracy (NNER, 2016). This mission includes: 1) providing access to knowledge for all children (equity and excellence); 2) educating the young for thoughtful participation in a social and political democracy (enculturation); 3) basing teaching on knowledge of the subjects taught, establishing principles of learning, and sensitivity to the unique potential of learners (nurturing pedagogy); and 4) taking responsibility for improving the conditions of

learning in PreK-12 schools, institutions of higher education and communities (stewardship).

As reported by Goodlad, Soder, and Sirotnik (1990), faculty members in educator preparation have a responsibility to future teachers and leaders to not only transmit information, but also model what their candidates are expected to do. In order to build appropriate competencies, the professional education faculty is committed to teaching and modeling effective instructional practices creating an invitational environment, translating critical theory to classroom practice. Through experiencing and reflecting on these practices and environments, teacher and principal licensure candidates will better comprehend the role of the teacher and leader as facilitators of student success. Goodlad et al. (1990) reminded us, “faculty of the school must come together to plan the array of teaching methods to be demonstrated in the program, the kinds of faculty-student interactions to be modeled for and replicated by their students, and the ways in which students are to participate in evaluating the teaching they observe and the curriculum they experience” (p. 290). This concept of effective modeling is similarly addressed in Vygotsky’s (1986) concept of relational imitation and through John Dewey’s (1938) notion of learning through direct experiences. In their endeavor to identify specific instructional features promoting meaningful growth in teacher candidates, Jensen and Winitzky (1999) examined over 43 studies on educational improvement. Thirty-two of these investigations reported meaningful learning in candidates when training programs emphasized course content used in context, repeated reflection, and modeling by faculty and other professional educators.

As Goodlad et al. (1990) surmised, “We recommend, then, that the responsible faculty plan not just a sequence of courses and field experiences but deliberate demonstration of pedagogical procedures their teacher and leader candidates will be expected to use in the practice part of their preparation programs” (p. 291). The educator preparation program discussed is developmental in its phase design, with courses and field experiences intended to address the progressive stages of learning to teach (or lead), and *take place in PreK-12 schools*. Skills, technical knowledge, and dispositions in each program phase are built upon those that precede and on the developing skills and understandings of pre-service candidates. The conceptual framework of these licensure programs support the development of new teachers and leaders who understand how best to facilitate student learning based on their roles as learners, collaborators, and leaders. The components of this theme are grounded in a strong knowledge base developed from research and best practice.

Considering the structure presented, the new leaders of the educator preparation program were determined to describe the complexity of its Professional Development School framework of educator preparation, faculty development, inquiry directed at the improvement of practice and enhanced student engagement through logic modeling with the intent to communicate its work both within and outside the university. In addition, the models would be used to guide the work, along with the identification and allocation of resources, and decisions moving forward.

Methodology

Prior to designing either logic model formats (theory of change or program), the co-leaders of the educator preparation program reviewed the literature pertaining to John Goodlad, Professional Development Schools (PDS), and clinical practice, all foundational to the program. In addition, the university context is the state site for the National Network for Educational Renewal (NNER). Understanding these philosophical foundations was important to developing both the theoretical and programmatic models. Knowing your organization and its philosophical underpinnings is important to establishing and maintaining a clear and consistent vision. After multiple conversations it was determined both leaders had a solid foundation of PDSs, clinical practice in educator preparation, John Goodlad, and the NNER's Agenda for Education in a Democracy. The leaders next reviewed the literature relating to logic models and their development.

Model Development

The co-leaders both agreed to use an iterative process for the logic model development, employing initial input from internal university stakeholders including advising staff, content experts teaching methods courses, and those coordinating both undergraduate and graduate programs. In addition, the leaders used the development framework as described by Wyatt-Knowlton and Phillips (2013) for its pragmatic nature. Both leaders met on several occasions to discuss the aspects inherent to the Theory of Change logic model, discussing each of the four components: Results, Do, Assumptions/Beliefs and Frameworks of Research, Practice and Theory. Once an initial draft was developed, the concept was shared with the School Director, communicating the intended steps for developing and implementing the Theory of Change Logic Model with program faculty, so as to communicate the program's overall goal, solicit feedback and gain support from upper leadership prior to moving forward. Once approved, the co-leaders brought the initial draft to the core program faculty (N = 7) for feedback, revisions, and edits. As stated, reflection and action cannot occur in isolation and are imperative to leading and managing change (Gosling & Mintzberg, 2003). Establishing buy-in and agreed upon direction(s) from impacted stakeholders using a collaborative, iterative process was key to the overall development of all models. Edits were made by the two leaders, and the second iteration was shared with the larger program faculty (N = 37). Again, buy-in was established and an agreed upon direction was solicited from the group. The final Theory of Change Logic Model (Figure 3) was developed and provided the foundation for designing the four programmatic logic models.

For the following five months, the four-fold mission of the NCATE PDS framework was posted in each of the leaders' offices, discussed at monthly meetings, and monitored for one semester. This was to determine if all components of current work would fit within the PDS framework, as well as to identify if any of the work was out of the scope of the PDS framework. After one semester, it was determined that all work employed by the educator preparation program was in line with the NCATE PDS framework (i.e., educator preparation, faculty development, inquiry directed at the improvement of

practice, and enhanced student engagement). During this same timeframe, all program faculty were involved in the identification of resources. All interested faculty participated in two work sessions to identify five categories of resources as defined by logic model frameworks as human, fiscal, organizational, community, and systems. This collective brainstorming aided the co-leaders in better understanding the interconnectedness of the program and explain the complexity of resource availability, management, and allocation for each of the four pillars. Long-term, understanding of resources from these perspectives aided in decision-making among and within each pillar.

As indicated, all faculty were solicited for feedback and suggestions at monthly program meetings, discussing the development of each of the four programmatic logic models based upon the four pillars of a PDS. Faculty then provided feedback and suggestions on the identification of activities, outputs, outcomes, and overall intended impact. This iterative process allowed all faculty members to discuss their work within each of the four areas, and allowed for the opportunity to identify collaboration among common areas of interest as they related to educator preparation, faculty development, inquiry directed at the improvement of practice, and enhanced student engagement.

Results

At the end of spring 2016, one Theory of Change Logic Model and three programmatic logic models had been developed by the two leaders. The leaders determined to include PreK-12 school district partners into the overall design of the logic models, including the final model of Enhanced Student Engagement. This final model is an intentional representation of the university teacher training program working with school district partners to positively impact student learning. With the methods employed, this reflective and actionable process was not done in isolation. Informing both internal and external constituents was of paramount importance. To help structure the dialogue moving forward, the *Logic Model Prospectus* was drafted with the intent of communicating the mission and vision of the educator preparation program, as well as the development of each of the five models, to both internal and external constituents. Once drafted, feedback was again solicited from core program faculty. Once changes were made, the *Prospectus* was shared with the School Director and College Dean prior to discussing with those outside the unit and university. The *Prospectus* is now used as a forum for communicating with entities in the pursuit of funding, as well as educating interested stakeholders and constituents.

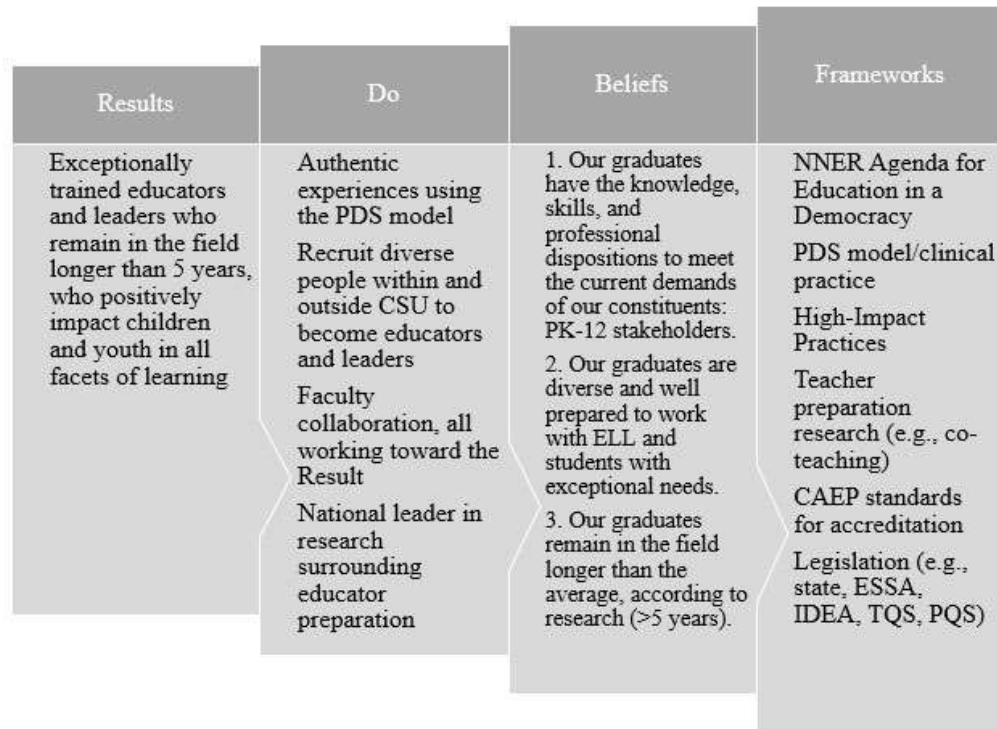


Figure 3. Theory of change model for educator preparation program*
 *Condensed version shown.

The final step in the overall iterative process is the connection of the logic model work with evaluation. Within teacher preparation, accreditation is often tied with evaluation. The four program logic models developed will aid in categorizing and communicating accreditation requirements as set forth by CAEP. Adhering to the developmental evaluation approach discussed earlier, the co-leaders will continue to monitor the program using the logic models developed as a way to create formative evaluation plans for the next cycle of accreditation.

Discussion

One U.S. educator preparation program in one western state of the U.S. experienced substantial change in leadership. This change brought opportunity for retooling, rethinking, and reinvigorating the people and the work through the use of logic model development. Employing logic models aids in providing both leadership and management to move organizations, programs, and projects forward. Embarking on this intentional process has brought direction through the use of transformational leadership, clarity in decision-making through resource management in a complex

environment, and established a plan for program review and accreditation through the use of developmental evaluation.

Transformational leadership is an effective way to facilitate change. Burns (1978) described transformational leadership as a leadership approach that aims to achieve a collective goal rather than a multitude of individual goals and aims to transform all workers—both managers and staff—in pursuit of the higher collective purpose. This can be the most efficient and effective means of achieving widespread and fundamental organizational change. Logic modeling, when done with all relevant stakeholders, allows leaders to establish a goal “bigger than themselves,” thus engaging their followers in pursuit of a collective purpose through transformational leadership. The Theory of Change logic modeling process requires the thoughtful consideration of intended results. The results section of the Theory of Change logic model is the goal toward which everyone is working. Those employed in education, by nature, have as their pursuit the success of something bigger than themselves, that of the success of children and youth. Within higher education and pre-service teacher training, the ultimate goal is to effectively train and prepare future teachers who, we presume, will uphold this goal of student learning and success. Leaders in higher education wishing to engage their faculty more purposefully should consider the logic modeling process through the use of transformational leadership to support the establishment and achievement of program goals.

The logic modeling process as employed has resulted in the identification of priorities for moving the work forward within each of the four pillars. Once priorities were identified by faculty in monthly meetings, it was obvious what resources were needed within the complex environment. The leaders worked together to identify, allocate, and manage resources to support identified priorities. When asked to submit a budget for the subsequent year’s work, for example, the direction of the work was clear, along with needed resources. Because the School Director was informed and involved in the overall development of the logic models, explaining needed resources in the areas of human, fiscal, and organizational were easily identified and explained because the requests were directly connected to the models developed.

Developmental evaluation, when employed with logic modeling, allows leaders from within the organization to be part of the design and evaluation process. This is critical given the current structure of accreditation for teacher training programs. In 2014, the National Council for Accreditation of Teacher Educators (NCATE) and the Teacher Education Accreditation Council (TEAC) combined to form the Council for the Accreditation of Educator Preparation (CAEP). This resulted in one national accrediting body for teacher preparation within the U.S. Logic modeling, through the use of developmental evaluation, allows for program leaders to be involved in the accreditation process for both the purposes of identifying program competencies based upon a series of standards, as well as for the purposes of overall program evaluation within its context. CAEP has developed five standards for which teacher training programs must communicate competence. Logic modeling, combined with CAEP standards, allows leaders of U.S. educator preparation programs to be thoughtful in identifying the work,

as well as communicating successes of the work based upon accreditation requirements. A simple spread sheet listing CAEP standards and the categories of the four PDS pillars, allows leaders to be thoughtful in planning, collecting, and communicating how they are satisfying accreditation requirements. In addition, the pictorial models developed can be used to communicate the program as a whole to CAEP reviewers.

The limitations of this work must be identified. The educator preparation program discussed has a specific philosophical underpinning. As programs are different, so are the ways in which they organize their work. With that said, the authors believe logic modeling is a helpful process in bringing faculty together to rethink and plan the work moving forward. The process discussed has been done at other institutions and the results identified here may not be similar.

Future research as it relates to leadership, management, and logic model development should be the next steps. For example, how effective are logic models in continuing the program when faculty, staff and/or leadership change? What is the sustainability of the models with varying leadership styles? Development evaluation was used in this process however, other evaluation options exist. How can evaluation support teacher training for those programs employing logic models, especially given the current demands of CAEP accreditation and standard requirements? Given the recent changes allowing states control of education policy within the U.S. moving forward (ESSA, 2015), how can the use of logic modeling support educator preparation, as a whole and as individual programs, explain their intended impact for addressing teacher recruitment and retention, professional development for university faculty and PreK-12 faculty, and support research related to teaching and learning to positively impact and enhance student engagement? These are all important facets of an education system and important to consider as we all move forward in supporting the learning of children and youth. Education of children is the most important aspect on which many societies focus. As described by NNER (2016), the goal in the U.S. is to improve the quality of education through intentional and thoughtful participation in a democracy to best support quality educator preparation. To make positive impacts in recruiting and retaining the best educators for students, we will positively impact society moving forward. Doing so with intentionality has never been more important.

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