

Logic Models

Karen A. Randolph



A logic model is a diagram of the relationship between a need that a program is designed to address and the actions to be taken to address the need and achieve program outcomes. It provides a concise, one-page picture of program operations from beginning to end. The diagram is made up of a series of boxes that represent each of the program's components,

inputs or resources, activities, outputs, and outcomes. The diagram shows how these components are connected or linked to one another for the purpose of achieving program goals. Figure 31.1 provides an example of the framework for a basic logic model.

The program connections illustrate the logic of how program operations will result in client change (McLaughlin & Jordan, 1999). The connections show the “causal” relationships between each of the program components and thus are referred to as a series of “if-then” sequence of changes leading to the intended outcomes for the target client group (Chinman, Imm, & Wandersman, 2004). The if-then statements represent a program's theory of change underlying an intervention. As such, logic models provide a framework that guides the evaluation process by laying out important relationships that need to be tested to demonstrate program results (Watson, 2000).

Logic models come from the field of program evaluation. The idea emerged in response to the recognition among program evaluators regarding the need to systematize the program evaluation process (McLaughlin & Jordan, 2004). Since then, logic models have become increasingly popular among program managers for program planning and to monitor program performance. With a growing emphasis on accountability and outcome measurement, logic models make explicit the entire change process, the assumptions that underlie this process, and the pathways to reaching outcomes. Researchers have begun to use logic models for intervention research planning (e.g., Brown, Hawkins, Arthur, Briney, & Abbott, 2007).

The following sections provide a description of the components of a basic logic model and how these components are linked together, its relationship to a program's theory of

Figure 31.1
Logic Model



AUTHOR'S NOTE: The author wishes to acknowledge Dr. Tony Tripodi for his thoughtful comments on a draft of this chapter.

change, and its uses and benefits. The steps for creating a logic model as well as the challenges of the logic modeling process will be presented. The chapter concludes with an example of how a logic model was used to enhance program outcomes for a family literacy program.

Components of a Logic Model

Typically, a logic model has four components: inputs or resources, activities, outputs, and outcomes. Outcomes can be further classified into short-term outcomes, intermediate outcomes, and long-term outcomes based on the length of time it takes to reach these outcomes (McLaughlin & Jordan, 2004). The components make up the connection between the planned work and the intended results (W. K. Kellogg Foundation, 2004). The planned work includes the resources (the inputs) needed to implement the program as well as how the resources will be used (the activities). The intended results include the outputs and outcomes that occur as a consequence of the planned work. Figure 31.2 expands on the model illustrated in Figure 31.1 by adding examples of each component. This particular logic model, adopted from Frechtling (2007), provides an illustration of the components of an intervention designed to prevent substance abuse and other problem behaviors among a population of youth. The intervention is targeted toward improving parenting skills, based on the assumption that positive parenting leads to prosocial behaviors among youth (Bahr, Hoffman, & Yang, 2005). The following section provides definitions and examples of each logic model component, using this illustration.

Resources

Resources, sometimes referred to as inputs, include the human, financial, organizational, and community assets that are available to a program to achieve its objectives (W. K. Kellogg Foundation, 2004). Resources are used to support and facilitate the program activities. They are usually categorized in terms of funding resources or in-kind contributions (Frechtling, 2007).

Some resources, such as laws, regulations, and funding requirements, are external to the agency (United Way of America, 1996). Other resources, such as staff and money, are easier to quantify than others (e.g., community awareness of the program; Mertinko, Novotney, Baker, & Lange, 2000). As Frechtling (2007) notes, it is important to clearly and thoroughly identify the available resources during the logic modeling process because this information defines the scope and parameters of the program. Also, this information is critical for others who may be interested in replicating the program. The logic model in Figure 31.2 includes funding as one of its resources.

Activities

Activities represent a program's service methodology, showing how a program intends on using the resources described previously to carry out its work. Activities are also referred to as action steps (McLaughlin & Jordan, 2004). They are the highly specific tasks that program staffs engage in on a daily basis to provide services to clients (Mertinko et al., 2000). They include all aspects of program implementation, the processes, tools, events, technology, and program actions. The activities form the foundation toward facilitating intended client changes or reaching outcomes (W. K. Kellogg Foundation, 2004). Some examples are establishing community councils, providing professional development training, or initiating a media campaign (Frechtling, 2007). Other examples are

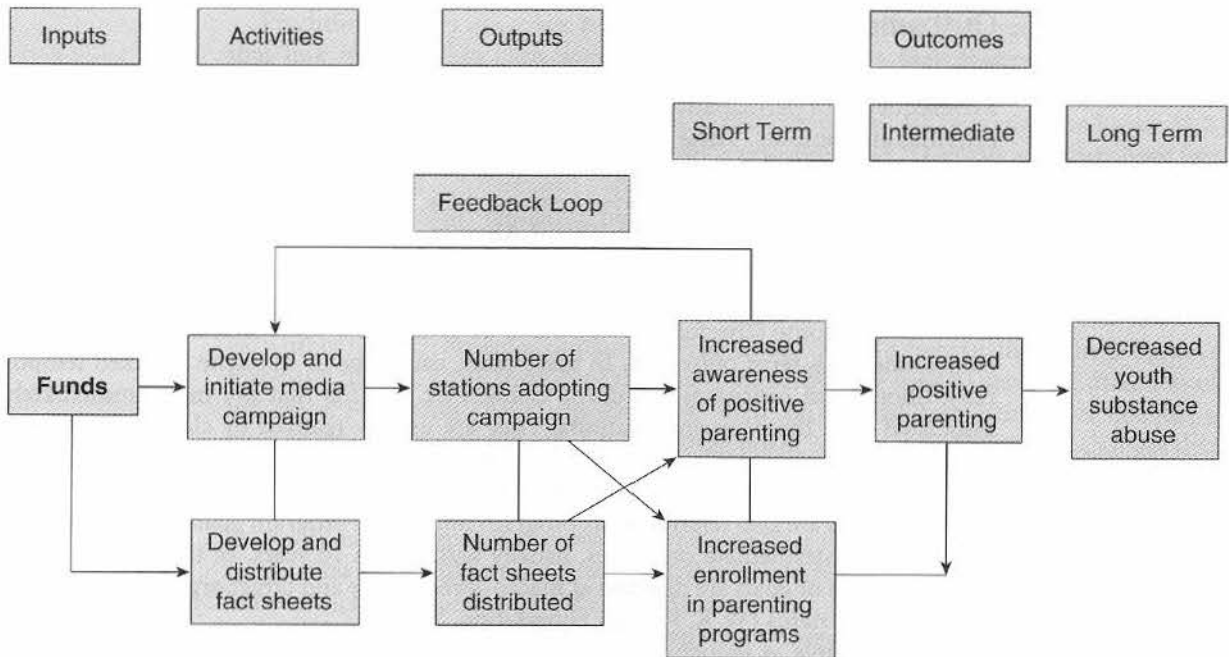


Figure 31.2 Example of Logic Model With Components, Two Types of Connections, and a Feedback Loop

providing shelter for homeless families, educating the public about signs of child abuse, or providing adult mentors for youth (United Way of America, 1996). Two activities, “Develop and initiate media campaign” and “Develop and distribute fact sheets,” are included in the logic model in Figure 31.2. Activities lead to or produce the program outputs, described in the following section.

Outputs

The planned works (resources and activities) bring about a program’s desired results, including outputs and outcomes (W. K. Kellogg Foundation, 2004). Outputs, also referred to as units of service, are the immediate results of program activities in the form of types, levels, and targets of services to be delivered by the program (McLaughlin & Jordan, 1999). They are tangible products, events, or services. They provide the documentation that activities have been implemented and, as such, indicate if a program was delivered to the intended audience at the intended dose (W. K. Kellogg Foundation, 2004). Outputs are typically described in terms of the size and/or scope of the services and products produced by the program and thus are expressed numerically (Frechtling, 2007). Examples of program outputs include the number of classes taught, meetings held, or materials produced and distributed; program participation rates and demography; or hours of each type of service provided (W. K. Kellogg Foundation, 2004). Other examples are the number of meals provided, classes taught, brochures distributed, or participants served (Frechtling, 2007). While outputs have little inherent value in themselves, they provide the link between a program’s activities and a program’s outcomes (United Way of America, 1996). The logic model in Figure 31.2 includes the number of stations adopting the media campaign and the number of fact sheets distributed as two outputs for the prevention program.

Outcomes

Outcomes are the specific changes experienced by the program's clients or target group as a consequence of participating in the program. Outcomes occur as a result of the program activities and outputs. These changes may be in behaviors, attitudes, skill level, status, or level of functioning (W. K. Kellogg Foundation, 2004). Examples include increased knowledge of nutritional needs, improved reading skills, more effective responses to conflict, and finding employment (United Way of America, 1996). Outcomes are indicators of a program's level of success.

McLaughlin and Jordan (2004) make the point that some programs have multiple, sequential outcome structures in the form of short-term outcomes, intermediate outcomes, and long-term outcomes. In these cases, each type of outcome is linked temporally. Short-term outcomes are client changes or benefits that are most immediately associated with the program's outputs. They are usually realized by clients within 1 to 3 years of program completion. Short-term outcomes are linked to accomplishing intermediate outcomes. Intermediate outcomes are generally attainable in 4 to 6 years. Long-term outcomes are also referred to as program impacts or program goals. They occur as a result of the intermediate outcomes, usually within 7 to 10 years. In this format, long-term outcomes or goals are directed at macro-level change and target organizations, communities, or systems (W. K. Kellogg Foundation, 2004).

As an example, a sequential outcome structure with short-term, intermediate, and long-term outcomes for the prevention program is displayed in Figure 31.2. As a result of hearing the public service announcements about positive parenting (the activity), parents enroll in parenting programs to learn new parenting skills (the short-term outcome). Then they apply these newly learned skills with their children (the intermediate outcome), which leads to a reduction in substance abuse among youth (the long-term impact or goal the parenting program was designed to achieve).

Outcomes are often confused with outputs in logic models because their correct classification depends on the context within which they are being included. A good example of this potential confusion, provided in the United Way of America manual (1996, p. 19), is as follows. The number of clients served is an output when it is meant to describe the volume of work accomplished. In this case, it does not relate directly to client changes or benefits. However, the number of clients served is considered to be an outcome when the program's intention is to encourage clients to seek services, such as alcohol treatment. What is important to remember is that outcomes describe intended client changes or benefits as a result of participating in the program while outputs document products or services produced as a result of activities.

Links or Connections Between Components

A critical part of a logic model is the connections or links between the components. The connections illustrate the relationships between the components and the process by which change is hypothesized to occur among program participants. This is referred to as the program theory (Frechtling, 2007). It is the connections illustrating the program's theory of change that make the logic model complicated. Specifying the connections is one of the more difficult aspects of developing a logic model because the process requires predicting the process by which client change is expected to occur as a result of program participation (Frechtling, 2007).

Frechtling (2007) describes two types of connections in a logic model: connections that link items within each component and connections that illustrate the program's theory of change. The first type, items within a component, is connected by a straight line. This line shows that the items make up a particular component. As an example, in Figure 31.2, two activities, "Develop and initiate media campaign" and "Develop and distribute fact sheets," are linked together with a straight line because they represent the items within the activities component. Similarly, two outputs, "Number of stations adopting the campaign" and "Number of fact sheets distributed," are connected as two items within the outputs component.

The second type of connection shows how the components interact with or relate to each other to reach expected outcomes (Frechtling, 2007). In essence, this is the program's theory of change. Thus, instead of straight lines, arrows are used to show the direction of influence. Frechtling (2007) clarifies that "these directional connections are not just a kind of glue anchoring the otherwise floating boxes. Rather they portray the changes that are expected to occur after a previous activity has taken place, and as a result of it" (p. 33). She points out that the primary purpose of the evaluation is to determine the nature of the relationships between components (i.e., whether the predictions are correct). A logic model that illustrates a fully developed theory of change includes links between every item in each component. In other words, every item in every component must be connected to at least one item in a subsequent component. This is illustrated in Figure 31.2, which shows that each of the two items within the activities component is linked to an item within the output component.

Figure 31.2 provides an example of the predicted relationships between the components. This is the program theory about how the target group is expected to change. The input or resource, funding, is connected to the two activities, "Develop and initiate media campaign" and "Develop and distribute fact sheets." Simply put, this part of Figure 31.2 shows that funding will be used to support the development and initiation of PSA campaigns and the distribution of fact sheets.

The sequencing of the connections between components also shows that these steps occur over a period of time. While this may seem obvious and relatively inconsequential, specifying an accurate sequence has time-based implications, particularly when short-term, intermediate, and long-term outcomes are proposed as a part of the theory of change (Frechtling, 2007). Recall that the short-term outcomes lead to achieving the intermediate outcomes, and the intermediate outcomes lead to achieving long-term outcomes. Thus, the belief or underlying assumption is that short-term outcomes mediate (or come between) relationships between activities and intermediate outcomes, and intermediate outcomes mediate relations between short-term and long-term outcomes.

Related, sometimes logic models display feedback loops. Feedback loops show how the information gained from implementing one item can be used to refine and improve other items (Frechtling, 2007). For instance, in Figure 31.2, the feedback loop from the short-term outcome, "Increased awareness of positive parenting," back to the activity, "Develop and initiate media campaign," indicates that the findings for "Increased awareness of positive parenting" are used to improve the PSA campaigns in the next program cycle.

Contextual Factors

Logic models describe programs that exist and are affected by contextual factors in the larger environment. Contextual factors are those important features of the environment

in which the project or intervention takes place. They include the social, cultural, and political aspects of the environment (Frechtling, 2007). They are typically not under the program's control yet are likely to influence the program either positively or negatively (McLaughlin & Jordan, 2004). Thus, it is critical to identify relevant contextual factors and to consider their potential impact on the program. McLaughlin and Jordan (1999) point out that understanding and articulating contextual factors contributes to an understanding of the foundation upon which performance expectations are established. Moreover, this knowledge helps to establish the parameters for explaining program results and developing program improvement strategies that are likely to be more meaningful and thus more successful because the information is more complete. Finally, contextual factors clarify situations under which the program results might be expected to generalize and the issues that might affect replication (Frechtling, 2007).

Harrell, Burt, Hatry, Rossman, and Roth (1996) identify two types of contextual factors, antecedent and mediating, as outside factors that could influence the program's design, implementation, and results. Antecedent factors are those that exist prior to program implementation, such as characteristics of the client target population or community characteristics such as geographical and economic conditions. Mediating factors are the environmental influences that emerge as the program unfolds, such as new laws and policies, a change in economic conditions, or the startup of other new programs providing similar services (McLaughlin & Jordan, 2004).

Logic Models and a Program's Theory of Change

Definition

Logic models provide an illustration of the components of a program's theory and how those components are linked together. Program theory is defined as "a plausible and sensible model of how a program is supposed to work" (Bickman, 1987, p. 5). Program theory incorporates "program resources, program activities, and intended program outcomes, and specifies a chain of causal assumptions linking resources, activities, intermediate outcomes, and ultimate goals" (Wholey, 1987, p. 78). Program theory explicates the assumptions about how the program components link together from program start to goal attainment to realize the program's intended outcomes (Frechtling, 2007). Thus, it is often referred to as a program's theory of change. Frechtling (2007) suggests that both previous research and knowledge gained from practice experience are useful in developing a theory of change.

Relationship to Logic Models

A logic model provides an illustration of a program's theory of change. It is a useful tool for describing program theory because it shows the connections or if-then relationships between program components. In other words, moving from left to right from one component to the next, logic models provide a diagram of the rationale or reasoning underlying the theory of change. If-then statements connect the program's components to form the theory of change (W. K. Kellogg Foundation, 2004). For example, certain resources or inputs are needed to carry out a program's activities. The first if-then statement links resources to activities and is stated, "If you have access to these resources, then you can use them to accomplish your planned activities" (W. K. Kellogg Foundation, 2004, p. 3). Each

component in a logic model is linked to the other components using if-then statements to show a program's chain of reasoning about how client change is predicted to occur. The idea is that "if the right resources are transformed into the right activities for the right people, then these will lead to the results the program was designed to achieve" (McLaughlin & Jordan, 2004, p. 11). It is important to define the components of an intervention and make the connections between them explicit (Frechtling, 2007).

Program Theory and Evaluation Planning

Chen and Rossi (1983) were among the first to suggest a program theory-driven approach to evaluation. A program's theory of change has significant utility in developing and implementing a program evaluation because the theory provides a framework for determining the evaluation questions (Rossi, Lipsey, & Freeman, 2004). As such, a logic model that illustrates a program's theory of change provides a map to inform the development of relevant evaluation questions at each phase of the evaluation. Rossi et al. (2004) explain how a program theory-based logic model enhances the development of evaluation questions. First, the process of articulating the logic of the program's change process through the development of the logic model prompts discussion of relevant and meaningful evaluation questions. Second, these questions then lead to articulating expectations for program performance and inform the identification of criteria to measure that performance. Third, obtaining input from key stakeholders about the theory of change as it is displayed in the logic model increases the likelihood of a more comprehensive set of questions and that critical issues have not been overlooked. To clarify, most agree that this is a team effort that should include the program development and program evaluation staff at a minimum, as well as other stakeholders both internal and external to the program as they are available (Dwyer & Makin, 1997; Frechtling, 2007; McLaughlin & Jordan, 2004). The diversity of perspective and skill sets among the team members (e.g., program developers vs. program evaluators) enhances the depth of understanding of how the program will work, as diagramed by the logic model (Frechtling, 2007). As Dwyer and Makin (1997) state, the team approach to developing a theory-based logic model promotes "greater stakeholder involvement, the opportunity for open negotiation of program objectives, greater commitment to the final conceptualization of the program, a shared vision, and increased likelihood to accept and utilize the evaluation results" (p. 423).

Uses of Logic Models

Logic models have many uses. They help to integrate the entire program's planning and implementation process from beginning to end, including the evaluation process (Dwyer & Makin, 1997). They can be used at all of a program's stages to enhance its success (Frechtling, 2007; W. K. Kellogg Foundation, 2004). For instance, at the program design and planning stage, going through the process of developing logic models helps to clarify the purpose of the program, the development of program strategies, resources that are necessary to attaining outcomes, and the identification of possible barriers to the program's success. Also, identifying program components such as activities and outcomes prior to program implementation provides an opportunity to ensure that program outcomes inform program activities, rather than the other way around (Dwyer & Makin, 1997).

During the program implementation phase, a logic model provides the basis for the development of a management plan to guide program monitoring activities and to improve program processes as issues arise. In other words, it helps in identifying and highlighting the key program processes to be tracked to ensure a program's effectiveness (United Way of America, 1996).

Most important, a logic model facilitates evaluation planning by providing the evaluation framework for shaping the evaluation across all stages of a project. Intended outcomes and the process for measuring these outcomes are displayed in a logic model (Watson, 2000), as well as key points at which evaluation activities should take place across the life of the program (McLaughlin & Jordan, 2004). Logic models support both formative and summative evaluations (Frechtling, 2007). They can be used in conducting summative evaluations to determine what has been accomplished and, importantly, the process by which these accomplishments have been achieved (Frechtling, 2007). Logic models can also support formative evaluations by organizing evaluation activities, including the measurement of key variables or performance indicators (McLaughlin & Jordan, 2004). From this information, evaluation questions, relevant indicators, and data collection strategies can be developed. The following section expands on using the logic model to develop evaluation questions.

The logic model provides a framework for developing evaluation questions about program context, program efforts, and program effectiveness (Frechtling, 2007; Mertinko et al., 2000). Together, these three sets of questions help to explicate the program's theory of change by describing the assumptions about the relationships between a program's operations and its predicted outcomes (Rossi et al., 2004). Context questions explore program capacity and relationships external to the program and help to identify and understand the impact of confounding factors or external influences. Program effort and effectiveness questions correspond to particular components in the logic model and thus explore program processes toward achieving program outcomes. Questions about effort address the planned work of the program and come from the input and activities sections of the evaluation model. They address program implementation issues such as the services that were provided and to whom. These questions focus on what happened and why. Effectiveness or outcome questions address program results as described in the output and outcomes section of the logic model. From the questions, indicators and data collection strategies can then be developed. Guidelines for using logic models to develop evaluation questions, indicators, and data collection strategies are provided in the *Logic Model Development Guide* (W. K. Kellogg Foundation, 2004).

In addition to supporting program efforts, a logic model is a useful communication tool (McLaughlin & Jordan, 2004). For instance, developing a logic model provides the opportunity for key stakeholders to discuss and reach a common understanding, including underlying assumptions, about how the program operates and the resources needed to achieve program processes and outcomes. In fact, some suggest that the logic model development process is actually a form of strategic planning because it requires participants to articulate a program's vision, the rationale for the program, and the program processes and procedures (Watson, 2000). This also promotes stakeholder involvement in program planning and consensus building on the program's design and operations. Moreover, a logic model can be used to explain program procedures and share a comprehensive yet concise picture of the program to community partners, funders, and others outside of the agency (McLaughlin & Jordan, 2004).

Steps for Creating Logic Models

McLaughlin and Jordan (2004) describe a five-stage process for developing logic models. The first stage is to gather extensive baseline information from multiple sources about the nature of the problem or need and about alternative solutions. The W. K. Kellogg Foundation (2004) also suggests collecting information about community needs and assets. This information can then be used to both define the problem (the second stage of developing a logic model) and identify the program elements in the form of logic model components (the third stage of logic model development). Possible information sources include existing program documentation, interviews with key stakeholders internal and external to the program, strategic plans, annual performance plans, previous program evaluations, and relevant legislation and regulations. It is also important to review the literature about factors related to the problem and to determine the strategies others have used in attempting to address it. This type of information provides supportive evidence that informs the approach to addressing the problem.

The information collected in the first stage is then used to define the problem, the contextual factors that relate to the problem, and thus the need for the program. The program should be conceptualized based on what is uncovered about the nature and extent of the problem, as well as the factors that are correlated with or cause the problem. It is also important at this stage to develop a clear idea of the impact of the problem across micro, mezzo, and macro domains. The focus of the program is then to address the “causal” factors to solve the problem. In addition, McLaughlin and Jordan (2004, p. 17) recommend identifying the environmental factors that are likely to affect the program, as well as how these conditions might affect program outcomes. Understanding the relationship between the program and relevant environmental factors contributes to framing its parameters.

During the third stage, the elements or components of the logic model are identified, based on the findings that emerged in the second stage. McLaughlin and Jordan (2004) recommend starting out by categorizing each piece of information as a resource or input, activity, output, short-term outcome, intermediate outcome, long-term outcome, or contextual factor. While some suggest that the order in which the components are identified is inconsequential to developing an effective logic model, most recommend beginning this process by identifying long-term outcomes and working backward (United Way of America, 1996; W. K. Kellogg Foundation, 2004).

The logic model is drawn in the fourth stage. Figure 31.2 provides an example of a typical logic model. This diagram includes columns of boxes representing the items for each component (i.e., inputs, activities, outputs, and short-term, intermediate, and long-term outcomes). Text is provided in each box to describe the item. The connections between the items within a component are shown with straight lines. The links or connections between components are shown with one-way directional arrows. Program components may or may not have one-on-one relationships with one another. In fact, it is likely that components in one group (e.g., inputs) will have multiple connections to components in another group (e.g., activities). For example, in Figure 31.2, we show that the funding resource leads to two activities, “Develop and initiate media campaign” and “Develop and distribute fact sheets.” Finally, because activities can be described at many levels of detail, McLaughlin and Jordan (2004) suggest simplifying the model by grouping activities that lead to the same outcome. They also recommend including no more than five to seven activity groupings in one logic model.

Stage 5 focuses on verifying the logic model by getting input from all key stakeholders. McLaughlin and Jordan (2004) recommend applying the if-then statements presented by United Way of America (1996) in developing hypotheses to check the logic model in the following manner:

given observations of key contextual factors, if resources, then program activities; if program activities, then outputs for targeted customer groups; if outputs change behavior, first short term, then intermediate outcomes occur. If intermediate outcomes occur, then longer-term outcomes lead to the problem being solved. (p. 24)

They also recommend answering the following questions as a part of the verification process (pp. 24–25):

1. Is the level of detail sufficient to create understanding of the elements and their interrelationships?
2. Is the program logic complete? That is, are all the key elements accounted for?
3. Is the program logic theoretically sound? Do all the elements fit together logically? Are there other plausible pathways to achieving the program outcomes?
4. Have all the relevant external contextual factors been identified and their potential influences described?

Challenges in Developing Logic Models

Frechtling (2007) describes three sets of challenges in developing and using logic models, including (a) accurately portraying the basic features of the logic model, (b) determining the appropriate level of detail in the model, and (c) having realistic expectations about what logic models can and cannot contribute to program processes. These challenges are reviewed in more detail in the following section.

Portraying the Logic Model's Basic Features Accurately

The basic features of a logic model must be clearly understood in order for the logic model to be useful. In particular, logic model developers often encounter difficulty in four areas: confusing terms, substituting specific measures for more general outcomes, assuming unidirectionality, and failing to specify a timeframe for program processes (Frechtling, 2007; McLaughlin & Jordan, 2004).

One issue in developing the logic model is accurately differentiating between an activity or output and an outcome. Frequently, activities and outputs are confused with outcomes (Frechtling, 2007). They can be distinguished by remembering that activities are steps or actions taken in pursuit of producing the output and thus achieving the outcome. Outputs are products that come as a result of completing activities. They are typically expressed numerically (e.g., the number of training sessions held). Outputs provide the documentation that activities have occurred. They also link activities to outcomes. Outcomes are statements about participant change as a result of experiencing the intervention. Outcomes describe how participants will be different after they finish the program.

Another issue in portraying the basic features of logic models accurately is not confusing outcomes with the instruments used to measure whether the outcomes were achieved.

For example, the outcome may be decreased depression, as measured by an instrument assessing a participant's level of depression (Center for Epidemiological Studies–Depression Scale; Radloff, 1977). Some may confuse the outcome (i.e., decreased depression) with the instrument (i.e., Center for Epidemiological Studies–Depression Scale) that was used to determine whether the outcome was met. To minimize the potential for this confusion, Frechtling (2007) recommends developing the outcome first and then identifying the appropriate instrument for determining that the outcome has been reached.

A third issue in logic model development is avoiding the assumption that the logic model and, by implication, the theory of change that the logic model portrays move in a unidirectional progression from left to right (Frechtling, 2007; McLaughlin & Jordan, 2004). While the visual display may compel users to think about logic models in this way, logic models and the programs they represent are much more dynamic, with feedback loops and interactions among components. The feedback loop is illustrated in Figure 31.2, showing that the experiences and information generated from reaching short-term outcomes are used to refine and, it is hoped, improve the activities in the next program cycle that are expected to lead to these outcomes. Also, assuming uniform directionality can enforce the belief that the inputs drive the project, rather than attaining the outcomes. This underscores the importance of starting with the development of outcomes when putting together a logic model.

The final issue is including a timeframe for carrying out the processes depicted in the logic model. The lack of a timeframe results in an incomplete theory of change as well as problematic expectations about when outcomes will be reached (Frechtling, 2007). Whether outcomes are expected too soon or not soon enough, key stakeholders may assume that the theory of change was not accurate. Developing accurate predictions of when outcomes will be reached is often difficult, especially with new projects in which very little is known about program processes and so forth. In this case, as more clarity emerges about the amount of time it will take to complete activities, timeframes should be revisited and modified to reflect the new information.

Determining the Appropriate Level of Detail

A second set of challenges is to determine how much detail to include in the logic model. The underlying dilemma is the level of complexity. Models that are too complex, with too much detail, are time-consuming to develop and difficult to interpret. Thus, they are likely to be cumbersome to use. Models that lack enough information may depict an incomplete theory of change by leaving out important information. For instance, if activities are combined into particular groups, it is possible that important links between specific activities, outputs, and outcomes will not be represented. This increases the possibility of making faulty assumptions about program operations and how these operations lead to positive participant outcomes.

Realistic Expectations

The final set of challenges in using logic models is not expecting more from logic models than what they are intended to provide. Frechtling (2007, p. 92) notes that some may inaccurately view the logic model as a “cure-all” and that, just by its mere existence, the logic model will ensure the success of the program and the evaluation. Of course, the efficacy of a logic model depends on the quality of its design and components. A logic model cannot overcome these types of problems. Frechtling identifies four common issues here. First, sometimes new programs are such that applying the theory of change and a

representative logic model is premature. This is the case for programs in which a priori expectations about relationships between activities and outcomes do not exist.

A second risk in this area is failing to consider alternative theories of change. Alternative explanations and competing hypotheses should be explored. Focusing on only one theory of change may result in not recognizing and including important factors that fall outside of the theory's domain. Ignoring these competing factors may result in the failure of the logic model and the program.

Third and related, it is critical to acknowledge the influence of contextual factors that are likely to affect the program. Interventions always exist and function within a larger environment. Contextual factors influence the success or failure of these interventions. For instance, one contextual factor that might affect outcomes of the program diagrammed in Figure 31.2 is the diversity of the target group. As Frechtling (2007) observes, this diversity may include language differences among subgroups, which need to be accounted for in developing program materials.

Finally, logic models cannot fully compensate for the rigor of experimental design when testing the impact of interventions on outcomes (Frechtling, 2007). The logic model explicates the critical components of a program and the processes that lead to desired outcomes (the program theory of change). The implementation of the model provides a test of the accuracy of the theory. However, validation of the logic model is not as rigorous a proof as what is established through study designs employing experimental or quasi-experimental methodologies. Causality cannot be determined through logic models. When possible, an evaluation can be strengthened by combining the advantages of logic modeling with experimental design.

Logic Modeling in Practice: Building Blocks Family Literacy Program

The following provides an example of logic modeling in practice. The example describes the use of a program logic model in developing, implementing, and evaluating the Building Blocks family literacy program and how client exit data were then used to revise the model in a way that more explicitly illustrated the program's pathways to achieving intended outcomes (i.e., feedback loop; Unrau, 2001, p. 355). The original program outcomes were to increase (a) children's literacy skills and (b) parents' abilities to assist their children in developing literacy skills. The sample included 89 families who participated in the 4-week program during its initial year of operation. The following describes the process by which the logic model was developed and how the client outcome data were used to fine-tune the logic model.

The family literacy program's logic model was created at a one-day workshop facilitated by the evaluator. Twenty key stakeholders representing various constituencies, including program staff (i.e., steering committee members, administration, and literacy workers), representatives from other programs (i.e., public school teachers, child welfare, and workers and clients from other literacy programs), and other interested citizens, participated in the workshop (Unrau, 2001, p. 354). A consensus decision-making process was used to reach an agreement on all aspects of the process, including the program purpose, the program objectives, and the program activities.

During the workshop, stakeholders created five products that defined the program parameters and informed the focus of the evaluation. These products included an organizational chart, the beliefs and assumptions of stakeholders about client service delivery, the questions for the evaluation, the program's goals and objectives, and the program

activities. The program goals, objectives, and activities were then used to develop the original logic model.

One of the evaluation methods used to assess client outcomes was to conduct semi-structured phone interviews with the parents after families completed the program. Random selection procedures were used to identify a subset ($n = 35$ or 40%) from the list of all parents to participate in the interviews. Random selection procedures were used to ensure that the experiences of the interviewees represented those of all clients served during the evaluation time period. Relative to the two program outcomes, respondents were asked to provide examples of any observed changes in both their children's literacy skills (Outcome 1) and their ability to assist their children in developing literacy skills (Outcome 2; Unrau, 2001, p. 357). The constant comparison method was used to analyze the data (Patton, 2002). In this method, meaningful units of text are assigned to similar categories to identify common themes.

What emerged from the parent interviews was more detailed information about how the two intended outcomes were achieved. Parent experiences in the program suggested four additional processes that link to reaching the two final outcomes. This information was added to the original logic model to more fully develop the pathways to improving children's literacy skills through the family literacy program. These additional outcomes were actually steps toward meeting the two originally intended outcomes and thus identified as intermediate outcomes and necessary steps toward achieving the originally stated long-term outcomes. Figure 31.3 provides a diagram of the revised logic model. The shaded boxes represent the components of the original logic model. The other components were added as a result of the parent exit interview data.

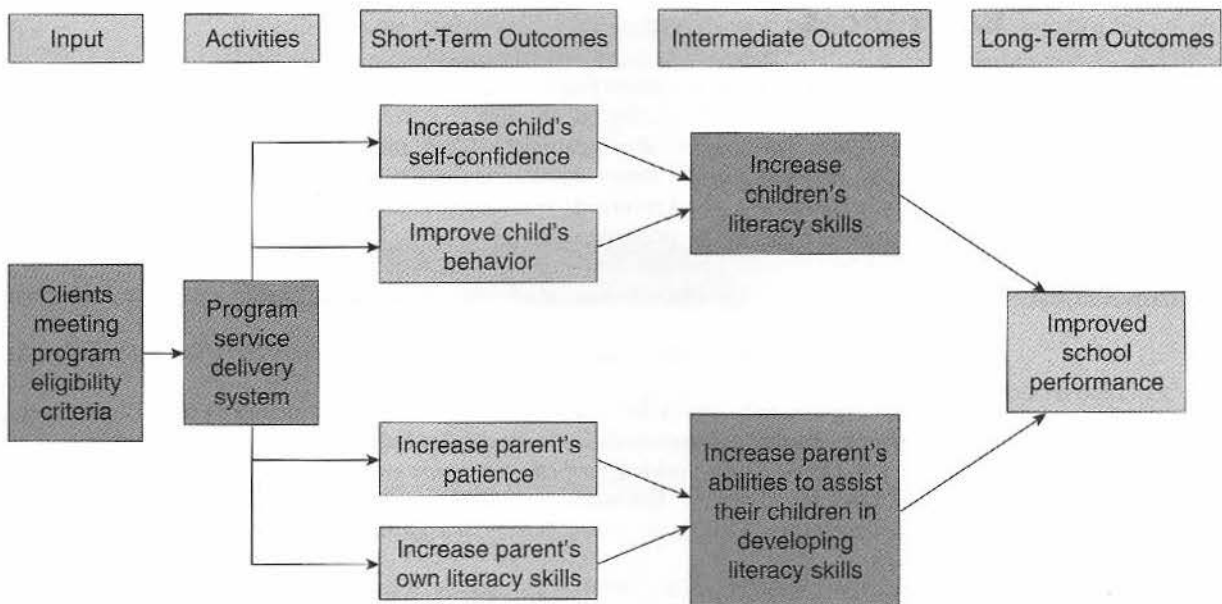


Figure 31.3 Example of a Revised Program Logic Model for a Family Literacy Program

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NOTE: The shaded boxes represent the logic model's original components. The other boxes were added as a result of feedback from clients after program completion.

While the parent interview data were useful in revising the program logic about client change, it is important to interpret this process within the appropriate context. This part of the evaluation does not provide evidence that the program caused client change (Rossi et al., 2004). This can only be determined through the use of experimental methods with random assignment. Nonetheless, these parent data contribute to developing a more fully developed model for understanding how family literacy programs work to improve outcomes for children. Experimental methods can then be used to test the revised model for the purpose of establishing the causal pathways to the intended outcomes.

Conclusion

The purpose of this chapter was to introduce the reader to logic models and to the logic modeling process. Logic models present an illustration of the components of a program (inputs, activities, outputs, and outcomes) and how these components connect with one another to facilitate participant change (program theory). They are tools to assist key stakeholders in program planning, program implementation and monitoring, and especially program evaluation. They can also be used as communication tools in explaining program processes to key stakeholders external to the program. Creating a logic model is a time-consuming process with a number of potential challenges. Nonetheless, a well-developed and thoughtful logic model is likely to ensure a program's success in reaching its intended outcomes.

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USEFUL WEB SITES

<http://www.wkkf.org>

Web site from the W. K. Kellogg Foundation containing useful templates and exercises in developing a logic model for a research project.

<http://www.unitedway.org/Outcomes/Resources/MPO/index.cfm>

Web site from the United Way's Outcome Measurement Resource Network, demonstrating the use of logic models in clarifying and communicating outcomes.

<http://www.cdc.gov/eval/resources.htm#logic%20model>

Web site from the Centers for Disease Control and Prevention's Evaluation Working Group, containing logic model resources.

DISCUSSION QUESTIONS

1. Define the term logic model.
2. Describe the difference between program activities, program outputs, and program outcomes.
3. Discuss the purpose of including lines with arrows in logic models.
4. Discuss the relationship between a program's theory of change and its logic model.
5. Describe the uses of logic models.