The Logic Model: An A-to-Z Guide to Training Development, Implementation, and Evaluation*

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Abstract

The call for accountability in interventions mandates that agencies follow a careful course throughout, including an assessment that helps to define problems, parallel needs, and appropriate outcome objectives; an intervention logically designed and implemented to address these; and both process and outcome evaluation to gauge the effectiveness of the intervention. Focusing on training as an intervention, this article describes an appropriate logic model and its use as a guide in training development, implementation, and evaluation.

The tension between the increasing need for social services and decreasing funds for these services has imposed on agencies a growing demand for accountability, as measured in the benefits that programs bring the clients for whom they are planned and the effectiveness and efficiency of their delivery (Gabor, Unrau, & Grinnell, 1998; Seidl, 1995; United Way, 1994; Weinbach, 1998). Paralleling this phenomenon is a devolution of responsibility for decisions and accountability to lower organizational levels than in the past. Thus agencies on all levels must show positive results to

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continue getting the funding they need to serve their clientele and remain in business. This requires careful assessment, planning, and evaluation.

Training falls under the same kind of scrutiny as other agency programs and, like them, must prove its worth. It is not enough to do a training and then conduct an outcome evaluation after it is over. To measure training's accountability, evaluation must be an integral part of the design from the beginning, evolving from needs assessment and tailored to measure efficiency and effectiveness from the training's inception throughout its implementation. The logic model is an ideal tool to guide this process.

In this paper, the authors discuss the logic model and how they have used it in training development, implementation, and evaluation at The Center for Child and Family Studies (The Center), College of Social Work, University of South Carolina.

The Logic Model

The logic model is not a new idea, as consultant Robert Yin notes (in Horsch & Anderson, 1997); it has a history in program evaluation. What is more revolutionary, though based on the obvious, is the recognition that evaluation as a mechanism for accountability is meaningless if needs assessment, program conceptualization, intervention, or any combination of these components is flawed. Each step of a program, from the earliest talking stages to the final evaluation, must tie into a rational understanding and plan. More than ever before, agencies must accurately identify problems, design and implement programs that are carefully planned to solve them, and both continually and finally evaluate these programs to ensure that they meet their goals and objectives. The logic model offers a conceptual and practical framework for this exacting work. Essentially, *it is a tool to guide critical thinking.*

The academic literature offers little on the logic model and its use, particularly beyond the purposes of evaluation. For Yin (cited in Horsch & Anderson, 1997), the logic model "outlines the cause and effect steps that link interventions with expected outcomes" (p. 2). In one of the few articles on the logic model in its more comprehensive use, Alter and Egan (1997), who employ it in teaching social work courses, describe its value in "teaching

critical thinking in social work practice" (p. 85) and explain logic modeling as "a process of planning for purposive change" (p. 87). Julian (1997), looking at services and their outcomes from an ecological perspective, defines the logic model as "a tool for conceptualizing the relationships between short term outcomes produced by programs, intermediate system impacts and long term community goals" (p. 251).

The logic model may be used in various ways. The Louisiana Challenge Project (Louisiana Challenge Evaluation, 1998), aimed at developing transferable models to improve the academic achievement and job preparation of underserved children, is structured on a logic model. R.E.A.C.H. of Louisville (1998), working with the Family Resource and Youth Service Centers, is using a logic model to evaluate the service delivery of the latter agency. United Way of America (1996) uses a logic model in its programs and offers a logic model guide in which it quotes other agencies on their success with the model. The Ontario Network of Employment Skills Training Projects (ONESTeP) (1995) has used a logic model for clients receiving social assistance to measure outcomes in the several types of assistance programs it offers.

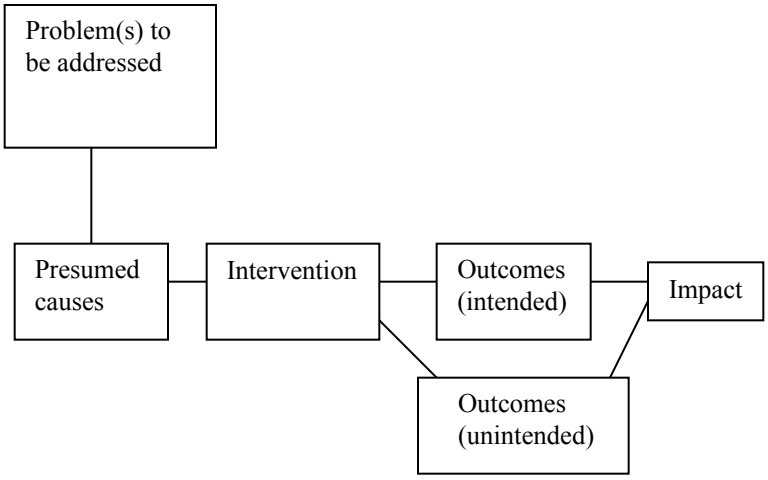
Not only are the logic model's uses varied, but the model itself may take a number of different shapes. It can follow a simple narrative form, assuming all the steps are included. It may be easier, however, to use a layout that provides visual keys to the connections between and among corresponding elements in the program. The Higher Education Center for Alcohol and Other Drug Prevention (HEC) (1997), which helps agencies plan programs with appropriate built-in evaluation components, offers a generic logic model form through the Internet. United Way (1996), the Louisiana Challenge Evaluation (1998), and Julian (1997) offer other forms.

In the literature that does exist on the logic model, there is evidence that it makes a difference in project planning and outcomes. United Way of America (1996) cites many quotes from program directors and administrators who are sold on its use. Julian, Jones, and Deyo (1995) critiqued two Columbus/Franklin County, Ohio, programs: the Family Development Project, which offered case management services to families on public assistance, and the Perinatal Addictions Program. It appeared that less successful elements of the first program might have been more positive had the planners first developed a detailed logic model.

This experience led to more intricate planning, using the logic model outline, for the second program, which was still running and thus not yet completely evaluated when the authors wrote their account.

Though there is no one official or "right" way to construct the model, it must contain all the elements that are needed to tie the program together coherently and logically. The Center uses a simple yet clear model that contains the essential elements and promotes a progression of critical thinking throughout. This model, unlike some others, contains a statement of the problem to be addressed and the problem's presumed causes. The model is presented visually in Figure 1.

Figure 1. The Logic Model
Used by The Center for Child and Family Studies



Using the Logic Model in Designing Training and Evaluation

The Center is in part a training organization that has a longstanding working relationship with the South Carolina Department of Social Services (DSS) and a history of training design, delivery, and evaluation for DSS and other agencies. In this work The Center uses a logic model for training design and evaluation. The process of planning in the logic model framework is meant to ensure that the training is based on an actual and well-defined problem for

which we hypothesize causes; includes an intervention (in this case, training) that can reasonably be theorized to meet that need by addressing one or more of the hypothesized causes; sets forth expected short-term, or proximal, outcomes and is geared to look for unexpected ones; and can be continuously and then finally measured in terms of meeting the identified need, or distal outcomes. The Center's approach to each element of the model is outlined below.

Problem

Some agencies do not include the problem statement in their logic models. At The Center every logic model begins with a problem statement. This may sound obvious and may be so in program development, but it is not so obvious in training. Often in the past, training has been developed to address a topic or area but without a keen sense of why training was needed.

For example, if family reunification were the focus and training were simply developed on this topic without a thorough needs assessment, the training would lack clear objectives related to the actual needs of the agency and the professionals mandated to pursue reunification. To clarify up front, we could begin by asking the agency to describe the problem around reunification. Are children spending too long in care? Are too few being reunified? Is the rate of reunification for one class of children (adolescents, AOD-affected) inordinately low? Are reunifications not "sticking" and children returning to care? If the presumed causes can be at least hypothesized on the basis of reliable information, then these will lead directly to formation of training objectives and design. For both trainers and trainees to focus their efforts effectively and evaluate their work meaningfully, it is necessary to begin with a clear sense of the problem to be addressed.

Further, it is important not to confuse a problem with a solution. Still using the example above, if training designers state the problem as "Workers need more training in family dynamics around the return of children," they have actually bypassed the step of defining the problem and jumped to the solution. Sometimes, too, there is a general belief in the agency that workers simply need training to do their job effectively. If so, it is crucial to determine where this idea came from; whether or not it is valid; and if it is valid, in exactly what areas workers actually do need training. Last, if a problem simply cannot be found, then there is

no need to waste always scarce training resources. However, it requires very careful, logical thought to make this determination with certainty. It is more likely that a problem exists and is just harder to define than was initially supposed or that the effort to define it has gone astray at some point.

Presumed Causes

Some logic models omit this block, but we believe it is essential for several reasons. First, it helps us to think more deeply and to uncover implicit theory. As Rog (1994) states in her discussion of evaluation, an intervention plan should incorporate appropriate theoretical and empirical knowledge. Looking at the problem in all its facets in the beginning helps us not only to define and clarify it but also to see what theory or empirical knowledge might be relevant to guide our training. Thus it can help us develop the "theory of action" (Patton, 1997, cited in Center for Studying Health System Change, 1998, p. 1) that is represented by the logic model and underlies the intervention and its evaluation.

Say, for example, the agency has stated that disruption of reunification occurs because families are inadequately prepared for it. And say a presumed cause the agency says training could address is that workers are not spending enough preparation time with families just before returning their children. It would then be necessary to go deeper and form educated hypotheses about the causes for *this:* lack of knowledge on workers' part? lack of motivation? inadequate understanding of need? literally not enough time? After this determination is made, we can look intelligently at what training can and cannot address. It can address lack of knowledge and understanding of need; whether it can address the issue of motivation is problematic; it cannot address a real problem of time.

The logic model also helps us understand fully that many factors can contribute to problems. Just as there are problems that cannot be addressed directly by training, as in the above example, so with some problems there are causes that can or cannot be targeted for training intervention. By careful analysis of the problem and its contributing factors or causes, we can look at which of these might be more amenable to training intervention and therefore more likely to be the most sensible areas on which to spend energy and funds. Then we can more rationally design

training to effect change where this appears to be possible and at least have an honest discussion about what it cannot change.

Intervention

As we begin to design our intervention—in this case training—there are many options in terms of both content and method. Not only must the content clearly reflect the problem and presumed causes, but also training methods must be selected with an eye toward effectiveness.

For instance, normally skills cannot be taught through lecture alone, and collaboration is difficult to teach without actual collaborative experiences as part of the training. In addition, we will want to consider some agency contextual factors that will influence training effectiveness. For example, to what extent do supervisors support the training? Do they understand the need and value the training enough to encourage workers to attend? And are they prepared to support the training through informed supervision so training effects don't quickly disappear? Does the agency performance appraisal system support and reward higher levels of practice as being taught through training?

Beyond considering all these questions and issues, it is helpful to recognize that performance is a blend of capacity, motivation, and opportunity and to ask how training, and what kind of training elements, can influence each of these factors. Capacity, the level at which much training is targeted, includes primarily knowledge and skills. Motivation is addressed secondarily. We must ask ourselves how motivation can be addressed apart from the work environment or in the face of a difficult and unsupportive work environment. Opportunity may be even more difficult to address since it involves work environment, agency culture, legal and policy mandates and constraints, and scheduling, among other factors.

Outcomes

Outcomes are the short-term, or proximal, results of the training. Though they appear in the logic model after intervention, in reality work on outcomes must occur before or during work on the intervention. After the intervention is too late.

It is helpful to think of outcomes as a more detailed and solution-directed articulation of presumed causes. For example, if a presumed cause of unsuccessful reunification is workers' neglecting to involve biological parents during the period of substitute care, reasonable outcomes of training would be for

workers to (a) understand the importance of involving biological parents, (b) know creative strategies for involving these parents, and (c) demonstrate more occurrences of such involvement.

Desired outcomes are often hard to measure, but this is no reason to abandon either the articulation of outcomes or the attempt to measure them. At the same time, weak or irrelevant measures will incorrectly represent the results of training or will not be sensitive enough to measure them genuinely and thus will provide no guidance to change needed in the intervention to address the problem more precisely. When measurement is difficult, it is necessary to acknowledge the limitations and imperfections of the process and design the best approach possible under the circumstances.

Another part of outcome measurement is looking at unintended consequences. These are outcomes, either positive or negative, that are usually not stated in the logic model. That is to say, they are not the specified desired outcomes, though they may not necessarily be negative. If it is reasonable to expect a certain outcome that is not the one desired, this should be noted in planning the evaluation and will become more apparent in the actual implementation of the evaluation. For example, training addressed at helping workers effect successful family reunification might help them learn, simply through talking with other workers, new resources outside the agency to which to refer families for appropriate help, though this may not have been specifically addressed by training.

Impact

Impact refers to long-term, or distal, results of the intervention. While short-term outcomes are likely to address presumed causes, long-term outcomes more directly address the problem. Impact measures are often omitted because of the difficulties involved in accessing appropriate measures and using a longitudinal design and the multiple causation of most problems.

Despite these difficulties, however, impact measurement should be undertaken to keep the intervention honest. This may mean addressing long-term outcomes with shorter-term proxy measures. We know, for example, that it will take a long time to measure a desired outcome of fewer child abuse and neglect reports, so we can measure in the shorter term whether or not workers are actually spending more time with families prior to

reunification, teaching them anger control methods, helping them bolster their social support systems, and the like. Since these actions can reasonably be expected to bring about the long-term outcomes, we can accept measurement of them as proxy measures.

In measuring impact, existing data should be used as much as possible, both because this is the information available and because these data are meaningful to the system. It is crucial, however, to avoid misinterpreting these data. The relationship between the impact and the problem is not simple. There are at least three kinds of possibilities to consider. First, if impact measurement actually shows that the problem has substantially disappeared, it is possible (though not likely altogether certain because of contextual factors) that we understood the problem correctly and the intervention provided the whole solution. Second, if impact measurement shows improvement in relation to the problem, it is possible that we understood the problem correctly and were able to address one or more of the presumed causes or were able partially to address the causes. This is probably the most likely result of training and the most impact we will ever see.

Last, if impact measure shows no improvement in the problem, there are several likely reasons: (a) we effectively addressed at least some of the causes, but more causes needed to be addressed to solve the problem; (b) we effectively addressed some of the causes, but our measurements lacked sufficient sensitivity to discern any change; (c) we understood the problem correctly, but the intervention, while appropriate, was not carried out as designed or was inadequate to bring about the desired change; or (d) the intervention was irrelevant, indicating a problem in conceptualization or implementation of the intervention and a need to return to the logic model for analysis.

Implementing the Evaluation

Seidl (1995) places program evaluation "in the interface between social work practice and research" (p. 1927) and notes its application of scientific thinking and methodology to the task of assessing the effectiveness and efficiency of a program and also the quality of the services it provides. As noted above, evaluation is used to promote accountability and finally to demonstrate this to funders and stakeholders. But evaluation does not happen just at the end of a training; it also helps to monitor training as it is being implemented and to point out where it may need revision

in content, delivery, or both. Thus we evaluate both process and results.

Once the logic model has been completed, both the intervention and its evaluation will be clearly understood and explicitly stated. When this has happened, it is time to implement both simultaneously and to evaluate both process and, finally, results.

Process Evaluation

Process evaluation monitors fidelity to the intervention. In other words, it answers the accountability question: Did we do what we said we would do? This is of utmost importance because otherwise the results cannot be clearly connected to the intervention.

To understand process evaluation, it is important to understand that key elements of the intervention must be marked for monitoring. It is impossible to monitor everything, but it should be possible to identify the most essential features of the intervention to monitor. It is important to ensure that intervenors (in this case, trainers) be adequately prepared to deliver the intervention. Otherwise there is no hope of fidelity to the plan. And because a logic model does not represent "truth" but rather our best hypotheses about the problem and how to solve it, individual aspects of the intervention can be changed in the process.

The important point is that such change should result from new knowledge emanating from the intervention as it progresses, not from neglecting the intervention plan or from arbitrarily or carelessly changing it. Intentional revision of the intervention is a good thing if it grows out of observations about what is being honestly tried, according to plan, but obviously is not working.

Results Evaluation

Measurement of outcomes and impact involves carrying out the evaluation as already planned with any adaptations that may have been indicated by the process evaluation. This is the testing point for the hypotheses about the connections among elements of the logic model. Each block of the model is a potential slippage point in our thinking. It is the point for questioning our understanding of the problem and its presumed causes, the relationship between the presumed causes and the intervention (both content and methodology), the relationship between the intervention and outcomes and/or measures, and the relationship between outcomes

and impact and/or measures. If we are off in any of the connections, we can see by the logic model where the problem lies and know this is where we must start rethinking the process.

The Center's Experience with the Logic Model

The Center has found the logic model to be an invaluable tool in all its projects. As the process of developing training has evolved over the years (see Ross, Wright, Skipper, & Valentine, 1998), it has become increasingly clear that without an integrated understanding and plan from the beginning, it is impossible to predictably and responsibly address any problem through training. For this reason, The Center aims to approach each project by constructing a logic model as outlined above. There are questions in the Appendix to further help training entities with logic modeling. We are interested in hearing from other training organizations about their use of the logic model and how it has guided their development and administration of training.

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Appendix

Questions to Ask

Here are some questions that can be used repeatedly in conjunction with the model to deepen and clarify thinking.

Problem

1. What problems is training being asked to address?
2. Do problem statements make it clear what current outcomes (e.g., client/system conditions) are unacceptable or need to be modified?
3. Do problem statements make it clear what worker behavior need to be modified?
4. What evidence is available to support problem definition?
5. Does the evidence represent multiple perspectives on the problem?
6. What additional information do we need to understand the problem, and how will we obtain that information?

Presumed Causes

1. What does the agency see as causes of the problem(s)?
2. What do others see as causes of the problem(s)?
3. Are multiple perspectives on causation represented?
4. What information about causation is available from theory?
5. What information about causation is available from research?
6. What information about causation is available from practice?
7. What is the composite view of causation?
8. What is your confidence in the composite view of causation?
9. What additional work can you do if you are not satisfied with the view of causation at this point?

Intervention

1. What aspects of presumed cause can/will training address?
2. Of all trainee behaviors (thoughts, feelings, actions), which can be modified by training?
3. What knowledge, attitudes, or skills in relation to the problem(s) do trainees lack?
4. What experiences are apt to be most successful in addressing identified deficits?

5. Overall, how can motivation, capacity, and opportunity be strengthened?
6. How confident are you that the training can affect trainee behavior?
7. How confident are you that trainees' behavior changes will affect the presumed causes that were selected to address?
8. If you lack confidence, what further information or assurance do you need?

Outcomes

1. What do you expect to happen as a result of training? How will trainee behaviors have been affected directly?
2. What will you accept as evidence of behavioral change?
3. What is your level of confidence in the appropriateness and sensitivity of your measures?
4. How will you measure durability of change?
5. If expected changes are not apparent, what is your explanation and how will you respond?

Impact

1. What do you expect to be different on the job for workers as a result of training?
2. Is this directly related to a presumed cause or problem definition?
3. What do you expect to be different for clients or the agency as a result of training?
4. Is this directly related to a presumed cause or problem definition?
5. How might you know if these changes have occurred?
6. If you are not satisfied with the impact (i.e., presumed causes or the problem have not been sufficiently affected), how do you explain that?
7. Did you incorrectly understand causes?
8. Was the training inappropriate, weak, or ineffective?
9. Is impact so dependent upon other systems elements that effective training alone will not affect the problem?