

Logic Models

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Outline

- What are logic models?
- Why use them?
- Types of logic models

- Developing a logic model
- Practical experience of developing a logic model

What are logic models?

Kellogg Foundation

- “A systematic and visual way to present and share your understanding of the relationships among the resources you have to operate the program, the activities you plan, and the changes and results you hope to achieve”
- Logic models focus on the *big ideas*, not the details of your intervention

W.K. Kellogg Foundation.
Logic Model Development Guide 2004

Kellogg Foundation

- Reading a logic model is about following a chain of reasoning of ‘if ...then...’ statements which connect the parts of the intervention
- Multiple terms used: ‘logic model’, ‘programme theory’, ‘intervention theory’ and ‘theory of change’

W.K. Kellogg Foundation.
Logic Model Development Guide 2004

What is theory?

- Theories are analytical tools for understanding, explaining, and making predictions about a given subject matter
- Theory in the context of logic models is a set of causal assumptions which link intervention activities to intended outcomes
- Theory can be explicit or implicit

<https://en.wikipedia.org/wiki/Theory>

Evidence for use of theory

- Evidence is mixed in terms of intervention effectiveness
- May be due to theory or other factors
- An explicit theory base allows testing of the causal assumptions underlying intervention effects (logic model)

Use of theory in development and evaluation

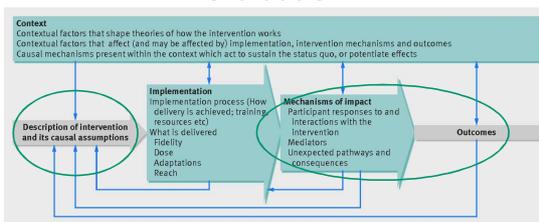


Fig 1 Key functions of process evaluation and relations among them (blue boxes are the key components of a process evaluation).

Moore.... Hardeman et al. BMJ 2015;350:bmj.h1258

Why use logic models?

Understanding your intervention

- Brings intervention's concepts and ideas to life
- Shows link between activities, outcomes and long term strategic outcomes set by government or funder
- Tells the story of the intervention in simple words: causal links between an identified need, what you do and how it makes a difference for the target group(s)
- Makes you think about why an intervention exists, why you do what you do and why you think that makes a difference
- Can expose weak links or potential contradictions in the hypothesised causal mechanism

W.K. Kellogg Foundation 2004; Evaluation Support Scotland,
www.evaluationsupportscotland.org.uk

Communication with stakeholders

- Aids the communication of your thinking to people who support your work
- Provides stakeholders with a road map
- Can identify where stakeholders differ in their understanding of the intervention
- Increases stakeholder involvement and commitment
- Brings people with different views together

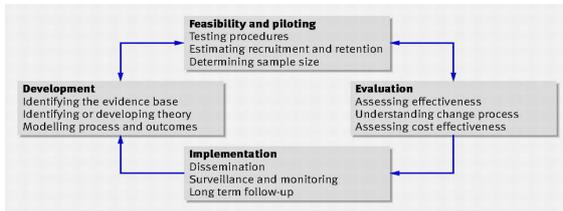
W.K. Kellogg Foundation 2004; Evaluation Support Scotland,
www.evaluationsupportscotland.org.uk

Development, implementation and evaluation

- Helps to plan a new intervention or project
- Identifies the risks of the intervention and how they could be managed
- Helps identify and collect data you need to monitor
- Helps understand what and when to evaluate
- Provides insight in where to focus your research

W.K. Kellogg Foundation 2004; Evaluation Support Scotland,
www.evaluationsupportscotland.org.uk

Benefits at different stages



Craig et al., BMJ 2008

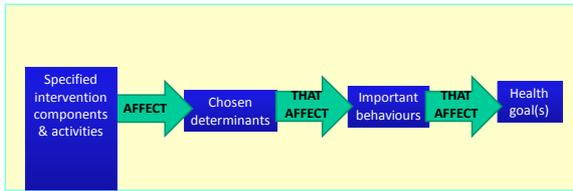
Limitations

- Represents intention, not reality
- May overlook unintended outcomes
- Focuses on positive change, but change is not always positive
- May simplify complex causal mechanisms
- Doesn't address whether we are doing the right thing
- May stifle creativity and spontaneity

University of Wisconsin-Extension, Enhancing Program Performance with Logic Models 2003

Types of logic models

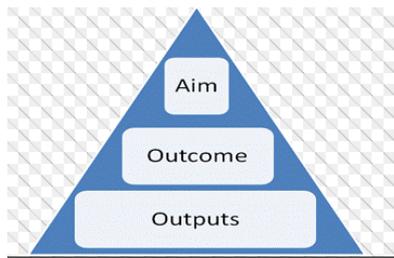
BDI Logic Model



Behaviour, Determinant, Interventions (BDI) Logic Model Components

Kirby, 2004

Weaver's Triangle



https://effectiveness.nidos.org.uk/Weavers_Triangle_Guidance

Weaver's Triangle

- Useful with limited number of intervention activities and outcomes
- Can be too simple and limit the ability to question assumptions
- Challenging to see connections visually or at what point change happens

Evaluation Support Scotland, www.evaluationsupportscotland.org.uk

Wisconsin Model

Program: _____ Situation: _____ Logic Model

Inputs	Activities	Outputs	Short-Term Outcomes	Medium-Term Outcomes	Long-Term Outcomes

Assumptions: _____ External Factors: _____

<http://fyi.uwex.edu/programdevelopment/logic-models/>

WK Kellogg Foundation (2004)

Resources	Activities	Outputs	Short and Long term outcomes	Impact
In order to accomplish our set of activities we will need the following	In order to address our problem we will conduct the following activities	We expect that once completed or underway these activities will produce the following evidence of service delivery	We expect that if completed or on-going these activities will lead to the following changes in 1-3 then 4-6 years	We expect that if completed these activities will lead to the following changes in 7-10 years

W.K. Kellogg Foundation 2004

Kellogg: Three approaches

- Theory approach: theory of change that influenced intervention design and plan
- Outcomes approach: early stages of intervention planning
- Activities approach: implementation process

W.K. Kellogg Foundation 2004

In sum...

- Range of formats
- There is no 'best' choice
- Select the format that fits your intervention and purpose best
 - e.g., who will use the logic model, how will it be used, and when - development, implementation, evaluation phase

Developing a logic model

Practice rather than cookbook approach

- Developing logic models is a process, and requires practice
- No right or wrong way: can start from left, middle or right
- No need to include all outcomes: logic model describes journey, not detail of everyday work

Evaluation Support Scotland, www.evaluationsupportscotland.org.uk; University of Wisconsin-Extension, Enhancing Program Performance with Logic Models 2003

Logic models are not static

- Like interventions, they can change over time
- They do not have to be linear - interactions between context and mechanisms underlying any intervention effects may not be linear
- Challenging to balance the 'big ideas' and the need to reflect complex realities

Kellogg Foundation, 2004, chapter 2;
Moore et al 2015

WK Kellogg Foundation (2004)

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W.K. Kellogg Foundation 2004

Basic intervention components

- Describe basic assumptions and add intervention components in the order in which they should occur
- Identify resources and/or barriers which enable or limit intervention effectiveness ('factors')
- Resources aim to support the solutions that your intervention proposes
- Decide on concrete intervention activities (processes, techniques) and link them to evidence from literature about what works

Kellogg Foundation, 2004

Link activities with outcomes

- Grant proposals often have strong rationale for intervention but lack linkage with what intervention will do and how it relates to evidence and best practice
- Funders want to see how interventions achieve effects – so can be helpful to start with outcomes
- Use ‘if .. then ..’ assumptions, e.g., ‘if you accomplish the planned activities you will deliver the amount of service or product as intended’

Kellogg Foundation, 2004, chapter 2

Describe the desired results

- Make outputs, outcomes, impact SMART
- Outputs: direct results of activities - size and scope of services/products delivered or produced by the intervention
- Outcomes: often individual level - change in attitude, behaviour or level of functioning
- Short term 1-3 years; long-term 4-6 years
- Impacts: organisational, community and/or system level changes expected from the intervention’s activities

Kellogg Foundation, 2004, chapter 2

Three approaches

- Theory-approach models: emphasise theory of change that informs the intervention, ‘how and why your intervention will work’
 - Grant proposals, development phases
- Outcomes approach models: focus on early aspects of intervention planning and attempt to connect the resources and/or activities with the desirable results
 - Informed by theory but not explicitly included
- Activities approach models: focus on details of implementation
 - Useful for intervention monitoring and management
- Guidance available for these specific models

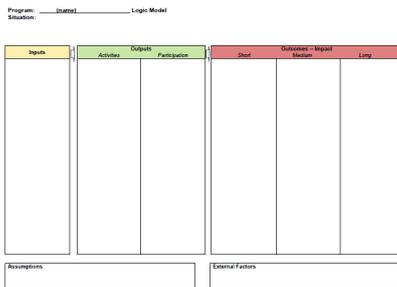
Kellogg Foundation, 2004, chapter 2

Assess the quality of your draft

Theory into Action Quality Criteria	Yes	Not Yet	Comments/Revisions
1. Major activities needed to implement the program are listed.	<input type="checkbox"/>	<input type="checkbox"/>	
2. Activities are clearly connected to the specified program theory.	<input type="checkbox"/>	<input type="checkbox"/>	
3. Major resources needed to implement the program are listed.	<input type="checkbox"/>	<input type="checkbox"/>	
4. Resources match the type of program.	<input type="checkbox"/>	<input type="checkbox"/>	
5. All activities have sufficient and appropriate resources.	<input type="checkbox"/>	<input type="checkbox"/>	

Kellogg Foundation, 2004

Wisconsin Model



<http://fyi.uwex.edu/programdevelopment/logic-models/>

Development of Wisconsin Model

- Situation: what is the problem and for whom? How do we know? Who cares? What influences the problem? Who else is trying to solve the problem?
- Inputs: which resources do we need or are we using?
- Outputs: what are we doing or do we need to do? Who are we reaching or targeting?
- Outcomes: what change do we expect as a result of those inputs/activities? Why is this important? Does it lead to something else? What will happen immediately and later on?

Evaluation Support Scotland, www.evaluationsupportscotland.org.uk

Considerations

- Determine the purpose of the logic model, who will use it and for what
- Involve others
- Explore the research, evidence base, and what others are doing and have done

University of Wisconsin-Extension, Enhancing Program Performance with Logic Models 2003

Approaches for a new intervention

- Start with long-term outcomes, informed by vision/strategy, and work backwards
- Start with long-term outcomes, then move to activities and connect them
- Start with long-term outcomes, then brainstorm all the things that need to happen to achieve them
- Turn model around: outcomes, outputs, input

University of Wisconsin-Extension, Enhancing Program Performance with Logic Models 2003

Standards of quality

- Meaningful: it represents action that is valued and worth doing
- Plausible: it makes sense
- Do-able: it can be carried out
- Testable: it can be verified

Working forwards: why?
Working backwards: how?
What else?

University of Wisconsin-Extension, Enhancing Program Performance with Logic Models 2003

Develop a logic model

Use an example intervention of a group member or example intervention provided

Develop a logic model for the intervention. It should depict:

- Resources, e.g., how you will apply resources to ensure implementation of intervention activities?
- Intervention activities: what will you implement?
- Outputs, outcomes and impact: what does the intervention aim to achieve?

Use one of the templates provided

Very brief physical activity advice

- Mitchell et al. - Protocol paper for the Very Brief Interventions (VBI) Trial (Trials 2016)
- A five-minute pedometer intervention to promote walking targeting apparently healthy adults aged 40-74 years
- Delivered by practice nurses or health care assistants as part of NHS Health Checks (preventive screening) in primary care
- The intervention consists of: brief assessment of physical activity and feedback, information about the physical activity recommendations, handing out a pedometer, and encouraging goal setting and self-monitoring

Conclusions and feedback

Take-home messages

- Logic models focus on the big ideas
- They can improve understanding of the intervention, communication with stakeholders, and inform intervention development, implementation and evaluation
- Select the format which best fits the intervention and purpose
- Developing a logic model is a process and requires practice

Key references

W.K. Kellogg Foundation (2004). Logic Model Development Guide.
www.wkkf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide

University of Wisconsin-Extension (2003). Enhancing program performance with logic models.

University of Wisconsin (2008). Developing a logic model: Teaching and training guide.

<http://fyi.uwex.edu/programdevelopment/logic-models/>

Online course: <http://lcourse.ces.uwex.edu>

Evaluation Support Scotland, Evaluation Support guide 1.2: Developing a Logic Model.
www.evaluationsupportscotland.org.uk/media/uploads/resources/supportguide1.2logicmodelsjul09.pdf
