EMPOWERING EDUCATORS
A GUIDE TO EVALUATING A PRODUCT LOGIC MODEL

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ABOUT THIS GUIDE

This guide will assist educators in understanding and evaluating logic models created by companies to describe their products. The guide's purpose is to empower educators, especially school leaders, to make well-informed decisions when choosing educational products that align with their goals and meet the requirements set by educational administrations. By the end of this guide, educators should be capable of discerning between high-quality and low-quality logic models and conducting critical assessments of educational products for their schools.

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About LXD Research

Charles River Media's LXD Research team designs and executes studies to provide evidence and insights for educational technology companies to ensure equity in education. With curriculum companies, we improve media-enhanced learning environments to provide opportunities for all students to succeed. LXD Research flexibly works with product leaders to design research plans that include multiple perspectives to provide a deep understanding of program implementation, teaching impact, and learner outcomes.

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I. INTRODUCTION

Importance of Logic Models in Product Evaluation

Do you often need help understanding how certain products will affect student learning even after reading about the product? Have you ever read a logic model that left you more confused about the product it was meant to clarify?

Logic models should effectively communicate the product's purpose and value in education and student learning. Consider the process of hiring a new teacher. When a teaching candidate goes through the interview process at a school district, they are often asked to provide a lesson plan and teach a mock lesson so the interview panel can gauge their skill and effectiveness. Doing this also provides the panel insight into how the teacher will fit into the overall climate and culture of the school. In educational products, the logic model is like the recipe for the product and the promise of what the product will do. It serves as a way to evaluate effectiveness and compatibility with a district or program's specific needs and goals.

An effective product logic model equips educators with a comprehensive framework, guiding the review of a product's educational value and alignment with the needs of their students and curriculum.

It empowers educators to gain clarity on how the product's features are designed to enhance learning outcomes, identify measurable indicators of success, and pinpoint areas for improvement to optimize educational efficacy.

A well-crafted logic model is like a roadmap for a product or program, outlining its objectives, the steps to reach them, and how to recognize when those objectives are achieved.

Alignment Between Research Foundations Paper and Logic Model

When exploring educational resources, you will frequently encounter detailed research papers with cited research that dive deep into the product's specifics, including its intended goals, the theory driving its creation, practical ways it can be used in teaching, and its potential influence on students' learning experiences. These papers act as a comprehensive guide, giving educators a thorough understanding of how the product was created, designed, and intended to be used. On the other hand, a logic model operates as a simplified, one-page summary of this extensive research. Picture it as a clear roadmap that highlights essential aspects of the product's functionality and how it aligns with educational objectives. It provides educators with a quick and accessible overview of the product's main components and its potential impact on the learning experience and process.

Overview of Guide Objectives and Structure

This guide will assist educators in understanding and evaluating logic models created by companies to describe their products. The guide's purpose is to empower educators, especially school leaders, to make well-informed decisions when choosing educational products that align with their goals and meet the requirements set by educational administrations. By the end of this guide, educators should be capable of discerning between high-quality and low-quality logic models and conducting critical assessments of educational products for their schools.

Resources used to create the guide:
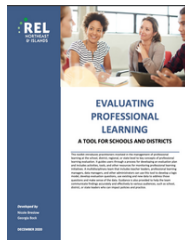
Breslow, N., & Bock, G. (2020). *Evaluation Professional Learning | A Tool for Schools and Districts.* REL Northeast & Islands.
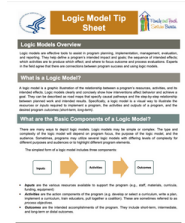
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Shakman, K., & Rodriguez, S. (2015). *Logic Models for Program Design, Implementation, and Evaluation: Workshop Toolkit*. Education Development Center.

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II. UNDERSTANDING THE PURPOSE AND COMPONENTS OF A LOGIC MODEL

Definition of a Logic Model

A logic model is like a visual map that shows how everything in a program is connected — the resources used, the activities undertaken, and the expected results. It represents how specific interventions and actions influence behavior and lead to accomplishing set goals. Essentially, a logic model is a roadmap that shows what is needed to run a program, what is done in the program, and what is hoped to be achieved in the end, both in the short term and in the long run. A product logic model is a concise snapshot of a product, condensing its key elements onto a single page. It outlines the intended users of the product, their expected interactions with it, and the anticipated results derived from its use.

Logic model is a general term for different ways to show how things change over time. Some other terms include:

- Conceptual map
- Mental model
- Blueprint for change
- Roadmap
- Framework for action
- Theory of Change
- Chain of causation
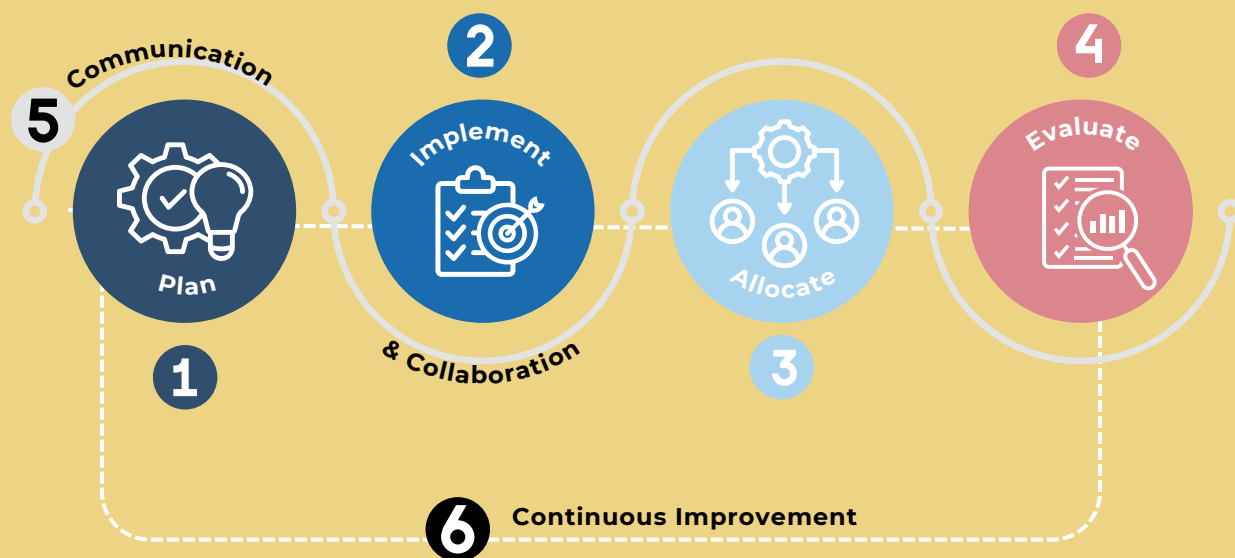
The Role of the Logic Model In Education

School districts often use logic models to plan, implement, and evaluate programs, curricula, products, and other initiatives. Some key roles of logic models in education include:

1 **Strategic Planning:** Logic models provide educators with a systematic approach to articulate the goals, activities, and expected outcomes of educational programs, which helps with strategic planning because the logic model can answer many of the questions that arise in the strategic planning process.

2 **Program or Product Design and Implementation:** By outlining the resources, activities, and expected outcomes, logic models guide educators in designing and implementing effective educational products or programs tailored to meet specific learning objectives and student needs. The logic model explains the overarching theory of change, offering a broad perspective on a program and communicating its underlying theory. It concisely describes why the creators anticipate the program or product will be effective.

3 **Resource Allocation:** By providing a clear overview of the inputs, activities, and intended outcomes, logic models help educators make informed decisions about allocating resources, ensuring that resources are efficiently utilized to support educational goals.

4 **Outcome Evaluation:** Logic models serve as a tool for assessing the effectiveness of educational interventions and programs, allowing educators to measure the impact of their efforts on student learning outcomes and make data-informed decisions to improve educational practices.

5 **Communication and Collaboration:** Logic models facilitate effective communication and collaboration among stakeholders by providing a shared understanding of the goals, activities, and expected outcomes of educational initiatives, fostering a common language, and facilitating collaboration toward shared goals and objectives.

6 **Continuous Improvement:** By establishing a clear framework for program planning and evaluation, logic models support a culture of continuous improvement in education, allowing educators to refine their practices, identify areas of strength and growth, and adjust their practices to meet the needs of students.

> "If you always do what you did, you'll always get what you got.
>
> **-Marian Diamond**
> Neuroscientist

Key Components of a Logic Model

The structure and components of the logic model may vary, depending on the creator, but a comprehensive logic model should incorporate Resources, Activities, Outputs, and Outcomes. For some logic models, additional components like Problem Statements and Goals may be included, and the outcomes may be categorized into short-term and long-term outcomes.

Problem Statements and Goals
If a logic model includes a problem statement and a goal component, the problem statement will define the issue or problem the product or program hopes to address. The goal, sometimes called the mission statement, provides the product's or program's overall purpose and ultimate objective.

Resources
The Resources section, sometimes called Inputs, outlines the resources, funding, staff, materials, or other necessary resources for implementing the program or initiative. In terms of product logic models, this section describes the product users and what the users do with the product.

Strategies and Activities
The Strategies and Activities section, sometimes called Objectives, Intervention, or Strategies, outlines what the program or initiative does with the resources to achieve its goals. In product logic models, this section describes what the users do when engaged with the product.

Outputs
Outputs are the immediate outcomes of the program's activities, proving that the planned actions were carried out as intended. For a product, this section will tell us what the data says about the user experience and the immediately noticeable impacts of using the product as intended.

Outcomes
The Outcomes section, sometimes called Effects or Results, details the specific changes or transformations in program participants' knowledge, skill, attitude, or behavior. The outcomes may be divided into short-term, achievable within 1 to 3 years, and long-term, achievable within 4 to 6 years. For a product, this section will outline the changes that occurred in users after using the product and/or summarize research findings regarding the benefits of using the product.

PROBLEM STATEMENTS AND GOALS

RESOURCES

STRATEGIES AND ACTIVITIES

OUTPUTS

OUTCOMES

Here is an example logic model for an app that helps increase math fluency for elementary students:

PRODUCT: Speed Reader is a literacy app for elementary students looking to improve their reading fluency.

PROBLEM STATEMENT:
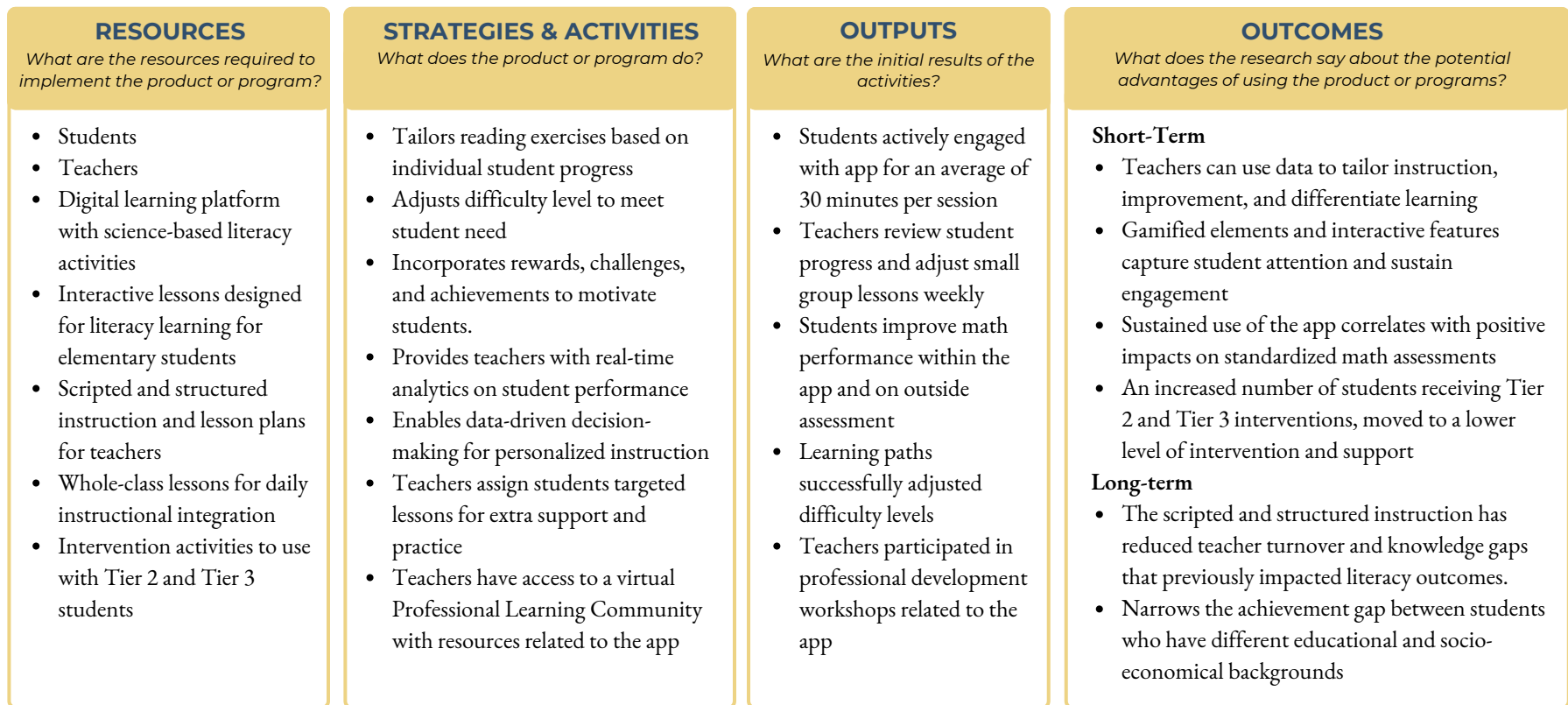There is a pressing need for individualized and evidence-aligned practice tools in classrooms with students at multiple reading levels. Many students struggle with developing quick and accurate decoding skills without targeted practice that includes feedback, impacting their overall literacy proficiency and confidence.

GOAL STATEMENT:
There is a pressing need for individualized and evidence-aligned practice tools in classrooms with students at multiple reading levels. Many students struggle with developing quick and accurate decoding skills without targeted practice that includes feedback, impacting their overall literacy proficiency and confidence.

RESOURCES	STRATEGIES & ACTIVITIES	OUTPUTS	OUTCOMES
What are the resources required to implement the product or program?	*What does the product or program do?*	*What are the initial results of the activities?*	*What does the research say about the potential advantages of using the product or programs?*
• Students • Teachers • Digital learning platform with science-based literacy activities • Interactive lessons designed for literacy learning for elementary students • Scripted and structured instruction and lesson plans for teachers • Whole-class lessons for daily instructional integration • Intervention activities to use with Tier 2 and Tier 3 students	• Tailors reading exercises based on individual student progress • Adjusts difficulty level to meet student need • Incorporates rewards, challenges, and achievements to motivate students. • Provides teachers with real-time analytics on student performance • Enables data-driven decision-making for personalized instruction • Teachers assign students targeted lessons for extra support and practice • Teachers have access to a virtual Professional Learning Community with resources related to the app	• Students actively engaged with app for an average of 30 minutes per session • Teachers review student progress and adjust small group lessons weekly • Students improve math performance within the app and on outside assessment • Learning paths successfully adjusted difficulty levels • Teachers participated in professional development workshops related to the app	**Short-Term** • Teachers can use data to tailor instruction, improvement, and differentiate learning • Gamified elements and interactive features capture student attention and sustain engagement • Sustained use of the app correlates with positive impacts on standardized math assessments • An increased number of students receiving Tier 2 and Tier 3 interventions, moved to a lower level of intervention and support **Long-term** • The scripted and structured instruction has reduced teacher turnover and knowledge gaps that previously impacted literacy outcomes. • Narrows the achievement gap between students who have different educational and socio-economical backgrounds

It is important to note that the layout and descriptions within a product logic model are not one-size-fits-all and can vary significantly from one product to another. The unique goals, intended user experiences, and nature of the product itself often shape the design details. Creating a logic model is a flexible process guided by the individualized considerations and objectives of the product's developers, educators, and stakeholders.

III. IDENTIFYING HIGH-QUALITY ELEMENTS OF A LOGIC MODEL

Several elements are crucial for ensuring product quality when assessing a logic model for product effectiveness. When reviewing a logic model, pay close attention to the clarity of the product goals. Evaluate the presentation and measurability of activities, ensuring they clearly illustrate anticipated outcomes. Additionally, ensure that the outputs are measurable and the outcomes are well-supported by solid research or data. A foundational research paper, brief lit review, or a few academic research citations should accompany a logic model.

Clear Goals

A product logic model may have a goal statement. A well-crafted goal should provide the overall direction and focus for the product while concisely expressing what the product is designed to accomplish. The goal should state what will happen due to the product being implemented.

A well-crafted goal statement:

- Targets a specific expected impact in addressing a key aspect of the product's purpose.
- Identifies the primary user group or audience to be served.
- Is free from specialized language, brief, clear, and easily comprehensible.
- Expresses outcomes in positive terms or to the reduction of risk behaviors or outcomes, steering clear of double negatives.

Examples of goal statements for a product logic model:

- This comprehensive math curriculum aims to equip elementary students with problem-solving skills and a deep understanding of numerical concepts, fostering mathematical proficiency and confidence.
- An immersive language learning platform that promotes global literacy by providing engaging experiences across multiple languages, fostering fluency and cultural understanding among diverse learners.
- An interactive environmental education program that aims to inspire a sense of environmental stewardship by offering immersive experiences and knowledge about sustainable practices, nurturing responsible behavior among young learners.
- This program strives to immerse young learners in robotics and engineering concepts, offering hands-on experiences to build robots while fostering creative and technical skills in STEM fields.

If a product's logic model does not explicitly state its goal, it is crucial that you can still figure out the purpose by looking at the problem statement and the different parts of the logic model. Each piece of the model should work together to show what the product is trying to achieve and what issues it aims to address. Even without an explicit goal, the logic model elements should provide a clear understanding of the product's overall objectives.

Role of Activities in Achieving Desired Outcomes

The Strategies & Activities section of the logic model should answer what the participants or users should do when interacting or leveraging the components of the product or program components. This section should outline activities, providing a detailed view of the fundamental elements of the product. The activities are designed to produce the desired user changes or outcomes when properly implemented. For example, if the product is created as a supplementary resource to improve math fluency, how must the student interact with the program, and how long and how often must the student use the product before seeing the intended results?

This section should answer the following questions:

- What are the recommended ways for users to engage with the key features to attain desired results?
- What is the ideal length of time users need to be engaged, and how should they be spaced apart?

Measurable Outputs and Research-based Outcomes

The outputs section should highlight the immediate, visible effects of engaging in the product activities. Outputs can be written as statements describing users' direct results and experiences from performing the activities. The outputs should highlight the minimum progress a user should make when engaging with the product.

Some example outputs could be:

- Students actively engaged in interactive science simulations for an average of 30 minutes per session
- Students have opportunities to practice solving word problems multiple days a week
- Students earn rewards for increasing performance levels
- Teachers identify student knowledge gaps for each topic covered
- Teachers gain support through ongoing professional development communities (PLCs) and learning modules

Outputs and outcomes are distinct elements that should not be confused. Outputs are the immediate things participants or users experience during the program or as a result of using the product. Conversely, outcomes are the lasting changes that happen because participants or users properly use the program or product. Recognizing this difference helps educators better assess how educational programs or products make a difference in teaching and learning.

Outcomes state the impact or intended results of using the program or product. Outcomes are organized by short-term, intermediate, and long-term. Short-term outcomes highlight the immediate changes following the use of the program or product. They focus on the user's knowledge, awareness, attitudes, and skills right after using the product. Meanwhile, intermediate outcomes highlight the shifts in behavior or actions due to the newly acquired knowledge. The short-term and intermediate outcomes are usually listed together.

Here are some examples of short-term and intermediate outcomes:

- Students can write words and small phrases in a clear and readable manner.
- Students quickly develop the ability to identify and recognize different types of math problems.
- Teachers collaborate with and learn from other teachers and teacher leaders in their content areas.
- Students increase their confidence when sounding out sight words.
- Teachers and school administrators obtain real-time analytics on effective teaching strategies contributing to student achievement.

Long-term outcomes are the overarching changes or impacts expected from implementing a program or product. Long-term outcomes typically become noticeable after a considerable period, usually within a 4–6-year timeframe. These outcomes represent the ultimate goals or aspirations of the program and often signify significant, sustained changes in individuals or communities. For example, a long-term outcome in an education program focused on improving literacy skills could be "Students demonstrate advanced reading proficiency, contributing to increased academic success and lifelong learning." These outcomes reflect broader, transformative changes that may take years to realize fully.

More long-term outcome examples include:

- Administrators cultivate stronger relationships with teachers, ultimately improving staff rapport and morale.
- Students develop positive attitudes toward mathematics, fostering a lifelong appreciation for the subject and a willingness to engage in continued math-related learning.
- Student learning outcomes on proficiency assessments increase.
- Sustained use of the program correlates with positive impacts on standardized math assessments.
- Students develop and maintain the necessary skills and competencies, ensuring a successful transition into the workforce or higher education and continued success in their chosen careers.

IV. PITFALLS AND WARNING SIGNS OF INEFFECTIVE LOGIC MODELS

Vague or Undefined Goals

Essentially, the logic model is a map guiding us through understanding whether the product or program works or not. Sometimes, logic models can have problems that make them less helpful. Three big issues are vague or unclear goals and problem statements, a disconnection between elements, and unclear outcomes or outputs. These issues will hinder our ability to accurately assess how well the product will meet our needs.

Even if the goal is not specifically written in the model, each part should tell a story about what the product aims to achieve and the problem it wants to solve. When a logic model does not have clear goals or does not say what problem it's solving, it's like being lost without a destination. This confusion causes big problems. Unclear goals make it hard for everyone involved - teachers, principals, and district administrators - to understand what the product does and why it matters. Additionally, clear goals and problem statements can provide valuable guidance in creating district SMART goals.

S Specific	Specifically defines the target users or audience (priority population) and outlines the precise action or function of the product.	
M Measurable	Clearly articulates measurable indicators or criteria that will be used to assess the degree of change or impact achieved by the product, facilitating precise measurement and evaluation.	
A Attainable	Goals for the product are within reach, considering the current capacity and limitations, fostering a practical and achievable aim.	
R Realistic	Focuses on practical and achievable program steps that naturally progress toward the set goals, ensuring these steps align with the product's operational capacity and resources.	
T Time-Phased	Outlines a coherent timeline with clear milestones and deadlines, guiding the product's implementation by specifying when key objectives should be achieved.	

The goal and problem statement tell the user where to go and what to focus on. Without this, the logic model feels messy and unclear. Secondly, unclear goals and problem statements make it tough to talk about the product. Everyone might get different ideas about what it's supposed to do, causing confusion and making teamwork harder. When teams are not on the same page, it's tough to make the product work well.

Disconnection between logic model elements

Assessing how well a product works can be tough when the elements of the logic model do not connect. A logic model should be like a well-crafted story about a product. Each part of this story—like the chapters or sections—should fit together smoothly. Like in a good book, everything should make sense, and there shouldn't be any missing parts or pieces. But, if there's a gap between the chapters, it's like missing a crucial part of the story—it becomes confusing and hard to understand.

Here is a breakdown of the story. First, you have the Resources, which are like the main characters - the materials and tools needed for the product to work. These should lead you to the Strategies and Activities, which are the ways the main characters use or interact with the product, Then, these strategies and activities should connect to the outputs, the things the product does or creates. Finally, these outputs should connect to the outcomes, which are the significant changes or improvements the product is expected to produce.

Each part of this 'story'—the goal or problem statement, resources, strategies and activities, and outcomes—should be clear and backed up by solid evidence. They're like the who, what, where, and why of the product. When these elements connect logically, just like chapters in a book, it helps us see the whole picture of how the product is supposed to work.

Unclear Outcomes or Outputs

The final pitfall occurs when there's a lack of clear outputs and outcomes. When the reader cannot see what the product achieves and the difference it makes, it's like an unfinished story—it leaves us hanging and the logic model loses its purpose.

Outcomes should:

1 **Highlight Specific Changes in Detail:** The outcomes should be written with enough detail to clearly describe the actual or expected impact. They should include the specific changes or transformations of the user's skill, behavior, attitudes, or knowledge resulting from the product or program.

2 **Present Changes Across Timeframes:** Short-term outcomes identify and describe changes attainable within 1-3 years after using the product. In contrast, long-term outcomes project expected changes over a 4-6 year period after implementing the product.

3 **Include Research Findings or Benefits:** Previously conducted research or evidence indicating the product's benefits or positive results. This could include statistical data, qualitative feedback, or documented outcomes observed through studies or evaluations. Ensure that any cited research is directly linked to the outcomes.

4 **Use Descriptive Verbs or Adjectives:** Outcomes should be written with enough detail to describe the impact. The outcomes should include verbs or adjectives that describe change, such as "improved," "increased," "reduced," "supports," "higher," "better," etc.

V. EVALUATING LOGIC MODELS TO GAUGE PRODUCT EFFECTIVENESS

Understanding the effectiveness of a product or program relies heavily on the clarity and coherence of the logic model. Here are guiding questions to evaluate and address the issues related to goals, problem statements, outputs, and outcomes within a logic model.

Guiding Questions

1. Can you easily identify what the product or program intends to achieve and the problems it aims to solve?

2. Do the stated goals and problem statements provide a clear direction for users, such as teachers, principals, or administrators?

3. Do the anticipated outcomes realistically align with the timeframe provided?

4. Are these elements logically interconnected, creating a clear narrative of how the product is supposed to function and the changes it aims to bring?

5. Do the outlined Resources thoroughly cover the necessary stakeholders, materials, and tools required for the product to work effectively?

6. Do the Strategies and Activities seamlessly connect to the desired Outputs, reflecting the actions or creations generated by the product?

7. Are the Outputs effectively linked to the intended Outcomes, representing the significant changes or improvements expected from using the product?

8. Are the logic model elements (goal or problem statement, resources, strategies & activities, outcomes) clearly articulated and supported by academic evidence and previous studies?

9. Are the changes or transformations in users' skills, behavior, attitudes, or knowledge realistic and clearly articulated within the outcomes?

10. Are there research results or evidence presented within the outcomes that align with the benefits or positive results described in the logic model?

Rubric for Evaluating Logic Model: The following rubric can be used to evaluate a logic model to gauge a product's or program's effectiveness.

CRITERIA	EXCEPTIONAL	EFFECTIVE	INEFFECTIVE
Clarity of Goals and Problem Statements	• **Goals and problem statements are exceptionally clear**, succinctly defining the product's purpose, target audience, and intended impact. They are subtly present across the entire logic model, ensuring a coherent understanding of the product's purpose, intended impact, and direction across all model elements.	• **Goals and problem statements are generally clear**, conveying the product's purpose and intended impact, though additional precision or specificity could enhance clarity. While not explicitly stated, the model hints at the product's purpose, audience, and intended impact, yet certain areas could use further clarity for coherence.	• **Goals and problem statements lack clarity and specificity**, fail to outline the product's purpose and intended impact, and are neither explicitly stated nor implicitly represented in the logic model.
Connection Between Logic Model Elements	• **Each element (resources, strategies, activities, outputs, outcomes) logically links and flows cohesively**, presenting a clear cause-and-effect relationship.	• **Most elements demonstrate a logical connection, but some areas could improve** to enhance the flow or coherence of the model.	• **Elements lack a coherent connection**, making it challenging to understand the progression of the relationship between components.
Clarity and Specificity of Outcomes	• **Outcomes are exceptionally clear, specific, measurable,** and directly linked to the product's use, detailing both short-term and long-term changes.	• **Outcomes are specific but might benefit from increased detail or measurability** in illustrating the impact of product use.	• **Outcomes lack specificity or measurable indicators,** making it challenging to determine the product's effects.
Evidence and Research Supporting Impact	• **Comprehensive evidence**, such as research findings, studies, or other data, directly supports the stated outcomes, showcasing the product's impact.	• **Some evidence or data** is presented but may lack comprehensiveness or direct correlation to the stated outcomes.	• **Little or no evidence or research** is presented to support the outcomes or the impact.
Language and Length	• **Language is concise and easy to understand**, and fits to one page.	• **Language is generally clear** but might benefit from slight refinement in clarity or conciseness, and fits to one page.	• **Language is unclear, too complex or vague**, and fits into two or more pages

LXD Research is an independent research firm that is part of Charles River Media, Inc that evaluates educational programs with ESSA-aligned methods.

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