Strategies that Enhance **Learning AND Evaluation**
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**Objectives:**

1. Learners will be able to describe the interdependence of the current situation and the desired outcomes.
2. Learners will be able to identify components of the situation statement that can be translated into outcome indicators.
3. Learners will have more confidence in their ability to write useful situation statements.
4. Learners will be able to distinguish between relevant and not-relevant outcome indicators.
5. Learners will be able to discuss the characteristics of measurable indicators.

**What we know:**

This discussion will focus on how to determine **what program outcomes can and should be evaluated.** To proceed, the following postulates and assumptions relative to educational programs are presented:

1. Outcomes (of educational programs) are defined as **“changes that occur because the program was conducted”**
2. It is necessary to know a condition at two points in time, if change over time is to be documented.
3. It is easier and more efficient to measure change in a parameter when the characteristics of that parameter are known than when they are unknown.
4. To be credible as a contributor to change, outcomes must be described and measured with reference the situation prior to program delivery.
5. Because we have neither sufficient resources nor ambition to document every change that may result from our programs, we use the Logic Model to communicate the relationship between what we do and changes that occur.
6. Short-term changes are easier and less expensive to measure directly than are long-term changes.

Much of what we do in Extension involves teaching and learning. For many of our programs, short-term outcomes can be described in terms of increased knowledge, improved understanding, acquisition of new skills, increased motivation, and improved confidence. Our success in causing these changes is directly related to the quality of our teaching, and the quality of our teaching is much more than how well we present a lesson.

There is a credible body knowledge derived from scholarly investigations into the processes of teaching and learning. Much of this information relates directly to extension education, and provides valuable guidance for both improving learning and for measuring the outcomes of our programs.
Curriculum design:

Decades of educational research have verified that using a curriculum design model both enhances learning and facilitates evaluation of learning activities. This occurs because a curriculum design model allows the “teacher” to describe in detail what the learner is expected to learn and how to measure that learning has occurred.

To incorporate the concepts of curriculum design into our planning and evaluation model, we must walk through the key steps of program development. Only during the planning stages of program development is there an opportunity to incorporate processes that can improve learning at the same time that you facilitate efficient evaluation. Once the program has been initiated, it is much more difficult to enhance both learning and evaluation with simple actions. It is true that outcomes can be measured even if the evaluation is designed after a project is underway, but the outcomes must still be linked back to the situation before the program began.

Just as the Logic Model enables us to design a program with the end in mind, a curriculum model enables us to design a learning activity with the end in mind. A curriculum model nicely compliments our Logic Model.

Logic Model, and Curriculum Design Processes are Compatible.
Efficient Evaluation requires that both learner outcomes and outcome indicators be identified BEFORE the program is delivered. EFFICIENCY results because the educator can describe the SITUATION, LEARNER OBJECTIVES, and OUTCOME INDICATORS in a single, sequential procedure.

At the beginning of the project development phase, a problem must be defined. (We will skip the problem identification step because, in most cases, we already have problems identified; and priorities have emerged from advisory groups, grower associations, or your own observations). Our task is to translate a priority into a problem statement. We communicate that problem through our SITUATION STATEMENT.

To be useful for both learning and evaluation, the situation statement needs to define a problem in specific terms, so that change in the situation can be measured or inferred.

Questions to answer in the situation statement include:
1. What is the problem? (Clear statement)
2. Who is affected by the problem? (where do they live, work, shop; who are their families?)
3. How widespread is the problem?
4. What are the symptoms of the problem? (less income, more crime, wasted resources, contaminated water, etc.)
5. What is the purpose of the program?
6. What is the preferred situation to be achieved through the program?
These questions should, as often as possible, be answered in measurable terms.

SITUATION EXAMPLE 1
- Prices for russet potatoes vary as much as 400% or more from one year to the next. Prices for high quality (fresh pack) potatoes and early season potatoes are less volatile, and may be as much as 300% higher than medium-grade potatoes or those harvested later in the season. Idaho growers produce over 1,300,000,000 pounds of potatoes annually; 28% of which are high grade.
- Research from the University of Idaho indicates that planting, irrigation, fertilization, pest management, harvesting, and storage methods each have an influence on potato quality. UI Extension has estimated that as many as 40% of Bannock County growers do not apply one or more recommended practices that will improve product quality.
- Increasing the proportion of fresh pack potatoes by 25% (to 35% of the total crop) would result in annual increased revenue averaging $18,200,000 for Idaho potato growers.

Exercise 1: for the proceeding example, answer the following questions.
1. what is the problem?
2. who is the target audience?
3. what are the desired outcomes?
SITUATION EXAMPLE 2:

- Idaho children have one of the lowest rates of matriculation into college for any State. Matriculation rates are particularly disturbing among children from rural communities.

- A variety of factors have been linked to low matriculation rates, among them: lack of adequate preparation in high school, lack of exposure to colleges and college graduates, lack of self confidence about attending college, an incomplete understanding about the long-term benefits of college, and a host of financial reasons.

- Extension 4-H programs have been documented to improve the self-image of participants. 4-H programs build life skills and characteristics that contribute to enhanced self-image, including: organizational skills, determination to complete a task, leadership skills, socialization, exposure to a broader community, and acceptance of responsibility.

- Idaho high school graduates who enter college have a 55% probability of completing a bachelor’s degree. Nearly half of the remaining students will complete two years of college or achieve an associate’s degree.

- The lifetime earning potential for a bachelors degree graduate in 2002 is estimated to be $1,200,000 greater than for a high school graduate of the same age. Earning potential for a graduate with an associate’s degree is $435,000 greater than for a high school graduate.

- In Butte County, 246 young people between the ages of 10 and 14 will graduate from high school between 2006 and 2010. Increasing the rate of matriculation into college of these young Butte County residents by 20% (from 125 to 150) will increase earnings in the county averaging $478,000 per year for the next 35 years.

- The income earned by the additional 19 people that do complete 2-year and 4-year degrees will increase the payroll in the county by $16,730,000 over their careers, compared to their potential earnings as high school graduates.

Exercise 2: for the proceeding example, answer the following questions.
1. what is the problem?
2. who is the target audience?
3. what are the desired outcomes?
4. what are potential measurable indicators of change?
SITUATION EXAMPLE 3:

- Only seven full-time daycare facilities are operating in Idaho County. Ninety-percent of families with daycare needs rely on friends and family members, often with unpredictable availability.

- Lack of affordable daycare is a barrier to many families, preventing a parent from holding down better-paying, full time employment.

- This problem strongly affects single parents and pre-school age children, but two-parent families and families with school-age children are also impacted. There are an estimated 122 “single-parent/pre-school-child” families and 795 two-parent families with young children in Idaho County. Seventy-percent of them live in the towns of Grangeville and Cottonwood.

- Of 540 Idaho County households living in poverty, 27% have pre-school age children, and those families experience far greater poverty than families with older children or with no children.

- The average hourly income of part-time employees in Grangeville is 32% lower than that for full-time employees.

- Underemployed parents are more likely to have problems with self-esteem, are more likely to convey resentment to their children, and are more likely to suffer anxiety about family finances. Children from families with underemployed parents also are more likely to have low self-esteem and less likely to be successful in school.

- Improving access to reliable daycare will enable more Idaho County families to attain higher-paying employment and increase family income, will result in more self-confident children, will improve the quality of life for affected families, and will improve the overall economic situation in Idaho County.

Exercise 3: for the proceeding example, answer the following questions.

1. what is the problem?
2. who is the target audience?
3. what are the desired outcomes?
4. what are potential measurable indicators of change?
5. what other baseline data may be useful to measure change?

Review of Key “Situation Statement” concepts:

- Identify the problem
- Identify who is affected by the problem
- Identify the scope of the problem
- Identify the symptoms of the problem
- Describe the situation when the problem is eliminated or mitigated
- Use measurable descriptions, whenever possible.
Describing Learner Needs

We will first discuss learner outcomes from a curriculum perspective. Then we will re-group to build the linkages between short-term outcomes and program outcomes that can be described in the logic model design.

Educational outcomes will only result in desired changes when the education is relevant to the desired action. In curriculum design, as in extension program design, it is necessary to answer the question:

*What do learners need to know in order to take actions that will improve the situation?*

- If we teach to address specific learner needs, we expect positive outcomes.
- Measuring outcomes is only feasible when we are measuring changes that happen to, or because of the learner.
- If we are addressing topics outside of those identified as learner needs, then we will not know how to measure outcomes.
- Learner needs must be clearly stated, or we will not know how to measure learner outcomes.

Examples of Learner needs:

- Learner needs to know how to manage livestock to protect water quality.
- Learner needs to know how to reduce economic risk associated with an enterprise.
- Learner needs to know how to improve net revenue.
- Learner needs to know how to improve the nutritional quality of their diet.
- Learner needs to know how to improve communication with family members.
- Learner needs to know how to reduce their spending on groceries.
- Learner needs to know when the crop needs irrigation.
- Learner needs to know how to improve pasture production.
- Learner needs to know how to assess the value of timber.
- Learner needs to know how to protect the home from wildfire.
- Learner needs to know how to comply with environmental regulations.
- Learner needs to know how to write a management plan.
- Learner needs to know how to access financial resources.
- Learner needs to know how to prepare safe foods.
- Learner needs to know how to drive a car, build a corral, cut out a pattern.

Once you define exactly what it is that the learner needs to know, the next steps are straight out of educational curriculum design literature (in education, curriculum design
assumes that what is needed by the learner is pre-determined; i.e. arithmetic—addition and subtraction, etc.)

From this literature, you must answer the following questions:

1. What is it that I must teach for them to learn what is needed?
2. How will I know when it has been learned?
3. What materials and procedures will work best to teach what I wish to teach?

First, **what is it that I must teach?** Let’s look at some examples.

The learner needs to know… **when the crop needs irrigation.**

I must teach…

- How much water does the crop need?
  - seasonal demands, phonological stage, stress

- How water becomes available to the crop?
  - soil-water relations, weather, roots and uptake

- How to measure water available to the crop?
  - deficiency symptoms, climate records, soil probes

In Extension, we may need to take learning a step further; if the learner is to apply their knowledge, they must be motivated to do so. Motivation may result from a wide range of interests related to the learner, including financial, ethical, family security, and others.

For many practices that we would like to see adopted, we must also ask and answer the question… **What does the learner need to know that will ensure adoption?**

Learner must know…

- What are the financial implications of adopting / not adopting?
- What are the environmental implications of adopting / not adopting?
- What are the human implications of adopting / not adopting?

Then we again ask… what is it that I must teach for the learner to understand financial, environmental or human implications? In many cases, this information should reflect the expected outcomes from the program. Therefore, the better we prepare for the program (using concrete data and realistic projections), the easier it is to incorporate motivation as part of the lesson.

**Describing Program Outcomes**

In the logic model, the next step following a description of the existing situation is a description of desired outcomes. In the long-term, what will the situation be like after the program has been successful? For the situations above, long-term outcomes may include the following:
o In Grangeville, affordable pre-school age daycare is provided for 70% of single parents within 10% of the poverty level income.

o Bingham County potato growers generate increased income by selling 10% more of their crop as high-value fresh pack product.

o A 20% increase in the number of college graduates working in Butte County results in higher wages and greater revenue for the community.

Long-term outcomes specify changes in conditions that will occur because of changes in knowledge, behavior, etc. It is my preference to first describe long-term changes rather globally (e.g. improved profit margin) and then to refine the outcome after describing more specific, near-term outcomes.

Two considerations are key to useful outcome descriptions (i.e., those descriptions that are useful for evaluation), whether for near-term or long-term outcomes. The first is to track the language with that used to describe the situation. The second is to use specific information that describes the indicators used to measure program success.

Outcome statements include four necessary components:

1. Who is the target audience?
2. What they will do (the performance)?
3. What is a criterion to measure performance?
4. What is the timeframe for performance?

Each of these components adds value to the program, for the educator, the learner, or the stakeholder. We’ll discuss these components individually.

1. Target Audience: delineate the target audience specifically – dairy producers, local elected officials, mothers with young children, etc. Avoid global references to the target audience such as “program participants.”

Delineation is even better if you can identify a measurable criteria associated with the target audience:

• Dairy farmers with calf mortality rates of over 5%. . .
• Men with cholesterol over 220. . .

Delineating the target audience with measurable criteria helps you:
  o market the program
  o increase the likelihood of participants with the need for which your program was designed.

When actual participants are the same as the real target audience, you have a greater chance of demonstrating program success! Make the target audience the subject of the sentence in which you state your objective.
2. **Performance**: The expected performance is the key to an outcome statement, and is absolutely required to evaluate success. Specify a performance that is an **educational outcome** you expect the target audience to achieve as a result of your program. Educational outcomes should be described in the curriculum model, and can include knowledge gain, attitude change, skill development, intention to do something in the future, or behavior change.

Express the performance with a **verb** followed by what is to be achieved:

- Gem County Beef Producers **will recall solutions** for reducing stress related to transporting animals. *(knowledge)*
- Gem County Beef Producers **will believe** within two months of the program that transportation of animals is a very serious source of stress for animals. *(attitude)*
- Limited Resource Parents **will discuss** budget constraints and opportunities to save money weekly with their spouses. *(behavior)*

The performance is the knowledge, skill, attitude, intention or behavior that an educator wants participants to achieve as a result of the program. The words used in the outcomes statement denote what the educator wants the participants to be skilled in, and to do, as a result of the program.

3. **Criteria**: Specify a quantitative criterion regarding the performance so you know when you have achieved success.

- Parents with teenage children will identify **6 solutions** for improving communications with their children, and agree to employ one of them within the next three months. *(knowledge and intention)*
- Volunteer Leaders will recall the **five categories** of critical life-skills and will identify which two or three skills are most closely related to their project areas. *(knowledge and application)*
- Independent loggers will select **four BMPs** that best fit their operations, and will estimate their cost to implement two of those practices. *(knowledge and skill)*

Criteria should quantify the performance and apply to all potential participants. In the first example, the criterion is: **one of six** (communication strategies). In this objective, the criterion establishes that all parents of teenagers that participate are not expected to experiment with all 6 communication techniques, only two.

*Why are criteria important? What role do they play in an objective?* Criteria are important because they fulfill the primary purpose of an educational program objective: to design an effective program. The design of a program will change depending on the criteria. For instance,

...parents of teenagers who participate in a program will employ **ONE of six Communication strategies**. ...Based on the criteria in this objective, it
would seem logical for an educator to design a program and have the parents break up into six groups so each parent will learn about one strategy and how best to employ it with their children back home.

But, if an objective had a different criterion such as... parents of teenagers who participate in a program will employ TWO of six communication techniques... the program would have to provide double the amount of programming for each participant. The design of a program changes depending on the criteria of the performance.

Think about this: Does your target audience need to employ all management changes you present in the program to achieve a reduction in the problem your program is designed to eliminate? Maybe yes; maybe no.

Remember that if you don’t specify criteria related to the performance, you are suggesting that the audience needs to know or employ everything you discussed.

4. **Timeframe**: Specify a time frame in which you want the target audience to achieve the performance. The time frame will depend on the particular performance; it could be weeks or months. In some cases, when a significant amount of money is involved such as a ventilation system in a barn, performance may be measured over a period of years.

A working assumption regarding knowledge gain is that it takes place at an extension event (note objective in NUMBER 3) but if the program is a learn-at-home or series of newsletters, the time frame may be weeks.

- At the end of the program, ranchers will recognize which endangered species require consideration in their grazing management plans.
- Four weeks after completing the workshop, ranchers will have completed an inventory of critical habitat occurring on their rangelands.
- During the 12-months following Master Gardener training, trainees will have completed 40-hours of approved community service work.

In this discussion, we have stressed the importance of describing outcomes clearly and specifically. In all cases, if evaluation of the program is desired, than specific descriptions of expected outcomes are imperative. However, what if we are not likely to conduct a program evaluation?

Planning programs for which formal evaluation is unlikely will also benefit from application of the curriculum design model. The benefits for teaching and learning due to clear statements of learner expectations are well documented. Further, clearly describing learner outcomes helps educators visualize how sequential programs can be constructed to help move learners through a series of events that lead toward long-term outcomes.
Measuring Outcomes

How will I know when it has been learned?

Most of our short-term outcomes involve learning, attitudes, and motivation. Curriculum specialists focus much of their energy on how the educator knows when learning has taken place. There are several approaches to this question.

1. We can measure cumulative knowledge (post-testing)
2. We can measure change in knowledge (pre/post-testing)
3. We can assess how the learners ask next-level questions (inference analysis)

Our ability to measure learning outcomes is directly proportional to how clearly we have described those outcomes. Confusion and difficulty result from generalized statements of expectations and desired outcomes. The more general the expectation, the less likely we are to demonstrate success. This is partially because outcome statements that are too general are far more difficult to tie back to a specific intervention.

Example: A desired short-term outcome statement, such as: \textit{parents will learn how to communicate with their children}, is fairly difficult and subjective, to measure. On the other hand, a more specific (i.e., measurable) statement might be: \textit{Parents of teenagers will agree that it is important to make time to listen to their children, and will demonstrate use of appropriate communication skills}. Developing measurable indicators to assess a more specific learning outcome is easier.

Example: A desired mid-term outcome statement, such as: \textit{growers will use less water}, may be influenced by climate, pumping costs, or water restrictions, as well as by your educational efforts. A more specific (i.e., measurable) mid-term outcome statement might be: \textit{onion growers will adopt soil-moisture monitoring technologies and will adjust their irrigation practices accordingly}.

Exercise: What are some potential measurable indicators for the examples above? (Remember audience, performance, criteria, timeframe).

- If we have specified what we will teach, then we can measure whether it has been learned.
- If we specify what practices will be adopted, we can measure whether adoption has occurred.
- If we specify what changes in conditions will occur, we can measure those changes.
Which Program Should I Evaluate?
Choose the programs you wish to evaluate carefully. The following criteria will help you determine which programs deserve your time and resources.

Program Punch and Viability
Is there enough of a program to evaluate? Or is it merely an activity or two? A realistic comparison of program objectives and amount of time participants spend in the program may reveal a relatively weak program, not worthy of evaluation. Choose a substantial program for your evaluation effort.

Stakeholder Interest
Is the program of interest to key community leaders, potential funders, extension committee members, an administrator, or part of the state plan of work? If so, find out what the stakeholders want to know about your program and collect this information in the evaluation. It will make the evaluation more efficient for you.

Program Modification
Evaluating a program is a very rewarding experience if there is an opportunity to improve it as a result of your assessment. Remember that evaluation to modify a program is a form of accountability; stakeholders are more apt to make allowances for program deficiencies if you indicate how you are going to change the program as a result of the evaluation.

Marketing Potential
Once you have evaluation results, decide whether this program should be marketed using the results. Does the program have a diverse audience, for instance, or deal with critical policy issues in your county?

Program Objectives
Are the stated objectives or the indicators measurable? Was the program strategies chosen to carry out those objectives? If not, don’t count on very good evaluation results from this program.

Organizational Interest
Do the volunteers in the program have a strong commitment to sustaining a program? Or, do they have too many other responsibilities to carry out? Volunteers in a program need the interest and the time to do justice to the evaluation.

Program Duration
Is the program going to be repeated? If not, it may not be worth evaluating.

Evaluation Materials
Have other educators or specialists developed evaluation strategies and tools for a program with similar objectives? If so, you may be able to modify them for your program.