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Use of Instructional Rubrics in Cooperative Extension Programming

Abstract

This article looks at the concept of the instructional rubric as a nonformal evaluation tool. The premise is that educators can obtain evaluation information on short-term programs where formal evaluation design is not desired. Examples of instructional rubrics are given for 4-H, agriculture, and family and consumer science. In addition to the rubric itself, there are implications for educator intervention and retooling the experience.

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Introduction

To Extension educators, evaluation is synonymous with terms such as "significant differences," "knowledge gained," and "cost/benefit analysis." Another term that should become part of the Extension educator's vocabulary is "instructional rubric." Instructional rubrics are assessment methods that are useful for everyone involved in the learning process. (Phifer & Nixon, 1998).

A rubric is represented as an evaluation instrument that contains identified criteria down its vertical axis and gradations of quality across the horizontal axis. In most cases, rubrics are measures of the degree of excellence achieved by participants against pre-determined criteria. Instructional rubrics provide a means of measuring progress while the learner is participating in the experience and provide a more positive learning experience than post-experience evaluations (Andrade, 1999).

Rubrics have been shown to be effective instruments of assessment in art (Huffman, 1998), science education (Luft, 1997), lab investigations (Eyster, 1997), and in specific scientific concepts (Jensen, 1995). Researchers such as Luft (1997) advocate the general use of rubrics in the facilitation and implementation of the National Science Education Standards with regard to science as inquiry. Others, such as Popham (1997), believe the rubrics are instructionally fraudulent and that problems can arise when rubrics are too task specific, general, or lengthy and confuse the skill tested with the skill itself.

Used wisely, however, rubrics facilitate learners to see themselves in positive ways while continuing toward their goals (Phifer & Nixon, 1998). Rubrics can help learners (youth and adult) evaluate themselves while giving the educator insight into additional teachable moments.

Discussion

When participant's responses are constructed in the form of a rubric, children and youth will know what success looks like before engaging in the activity. Because the participant has a voice in determining the goals and success of the project, it is a negotiated rubric."

Assume a 12-year-old who is learning to use tools correctly in the woodworking curriculum, and assume she is to build a birdhouse. Table 1 is an instructional rubric. Notice the criteria listed vertically and the quality gradient listed as levels horizontally. The criteria represent those tasks that must be accomplished if the outcome is to be obtained. The quality gradients represent levels of proficiency that can be either independent or dependent. For instance, drilling the hole for the bird entrance is not dependent upon any other criteria; however, both measuring and sawing affect the tightness of joints.

Table 1.
Instructional Rubric for Assessing Woodworking Knowledge

	Quality Gradient ----->			
Criteria	Master Craftsman	Carpenter	Apprentice	Beginner
Hammer	- Joints are tight - No hammer marks - No nails showing	- Joints hold together - Some hammer marks - Nails not set	- Some joints loose - Many hammer marks - Few nails protruding	- Most joints loose - Gouges in wood - Wood split by nails in many places
Saw	- Cuts are straight - Cuts are smooth - Cuts are even	Most cuts are straight, smooth, even	Some cuts are straight, smooth, even	No cuts are straight, smooth, or even
Measure	Measurements flush	Measurements within 1/16 th	Measurements within 1/8 th	Measurements within 1/4 th
Drill	Holes correct size, smooth and in proper location	Holes nearly the right size, slightly rough, and nearly in the right place	Holes not the right size, very rough or in the wrong place	Holes not made

This instructional rubric encourages the 12-year-old to assess her progress toward the level of proficiency she desires. The participant can then change the quality gradient, based upon her experience, making it more or less challenging. This is important with youth and adult audiences, because often they want immediate perfection that is beyond their present capabilities. The above rubric may be beyond the capabilities of most 12-year-olds, but just right for a 15-year-old who has done some woodworking.

The rubric provides for helper intervention in an unobtrusive manner, providing support based upon an agreed set of quality standards and criteria, which are designed to assist participants as they work through the activity. By using the rubric, we offer participants a platform on which to build their skills.

In Tables 2 and 3, we look at programs in Agriculture and Family and Consumer Sciences that also employ this type of self-assessment instrument. These should be of significant interest to colleagues in adult programming because often they present information in a single session with no formal follow-up. Yet it is still important that the people served feel that they have some method to measure what they have learned.

Table 2.
Instructional Rubric for Setting up a Cattle Handling Facility

	Quality Gradient ----->			
Criteria	Level 1	Level 2	Level 3	Level 4

Safer for workers	Includes gates, walk-ways, and equipment that minimizes the risk of injury to workers	Includes gates, walk-ways and equipment that provide moderate risk of injury to workers	Includes gates, walkways that provide little protection from injury to workers	Lacks a combination of gates, walk-ways and equipment to enhance worker safety
Reduces injury and stress to cattle	- Cattle easily move through the chutes with minimal stimulation. - Difficult for cattle to injured due to quality design and construction.	- Cattle require moderate stimulation to move through the chutes. - Moderate chance of injury due to quality design and construction.	- Cattle require frequent stimulation to move. - Moderately high chance of injury due to quality of design and construction.	- Cattle frequently placed in unsafe position due to the poor quality of design and construction. - Cattle must be prodded through the chutes.
Reduces labor	Reduces labor needs by 50% or more.	Reduces labor needs by 25% or more.	Labor needed to work cattle is moderately high and expensive	Labor needed to work cattle is extensive and costly
Saves time	Number of cattle worked per hour is maximized	Number of cattle worked per hour is acceptable.	Number of cattle worked per hour is less than desired	Number of cattle worked per hour is unacceptable and costly
Table is not meant to be inclusive, and other criteria may be added or deleted to fit program needs.				

Producers using this rubric will be able to assess the differences that are found in cattle-handling facilities and make decisions about which system best suits their needs. Remember that costs are not one of the criteria, but are implied in the rubric. Facility/material costs may decrease, but labor and probably maintenance costs will increase as you move from left to right.

Table 3 is an instructional rubric for end-of-life preparation. Many people find this issue overwhelming because of its complexity. Breaking the process down into clearly identifiable steps helps the participant measure what has been accomplished and how much is left to do.

Table 3.
Instructional Rubric for End-of-Life Preparation

	Quality Gradient ----->			
Criteria	Level 1	Level 2	Level 3	Level 4
Possible Future Disability (Durable power of attorney trusts, living will, health care power of attorney, bank or government forms, etc.)	- Appropriate legal documents are executed, and originals are stored in a safe place. - Agent(s) and/or trustee(s) are notified and given copies and location of originals.	- Attorney is contacted and retained. - Options are explored with attorney. Final decisions are made. - Documents are reviewed and clarified.	- Educated through self-study and seminars. - Issues and wishes are discussed with family and agent(s) and/or trustee(s). - Options are explored, and preliminary decisions are made.	- Awareness of issues, but no action is taken. - Wishes are unknown.
Living Arrangements (Home care, assisted living facilities, nursing homes, etc.)	Arrangements are made, and payment plan is in place.**	- Different types of facilities are visited and compared. - Financial situation is	- Options are explored and discussed with family. - Wishes are made known.	- Awareness of issues, but no action is taken. - Wishes are unknown.

		reviewed and necessary adjustments are made. - Realistic options are discussed with family, and preferences are stated.		
Will, trust(s), and other testamentary documents, such as a letter of last instruction or a memorandum disposing of selected items of personal property	- Appropriate legal documents are executed, and originals are stored in a safe place. - Executor(s), guardian(s), trustee(s) and other fiduciaries* are notified and, if appropriate, given copies and location of originals.	- Necessary information is gathered. - Attorney is contacted and retained. - Options are explored with attorney. - Final decisions are made. - Documents are reviewed and clarified.	- Educated through self-study and seminars. - Issues are discussed with family and proposed fiduciaries. - Options are explored, and preliminary decisions are made.	- Awareness of issues, but no action is taken. - Wishes are unknown.
Funeral	- Arrangements are made for burial, cremation or memorial services. - Services are pre-paid	- Specific funeral and burial service providers are contacted. - Options are explored with professionals. - Final decisions are made. - Contracts for services and/or burial plot are reviewed and clarified.	- Options are explored. - Funeral and burial services are compared. - Issues are discussed with family, and wishes are made known.	- Awareness of issues, but no action is taken. - Wishes are unknown.
Death	- Organ donation card is executed. - Wishes are made known to family and health care providers.	Driver's license indicates desire to be organ donor.	Options are explored, and issues are discussed with family.	Wishes are unknown.
<p>* The term "fiduciary" is used to describe someone who holds a position of trust, such as an executor, a trustee, a guardian, a health care agent, an attorney-in-fact, etc. ** Optimally, participants will not reach Level 4 because they will be able to maintain independent living until the end of their lives.</p>				

An Extension educator's role normally ends at Level 3, but that role is critical to help the participant progress to higher levels. Educational materials that have been developed by Extension educators include:

- Planning Your Estate Web site, <http://www.ces.ncsu.edu/depts/fcs/estates/>, developed by the North Carolina Cooperative Extension Service;
- Who Gets Grandma's Yellow Pie Plate: ™ Transferring Non-titled Property, developed by the University of Minnesota Extension Service (order@extension.umn.edu);
- Griefwork: Guides for Survival and Growth, developed by the Kentucky Cooperative Extension Service (fax: 606.257.1512); and
- Estate Planning MontGuides, developed by the Montana Cooperative Extension Service, <http://www.montana.edu/wwwpb/pubs/index.html>.

Implications

These examples show that regardless of subject matter, instructional rubrics have a place in helping the program participant determine their level of current knowledge or readiness and what

is required to increase their knowledge or readiness. For Extension professionals, it reveals opportunities for program improvement, and it outlines areas for additional teaching interventions.

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