Addressing Educational Complexities in Extension Programs

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ABOUT THIS POSTER

The purpose of this poster is to present a method for educational program design that aims to increase participant capacity to address real world concerns.

Primary objective of the iSNAP Water Quality Education Project is to provide educational programming and supporting resources to agricultural professionals and growers on innovative nutrient and pest management practices that can protect water quality, improve farm profitability, and comply with environmental regulations.

The challenge for the regional project is to enable participants to learn how to integrate crop needs (such as method and timing of nutrient and pesticide applications) with non-crop concerns (such as water and air quality, wildlife protection).

iSNAP Integrated Soil Nutrient and Pest Water Quality Education
http://isnap.oregonstate.edu/

ADRESSING EDUCATIONAL COMPLEXITIES

To better address these complexities the project has adopted an **outcome-based education** (OBE) approach. This approach ensures:

- Learning experiences that are relevant to the work the participants do
- A team approach is used to plan and design program materials
- An evaluation plan is integrated to capture impacts and feedback

The six steps of developing an OBE program are based on real context and situations (Fig. 1):

1. Determine the **roles** that learners have provides the context for creating curriculum that is relevant in lives of the learners (Fig. 2).

2. A "backwards from the outside in" design process is used to develop workshop programs as we do not start with the content we want to cover (Steihl and Lewchuk, 2002). Instead we begin with envisioning **intended outcomes** for the participants with a group of educators and others (Fig. 2).

3. **Concepts** are the ideas that learners need to understand to achieve the outcomes (Table 1). Concepts are similar to content except the intent is to move beyond knowledge to comprehension and application. **Themes** are threads that reoccur throughout the program and issues are dilemmas that need to be resolved through critical thinking.

4. Identifying the **skills** that are embedded in the outcomes allows the learners to perform more complex tasks (Table 1).

5. From the intended outcomes logical **performance or assessment tasks** are created that allow learners to demonstrate that they are capable of producing the intended outcomes (Table 1).

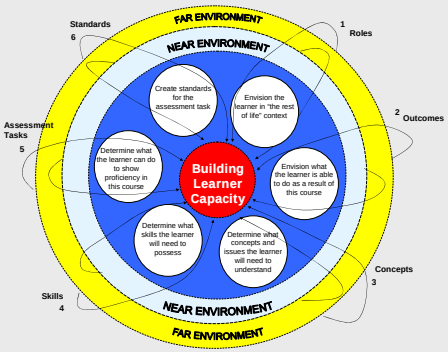
6. Development of **standards** for the assessment tasks aids in aligning the expectations of the program with those in the learners' world.

References available at www.outcomesnet.com

R. Stiehl and L. Lewchuk. (2002) The Outcomes Primer: Reconstruction the College Curriculum. 2nd ed. The Learning Organization, Corvallis, OR.

R. Stiehl and L. Lewchuk. (2005) The Mapping Primer: Tools for Reconstruction the College Curriculum. The Learning Organization, Corvallis, OR.

Figure 1. A learning-centered outcome-based development process (adapted with permission from Steihl and Lewchuk, 2002).



MAPPING OUTCOMES PROCESS – STEP 1

This group envisioning process allows for the development of themes and intended learning outcomes (Fig. 2).

1) A 15-30 minute brainstorming process to gather active worded phrases on Post-It™ notes.

2)The group clusters the answers by consensus.

3) Clusters are labeled and become outcomes.

Figure 2. Mapping Outcomes

Role Description
This educational program is designed for agricultural professionals who provide pest management recommendations and advice to growers or review or approve IPM (integrated pest management) plans.

Themes
Water quality and pest management, IPM alternatives

Intended Learning Outcomes
What do students need to be able to DO "out there" that we are responsible for "in here"?

1.Identify potential water quality issues related to pest management.

2. Conduct ongoing assessments of the growers' needs and address these issues through two-way conversations.

3. Locate and use appropriate tools and expert input.

4. Develop a credible list of IPM alternatives.

5. Evaluate IPM alternatives in terms of economic and environmental impacts.

6. Adapt IPM plan to address constraints and integrate new opportunities that emerge from the alternatives list.

7. Re-evaluate after constraint consideration to assess interactions of IPM alternatives.

8. Encourage growers to experiment, monitor and improve IPM plans.

OUTCOME GUIDE DEVELOPMENT – STEP 2

The information from the mapping outcomes process in Figure 2 was used to develop the **workshop outcome guide** (Table 1) for *Using Climate and Weather Information in IPM Decision Making* grower workshops. The program agenda is then produced from the guide.

Table 1. Workshop Outcomes Guide: Using Climate and Weather Information in IPM Decision Making

Themes: pesticides, weather and climate, water quality

Prerequisites: Experience in pest and/or nutrient management	Concepts and Issues	Process Skills	Performance Tasks	Intended Outcomes
	Concepts: • Weather and climate • Water resource protection • Watershed • Airshed • Vapor and gaseous pesticide transport • Buffers and barriers • Cost-share programs Issues: • Economics and risk • Air and water quality • Sensitive crops and biota • Systems thinking	•Inventory farm within a landscape context to determine water resource concerns • Select appropriate sprayer nozzles to increase pesticide delivery to target • Recommend sprayer calibration and operation methods to reduce off-site losses • Research and design site-specific buffers and barriers • Determine USDA cost-share options to support specific practices	Given a case study, develop a farm-specific plan that includes: • A list of practices that reduce the probability of aerial pesticide transport • An implementation plan with cost-share options	•Assess the potential impacts of local weather and climate to provide practical pest management guidance • Determine effective and viable mitigation strategies to reduce aerial transport of pesticides

BENEFITS AND CHALLENGES OF AN OUTCOME-BASED PROJECT

- Educators are more accountable to learners and there is clear alignment of the topics that are covered
- An obligation to support learners in being successful is realized as a result of the emphasis on doing instead of just knowing
- Clear outcomes produce consistent teaching over time and across educators
- There are two phases of investment: team-based planning and development to create core materials which is followed by continual local adaptation for specific workshop locations
- The fear of not including a given educator's content is real. Once it is clear that outcomes drive the selection of content, then what really matters is included

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