

**Sustainable Agriculture through Sustainable Learning:  
Improving educational outcomes  
with best practices for adult learning**



**A Guide for Educators**

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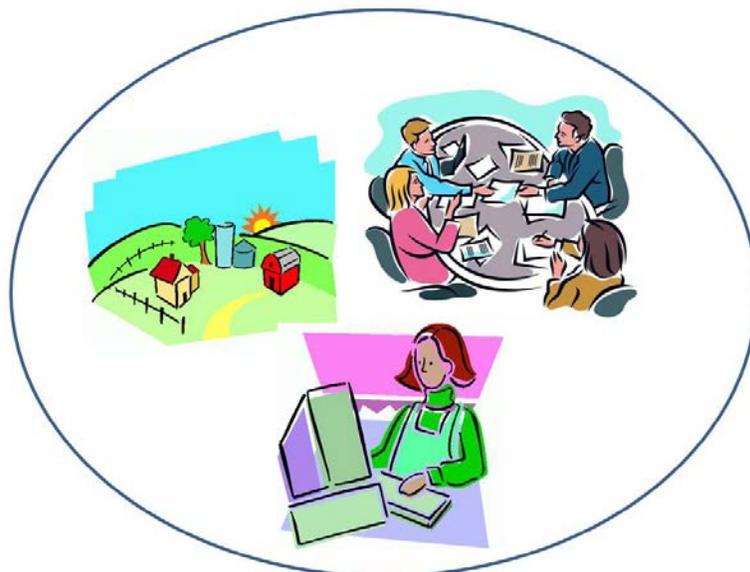
## Why this guide?

Farmers making changes – adopting innovative management practices and techniques, using improved business tools and strategies, growing new crops and livestock, reaching more markets and consumers – this is at the core of SARE’s vision of a more sustainable agriculture. Northeast SARE strives to foster and support such changes through its grant programs, which all have one element in common – learning. SARE recognizes that learning is an essential ingredient when it comes to farmers making changes to promote sustainability, and for all people working towards sustainable agriculture. Helping SARE grantees effectively facilitate learning for farmers, agricultural service providers, and other stakeholders is important to Northeast SARE.

In 2012, Northeast SARE sponsored a workshop about adult learning for the Northeast state coordinators, a key group of sustainable agriculture educators within SARE who provide needs-based train-the-trainer education to agricultural service providers who teach and advise farmers. Sandy Bell, Ph.D., Associate Professor and Section Head of the Adult Learning Program in the Neag School of Education, University of Connecticut facilitated the workshop, entitled *Principles of Adult Learning and Their Application in State Coordinator Education Programs*.

This Guide is based on Dr. Bell’s workshop materials and results of participants’ hands-on learning activities at the workshop. It was further refined based on workshops with New Hampshire Extension Educators who learned to use the concepts in the guide to facilitate improved farmer education programs.

The guide will introduce you to **Five Best Practices for Adult Learning** that you can use in the design and delivery of engaging and productive learning experiences that help farmers make changes. These principles are based on research in a variety of fields and their application is relevant in all formats or learning environments – from farm field days, to classroom workshops, to webinars.



## How to Use this Guide

This guide will be a valuable resource before, during, and after a single learning event or a series of related events.

**In planning before an event**, you can use the best practices to make decisions about setting up a safe learning environment, gathering information from prospective participants before the event to customize the content and better meet their needs, and planning specific learning experiences you want to make sure you integrate into the event.

**Look over the guide a day or two before the event** to remind you of things to keep in mind during a learning event, such as being mindful that participants will make sense of new information based on their prior experiences and being sure to allot time for participants to share their experiences with each other.

**After a learning event** use the guide as a way to identify if there were any gaps between what you had planned to do and what actually happened. Did you use some of the best practices more readily than others? Use the guide to help you identify what you might do differently next time and why.

**Last, but certainly not least, keep notes** of things you did before, during, and after a learning event that seemed to work really well. Why did they work well? Did they seem to reinforce or expand upon one or more of the best practices? Share your reflections with colleagues. Arrange to sit in on a learning event offered by another colleague and see if you can identify the best practices in action. Ask a friendly colleague to do the same for you.

In these ways the Guide can help you keep your learning as an educator sustainable!

The Guide will first describe each of the five best practices, and then provide example strategies for applying the practices in different environments **before, during, and after** learning events.

## Facilitate learning



## Getting Started: How do adults learn?

Adults learn by experience.

“Educators cannot give their ideas to adult learners like birthday presents. What we can give is new experiences” (Zull, 2006, p. 8).

The adult brain gathers new information and data through experiences. Experiences may be all sorts of things – reading a book, attending a lecture, practicing a sport or skill, talking to a colleague, repairing an engine. Some experiences are more effective than others at helping adults learn. For example, experiences in which adults feel threatened are very ineffective for learning. We’ll have more about different experiences and their influence on learning later.

After gathering information, the brain has to find meaning in the information. Sometimes it does this without our being aware of it and other times it finds meaning through intentionally reflecting and figuring out where and how the new information fits with what we already know (i.e. what’s in our memory). *Finding meaning and comprehension depends on the brain making associations between new experiences and past experiences.*

“The brain does not take meaning; it must make meaning.” (Wolfe, 2006, p. 39)

A hallmark of effective learning is being able to use new information to solve problems. When we’re trying to solve a new problem, our brain calls up pieces of relevant information and creates a plan for solving the problem. Our brain has amazing abilities to mix and match all kinds of information it has learned – the new data, old data, and some things we are not even consciously aware of as being relevant – and coming up with novel ideas and approaches for solving problems.

Learning is reinforced when adults test their plans in concrete situations, when they put the new learning into action.

**Learning creates physical change in the brain.** An individual’s prior learning is manifest in real, tangible patterns of brain cells. These patterns shape and reshape throughout life as new learning occurs through experience. And yes, old dogs (and adults) can learn new tricks!



**This is your brain on learning!**

Changes in brain patterns are necessary for learning; changes in brain patterns happen **only** through new experiences that are significantly different from prior experiences; **new experiences are essential for learning.**

**What motivates adults to learn?**

Think about participants in some of your past learning events. Perhaps the chart below represents some of the motivations you have encountered.

| <b>Primary reason for being here today<br/>I'm here . . .</b>                                                      | <b>Type of Motivation</b>                | <b>Link between one's<br/>Identity and Learning</b> |
|--------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------|
| 1. . . . for the food.                                                                                             | <b>Totally External</b>                  | None                                                |
| 2. . . . because I want to network with others I have not seen in a while.                                         | <b>External</b>                          | Maybe a little                                      |
| 3. . . . because I want others to know that I am somebody who takes my professional development seriously.         | <b>External</b>                          | A little                                            |
| 4. . . . because I want to develop my skills so I can be better at planning and facilitating learning events.      | <b>Mostly External<br/>Some Internal</b> | A lot                                               |
| 5. . . . because I want to learn whatever I can. I am a sponge for learning. I can find value in whatever I learn. | <b>Totally Internal</b>                  | Total                                               |

Totally internal motivation – learning purely for learning’s sake is rare. A mixture of external and internal motivations is more common. Number 4 on the list is a common motivational mix

for adult learners. Motivations can change as learning progresses. The more adults appreciate how new learning will help them address a current problem or challenge, the more internally motivated they will be to continue learning.

**Adults, including farmers and farmer educators, can be highly motivated for learning that helps them do the things that are important to them.**

As an educator you can use the following best practices to provide **meaningful learning experiences** for your clients, experiences that respond to and reinforce their motivations to learn.

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### Five Best Practices for Adult Learning

While there are certainly best practices for adult learning in addition to the five discussed below, these five practices in particular can lead to improved learning outcomes for participants and greater satisfaction for educators.



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## Best Practice 1: Provide a safe environment for learning.

**Emotions and learning are biologically linked.** How you feel directly influences your ability to think and solve problems.

**Learners are most receptive to learning when they feel safe, both physically and emotionally.**

Humans have six core emotions: Joy, Surprise, Fear, Anger, Disgust, and Sadness. When triggered, each emotion has its own set of automatic physical and physiological reactions, for example, smiling with joy, recoiling with disgust, or heart racing with fear. These core emotions play an important role in all learning.

### Core Emotions influence the feeling of “safety” in learning





**What makes a learning environment “safe”? What makes it “unsafe”?**

**Physical safety** and comfort are important. You should provide an appropriate facility or setting and attend to creature comforts like temperature, lighting and seating; but attending to **psychological and emotional safety** is even more critical.

Triggering too many and too strong **Negative** emotions inhibits learning. Triggering fear is especially harmful to learning. Fear and feeling threatened can cause the brain to shut down to new learning and go into “survival” mode - fear triggers that “fight, flight, or freeze” response.

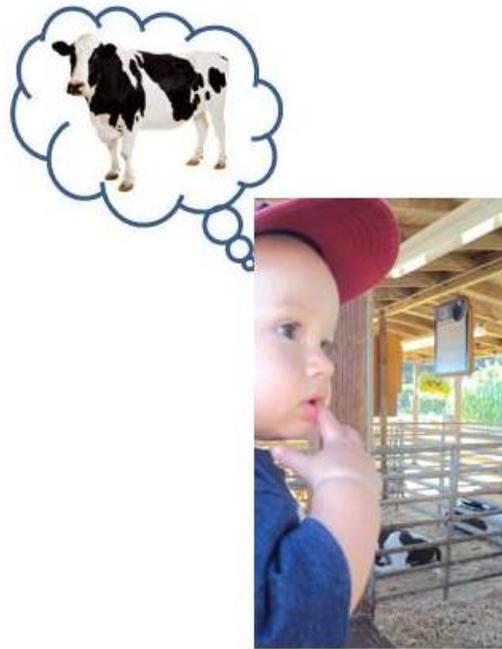
Try to trigger **Positive** emotions – pleasant surprise and novelty are especially important and effective. **Getting the brain’s attention is the first step in the learning process**, and using many little surprises keeps the brain’s attention and keeps it primed for learning – it’s like a wake-up call that says *“Hey that’s different, I should pay attention.”*

Surprises can be simple things like intriguing pictures; unexpected, thought-provoking questions; or mini-activities embedded in a presentation – especially ones that involve social interaction with other learners. Even a controlled amount of disgust, for example examining specimens of insect or disease damage, may provide a positive element of surprise and pique interest for learning – but use caution and don’t take disgust too far.



## Best Practice 2: Identify learners' prior knowledge and personal views about the content.

All adults bring prior knowledge, assumptions and preconceived ideas or personal views to the learning environment. They have what neuropsychologists call **Mental Models**, which are collections of brain pattern that represent their prior knowledge, assumptions and values about a particular thing or topic. People have mental models about content areas, aspects of one's life, and about learning itself. These models are formed as a result of all the experiences individuals have about the content or life aspect.



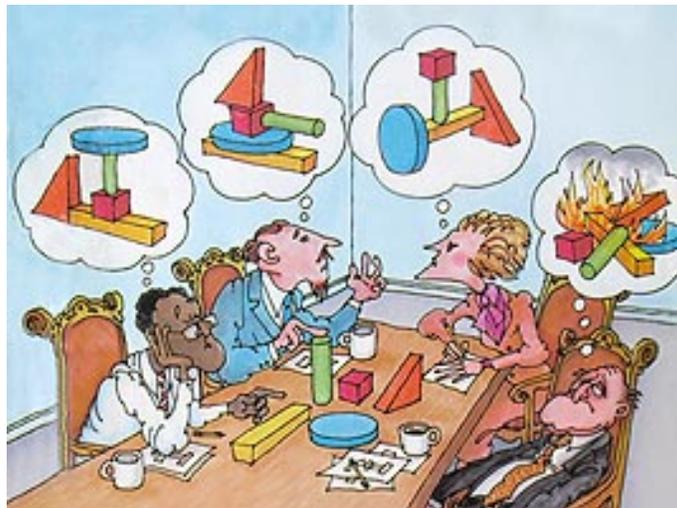
**This future adult is already building his mental model of livestock!**

**Mental models create perspectives and points of view, and they guide adults in learning, problem-solving and decision-making.**

For example, a farmer coming to an educational program about weed control has an existing mental model about weed control that includes his or her *knowledge* such as weed species on the farm, the problems they cause, control methods used currently or in the past and their level of success. The mental model also includes the farmer's *values* about such things as chemical use and tolerance for weeds, and some *assumptions* about the ease or difficulty of changing control practices.

Adult learners also bring their mental model about learning to the environments you create. These are based on all their prior experiences learning, some of which may be quite positive and some quite negative.

Finding out about the content area mental models of your learners – that set of existing knowledge, values and preconceived ideas, *and helping them to be aware of them* will help you design and manage the environment to maximize potential for learning. Asking some questions about your audience’s learning preferences during the planning stage can also help you design learning experiences that will be positively received.



**Each learner brings a unique mental model to the learning environment.**

**A few important ideas to keep in mind about Mental Models:**

1. Mental models are comprised of interrelated knowledge, assumptions, beliefs, and values.
2. Mental models are based on and limited by an individual’s range of experiences.
3. Mental models can be narrow or broad; accurate or inaccurate.
4. Mental models are largely tacit—adults are not aware of them unless they make a conscious effort.
5. Mental models can only be changed by new experiences that are significantly different from prior experiences.

Oftentimes, as educators of farmers and agricultural service providers, your goal is to encourage learners to do something that is new or improved on their farms or in their work. Getting learners to try something new may involve getting them to accomplish number 5 above - change their mental model. However, because most adults are not consciously aware of their

mental models (number 4), educators must first find ways to help learners make their own mental models explicit - open them up, verbalize or articulate them somehow so the assumptions and personal views can be examined and discussed. That step is necessary for learning and change. Unless deeply held values, beliefs, assumptions, and preconceptions or misconceptions in the learner's mental model are known and addressed, the new content you offer is unlikely to change that person's mental model – and that person is unlikely to take the actions you may be recommending.

**Remember the core emotions?** A positive emotional learning experience will increase the chance that new information is integrated into an individual's mental model.

**Here are some examples of questions you can ask to help uncover the mental models of your learners.**

What problem have you had with \_\_\_\_\_? How did you go about addressing it?

Can you tell me what led you to \_\_\_\_\_? What type of things did you consider when you made that decision?

You seem to feel strongly about \_\_\_\_\_? Can you tell me a bit more about why you feel strongly about it?

**Let's look at some examples involving farmers' mental models of their farming.**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Quotes from Frank<br/>(livestock and grain farmer)</b></p> <p><i>The year before when we had so much rain, I was very concerned about losing yield from nitrogen loss in the field, and I want, you know, to get maximum yield. I don't believe in losing yield especially if it only takes more nitrogen.</i></p> <p><i>A NRCS guy said I should take some corn stalk samples . . . he took the samples. This year we didn't have as much rain and the corn looked great. The stalk results were really high, and the guy told me to cut back my nitrogen. I'm not going to do that and risk getting a low yield. I don't care how much nitrogen is in the stalks; I'm after maximum yield.</i></p> <p><i>Morris, Sheckley, &amp; Bell (2003)</i></p> | <p><b>Quote from Cathy<br/>(organic vegetable farmer)</b></p> <p><i>They know at the experiment station that if they have something that is organic that they want to try, that we're very open to trials, we're very open to trying new techniques [but only if its organic]."</i></p> <p><i>Eckert &amp; Bell (2006)</i></p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

These quotes from Frank and Cathy tell us some important things about their mental model of farming, which include their goals, values, and beliefs. Uncovering these glimpses into a farmer’s mental model and making them explicit – for the educator and the farmer – is the first step towards opening them up to change. If Frank’s aversion to risk of yield loss is not attended to, then Frank is likely to continue to shut down his learning about new approaches to nitrogen management such as corn stalk testing. Cathy has developed a positive educational relationship with her nearby experiment station because they recognize and respect her strong commitment to organic production practices. The researchers and Cathy, after a long struggle to uncover and understand each other’s mental models, have adapted to working in ways that are mutually beneficial.

**Here is an additional example of contrasting mental models of farming and their impact on learning for different dairy farmers.**

| <b>Name</b>       | <b>Description of operation</b>                                                                                 | <b>Focal points of mental model</b>                                                                | <b>How the mental model impacts learning</b>                                                                                                                                  |
|-------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Joe               | 300-head dairy. Goal is to grow to 1000-head.                                                                   | Emphasis is on becoming a “top dairy” by increasing herd size and meeting industry standards.      | Values learning from the “top percentage” of the dairy community. Wants hard numbers and evidence for decisions. Hesitant to invest in new learning unless it will “pay off.” |
| Gordon and Marion | 65-head dairy; primarily grass-fed. Goal is to stay small and maintain balance to preserve quality family life. | Emphasis is on maintaining quality family life, economic stability, and low use of outside inputs. | Values learning from variety of sources: farming neighbors, Extension, sales reps, etc. Focus on sustainability resources. Willing to try out new ideas.                      |

Adapted from *Eckert & Bell (2005)*

When educators consider the mental models of farmers with whom they work, especially the guiding values and beliefs like the focal points in the table above and answers to the questions posed earlier, they can better anticipate how to tailor advice and instruction to meet farmers’ needs and address their view points. Farmers are more receptive to instruction and motivated to apply what they learn when their values are respected, and when new ideas are presented in ways that are consistent with their mental models, especially at the beginning of learning something new.

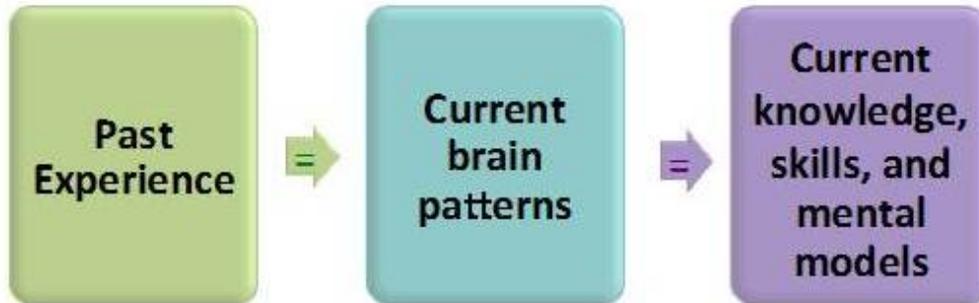
**Farmer-educators** often refer to *“meeting the farmers where they are.”* This saying embodies the essence of finding out about mental models, working within them, and gradually opening farmers up to new ideas – to change.

The importance of mental models in learning applies also for the **train-the-trainer educators** of SARE’s professional development programs. Educators and advisors of farmers have their own mental models about farming, teaching, and learning. Their mental models may or may not coincide or be compatible with the new ideas and practices you want to teach them, or with the mental models of the farmers they go on to teach. Professional development project leaders can help educators and advisors with whom they work to build skills in uncovering farmers’ mental models and using that insight to guide their instruction and design of learning formats and environments. Involving some farmers and educators on a planning team for the design of educational programs is a sound best practice for ensuring a learning program will *“meet the learners where they are.”*



### Best Practice 3: Link the content to learners' prior experience.

At the beginning of this guide we highlighted that **individuals learn through experience, and learning manifests in tangible brain cell patterns.**

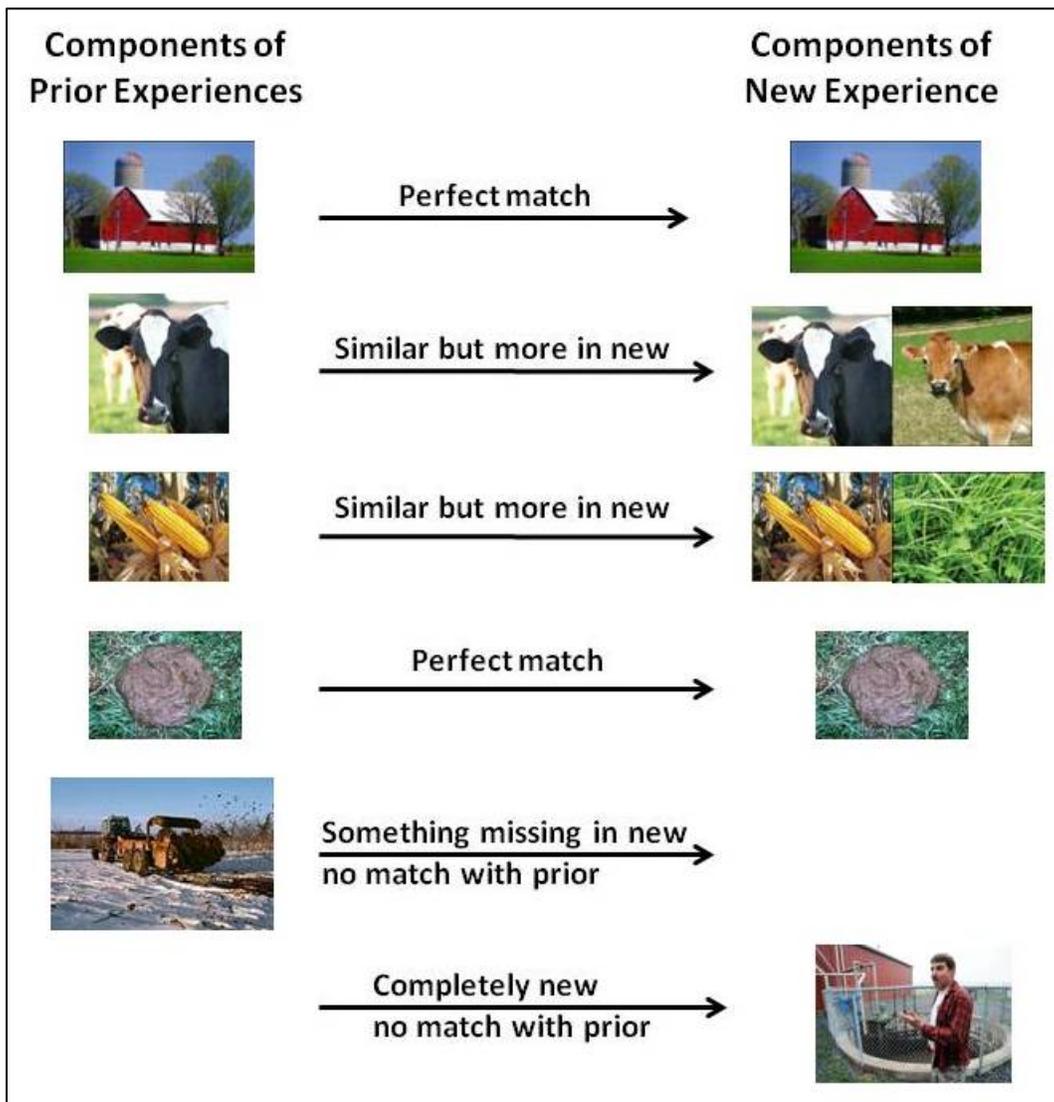


These brain cell patterns shape and reshape throughout life as new learning occurs through new experience.



We also highlighted that comprehension depends on the brain making associations, both consciously and unconsciously, between a new experience and past experiences. The graphic below illustrates how some components of prior experiences, which are stored in brain patterns, may be a perfect match or partial match to components of a new experience; at the same time a new experience may be completely new and the brain finds no match at all in prior experiences.

**To make sense of a new experience,** adults first pay attention to components that match in some way to past experiences. Once that occurs, adults are better able to focus on the components that are completely new.



To facilitate learning, educators must find ways to:

- Find out how the “new information” - what you want people to learn – matches with or links to what they already know.
- Encourage people to make associations between what you want to share and their prior experiences.

Asking people about their existing knowledge and skills in the content area and encouraging them to share their prior experience and perspectives with fellow learners are good strategies for finding out what individuals know and helping them begin to make associations.

Here are some examples of what to do to link the new content to learners' prior experiences and stimulate changes in brain patterns.

| What to do                                                                                                             | Why it works                                                                                               |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Allow learners to compare and contrast their prior experiences to the new content.                                     | "Locates" where current brain patterns match up with new content patterns.                                 |
| Provide opportunities for learners to observe others demonstrate new knowledge and skills.                             | Stimulates the new brain patterns needed to perform the same actions.                                      |
| Provide opportunities for learners to actively experiment with the content.                                            | Reinforces matching patterns and triggers the formation of new patterns.                                   |
| Provide opportunities for individualized and group deliberate practice of new skills and application of new knowledge. | Establishes and reinforces new content patterns in ways that are "customized" for each individual.         |
| Provide opportunities for applying new knowledge and skills to solve novel problems.                                   | Expands new patterns and establishes connections to broader networks; enables adaptability and creativity. |

#### Best Practice 4: Let learners work together to experiment and solve problems with the content.

To continue the *process of new brain pattern formation called learning*, people need opportunities to experiment, practice, and solve meaningful problems related to the content. These opportunities might include activities such as creating or completing a plan, generating questions or lists, analyzing or solving a case scenario problem or practicing a hands-on skill.

Letting learners work together in these activities has many benefits. First, the collective knowledge based on everyone's different prior experiences is greater than any one individual's. When a group can tap into the variety of experiences and personal views of its members it is able to come up with novel and creative strategies and solutions to problems. In addition, providing opportunities for learners to work together can be a low-risk, emotionally safe way for individuals to experiment with new information and skills. Encouraging peer-to-peer interaction as part of the learning experience will strengthen memory and learning outcomes.



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## Best Practice 5: Give learners choice in content, process, and outcomes.

### What happens when you offer choice and give some control for learning over to the learners?

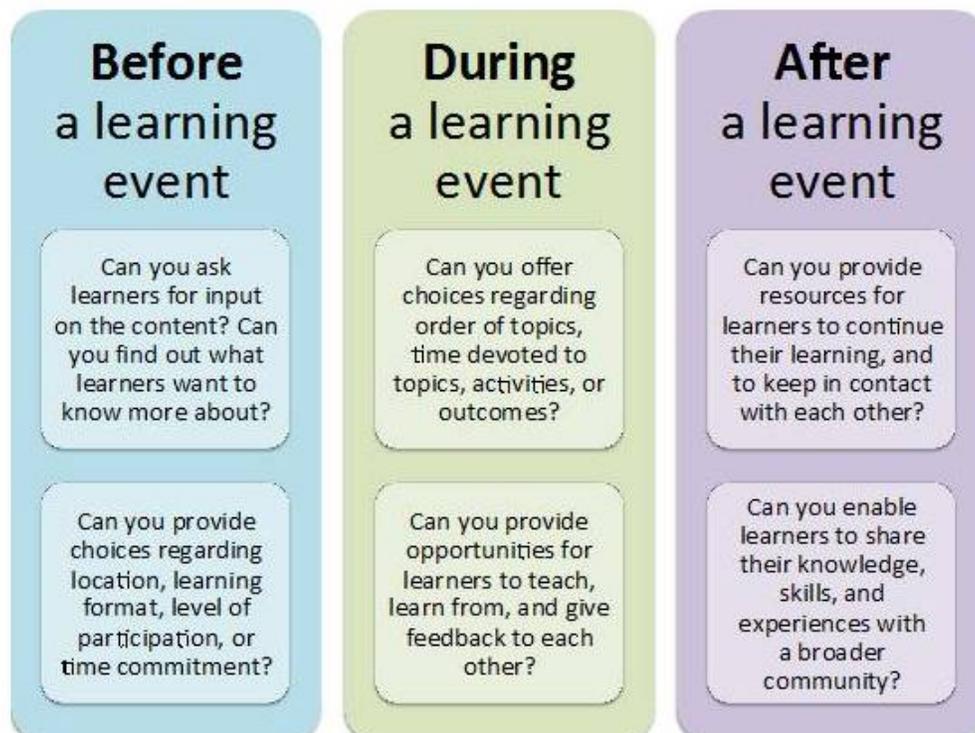
At first, giving some control to learners may be unsettling for some educators, and for some learners, but when adults have opportunities to contribute to decisions about their learning they are more likely to take responsibility for the outcomes of their efforts. When adults feel that their learning needs and desires are being respected and met, they will also be more independent and motivated in continuing their learning.

#### Giving control to learners:

- May pose a challenge to current mental models of learning; learners may initially feel confused
- Uncovers learners' mental models of learning
- Increases self-direction, ownership, and responsibility
- Increases motivation
- Promotes continued learning after the learning event

Educators can offer many different opportunities for learners to contribute to their learning.

**Here are some questions to prompt you to think of ways to give some control over to learners before, during, and after a learning event.**



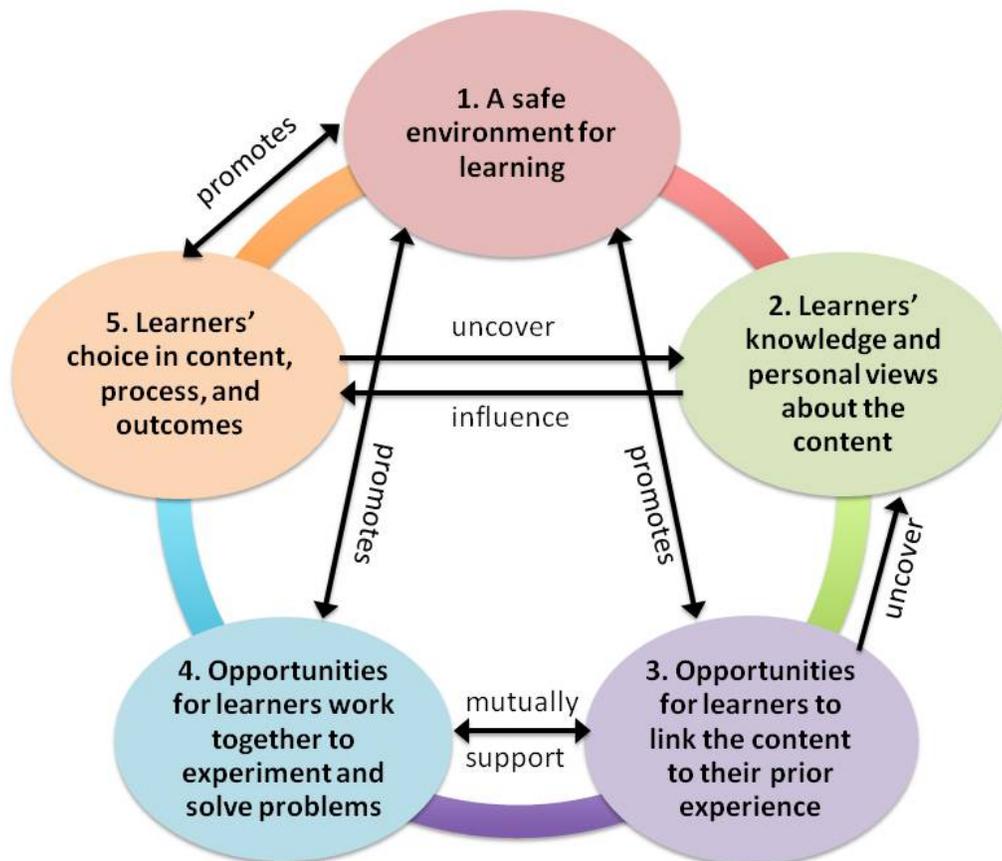
Many educators routinely conduct needs assessment activities in advance of designing programs. These activities can range from formal – like surveys or focus groups, to informal – like questions posed informally at meetings, observational checklists, or keeping notes on questions and inquiries received. This work of uncovering needs is one step towards giving learners control over the learning. Thinking of needs assessment broadly – as not just something done at the beginning, and not just something done to target content topics, but as an ongoing process to uncover desired learning formats, valued outcomes or end goals, and supports and interactions needed to meet goals, can help you provide opportunities for giving learners choice and control throughout the learning process.



## The five Best Practices for Adult Learning are all interconnected

As illustrated in the next figure, an interconnectedness and synergy exists among the five best practices for adult learning.

In a safe learning environment learners are more likely relate the content to their own experiences, take risks and experiment with the content, be active contributors to their learning, and take responsibility for the outcomes of their efforts. In turn, giving learners choice, encouraging them to link the content to what they already know, and providing opportunities to work together to solve problems all help create an emotionally safe learning environment. The stories learners tell when they relate the content to their own experiences can uncover learners' mental models, including their knowledge, values, and beliefs as well as their motivations for participating. Learners' knowledge and personal views can be also revealed in the choices they make when provided with opportunities to contribute to learning content, processes, and outcomes. Finally, educators can design many activities that do double duty in providing opportunities for learners to contribute to their learning while linking the content to their prior experiences and experimenting with the content.



## How to Put the Five Best Practices for Adult Learning into Action

Below is a quick summation of strategies based on the five principles that will motivate and encourage adults to learn.

| What to do                                                                    | Why it works                                                                                                       |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Provide a safe learning environment.                                          | Enables risk taking.                                                                                               |
| Imbed occasional “surprises” during learning.                                 | Gets the brains attention and primes it for new learning.                                                          |
| Ask questions about expectations, needs, and current practices.               | Encourages connections to past experience and enables expressing mental models.                                    |
| Provide choice.                                                               | Enables making connections to past experience, interests, and values. Provides control and ownership for learning. |
| Encourage learners to work together.                                          | Enables expressing individual mental models, testing assumptions, and developing shared mental models.             |
| Encourage experimentation.                                                    | Enables new brain patters to start to form.                                                                        |
| Provide opportunities for learners to observe others to whom they can relate. | Enables new brain patterns to start to form.                                                                       |
| Make it easy to be successful at first.                                       | Reinforces new brain patterns. Increases self-efficacy to try more.                                                |
| Leave the learners on their own at times.                                     | Enables taking ownership for learning.                                                                             |

Explore the tables on the pages at the end of this guide for more specific suggestions for how to use the best practices **before**, **during**, and **after** a learning event to improve the value and outcomes of the learning experience for participants, and increase your enjoyment and satisfaction as an educator.



Go for it!

| <b>What to do BEFORE an event:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Tips for Workshops and Most Other Events</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Practices Applied</b> |
| Work out and communicate beforehand all logistics, directions, parking, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                        |
| Get all prep work, agendas, handouts, demonstrations, etc. ready ahead of time. A frazzled instructor or facilitator can diminish learners' comfort and confidence.                                                                                                                                                                                                                                                                                                                                                 | 1                        |
| Share list of participants beforehand, if possible.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1                        |
| Acknowledge common gaps in knowledge and the need for learning beforehand, in registration, advertisements.                                                                                                                                                                                                                                                                                                                                                                                                         | 1, 2                     |
| Involve representative farmers and agricultural service provider learners in planning process – include their perspectives and ideas in design.                                                                                                                                                                                                                                                                                                                                                                     | 2, 5                     |
| Survey learners beforehand. Ask questions about expectations, needs, and what they are currently doing or know. Can include questions in registration materials.                                                                                                                                                                                                                                                                                                                                                    | 2, 3, 5                  |
| Use results of pre-event survey or test to focus program content, modify presentations, and customize learning process.                                                                                                                                                                                                                                                                                                                                                                                             | 3, 5                     |
| Spend adequate time with planning committee to uncover the facilitators' mental models of content, learning, and learners.                                                                                                                                                                                                                                                                                                                                                                                          | 2                        |
| Design homework or pre-event assignments, such as: <ul style="list-style-type: none"> <li>• Reading background information.</li> <li>• Watching a video demonstration about key topic or skill.</li> <li>• Taking a pre-test.</li> <li>• Coming prepared with information or data from their farm or work to use in workshop. For example, bringing to the learning event six items you know the costs of for use in an enterprise budget, a draft marketing plan, or soil analysis reports from fields.</li> </ul> | 3, 5                     |
| Select site that models what you are trying to teach. For example, for a farm energy program hold meeting in a passive-powered conference or meeting space.                                                                                                                                                                                                                                                                                                                                                         | 1                        |
| Ask participants to identify and bring along a learning partner – or encourage registering with a learning partner.                                                                                                                                                                                                                                                                                                                                                                                                 | 1, 4, 5                  |
| <b>Extra Tips for Webinars</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Practices Applied</b> |
| Send information and instructions ahead of time about how webinar will work. Arrange for technology testing beforehand.                                                                                                                                                                                                                                                                                                                                                                                             | 1                        |
| Offer webinar at group sites or hubs. Arrange for on-site tech support                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                        |

| <b>Extra Tips for Field Events</b>                                                                                                        | <b>Practices Applied</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Make sure physical environment – especially on-farm – is safe. Ensure restroom facilities at field events or at stops on bus tour.        | 1                        |
| Factor family-friendly and affordability into design of tours and field events.                                                           | 1                        |
| <b>Extra Tips for PDP Train-the-Trainer Events</b>                                                                                        | <b>Practices Applied</b> |
| Ask ag service providers to identify and bring along farmer learning partner(s) – or require registering with farmer learning partner(s). | 1, 4, 5                  |

| <b>What to do DURING an event:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Tips for Workshops and Most Other Events</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Practices Applied</b> |
| Provide adequate directional signs, welcome signs, name badges.                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                        |
| At beginning of event, review agenda or itinerary, and “ground rules” for respectful discussion.                                                                                                                                                                                                                                                                                                                                                                                                    | 1, 2                     |
| Moderate discussion, especially on sensitive topics.                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                        |
| Incorporate opportunities to gather informally, socialize, network, share stories and ideas. Especially important for longer duration, multi-day, or recurring events.                                                                                                                                                                                                                                                                                                                              | 1, 3, 4                  |
| Depending on content and goals, use pre-event survey results to pair or group individuals appropriately, e.g. those with greater and lesser experience, complimentary or contrasting backgrounds or enterprises, geographical proximity.                                                                                                                                                                                                                                                            | 1, 2, 3 4                |
| Be/Have credible, humble presenter/facilitator for topic; someone who is relatable as an educator and can get “on the same page” as audience.                                                                                                                                                                                                                                                                                                                                                       | 1                        |
| Monitor indoor or outdoor physical environment, adjust temperature, lighting, A/V, provide shade, offer refreshments, as needed. Provide accommodations for individuals with physical or sensory limitations.                                                                                                                                                                                                                                                                                       | 1                        |
| Early in the event offer learners an opportunity to become familiar with each other, ask questions, express their assumptions, expectations, motivations for the learning. Some example strategies for doing this: <ul style="list-style-type: none"> <li>• Use introductions - Have participants introduce themselves, say why attending, questions they came with, what they want to take away.</li> <li>• Ask for questions/concerns at time of agenda/itinerary review in beginning.</li> </ul> | 1, 2                     |

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| <ul style="list-style-type: none"> <li>• Do a scan of audience to ask about specific interests and expectations for the day. For example: <ul style="list-style-type: none"> <li>* “What is one question you want to leave with answers to today?”</li> <li>* “What is your primary motivation for coming here to learn today?”</li> <li>* “What do you hope to be able to do by the time you leave today?”</li> <li>* “What is one thing you know or have heard about _____?”</li> </ul> </li> <li>• Some ways to collect and record this feedback from learners: <ul style="list-style-type: none"> <li>* Ask around room, record on flip chart – this is easier for small groups.</li> <li>* Have index card or paper at seats upon arrival, ask participants to write a question or key take-away they’re looking for, collect if possible for use by facilitator during event. If collecting and assimilating is not possible, have learners keep for later questions.</li> </ul> </li> </ul> <p>Collecting early feedback about expectations and motivations, sharing feedback as a group, and using it to guide the session is quite valuable, but even if the environment and format do not allow sharing the feedback, having learners identify and record their expectations and motivations will begin the process of opening up their mental models.</p> |         |
| <p>If a pre-survey was done, show survey results at beginning of event or other appropriate time (can use tabular or graphic depictions). Ask learners to respond – any surprises? Point out how you will address concerns, viewpoints, or interests expressed through survey.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1, 2, 3 |
| <p>As the presenter or facilitator, share your own expectations and assumptions about the learning and event; give learners a clear picture of what your objectives are. Be prepared to adjust based on where the learners are.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1, 2    |
| <p>Ask learners to share what they are currently doing, or to share past experiences related to topic/concept/task. Example strategies for doing this:</p> <ul style="list-style-type: none"> <li>• Pose questions and ask for volunteers to share answers, or ask learners to reflect individually. Good times to ask: <ul style="list-style-type: none"> <li>* Before a tour or at tour stops. E.g. “Does anyone have an experience about marketing the crops we’re about to see that they’d like to share?”</li> <li>* When the topic/task is introduced. E.g. “What’s been your experience calibrating sprayers? What have you had most difficulty with? Have you developed any helpful tips others might use? “</li> <li>* Before a learning activity begins. E.g. “Take a few minutes to think about an enterprise on your farm and make a list of all the inputs needed for that enterprise.”</li> </ul> </li> <li>• Have learners share Best Experience – Worst Experience – Lessons Learned. This can be done effectively in small groups, with learners looking for commonalities, differences, contributors to success/failure. Volunteers from small groups can report to larger group.</li> </ul>                                                                                                                                                       | 3, 4    |

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| <p>Provide opportunities for learners to interact and work together. Include small group or partner exercises, especially exercises that encourage synthesis of learning, problem solving, situational analysis, or role-playing. Example ideas for group exercises:</p> <ul style="list-style-type: none"> <li>• Review an energy audit, GAPs inspection report and create action plan.</li> <li>• Review soil test results and other field management data and history and make nutrient management decisions.</li> <li>• Experiment using and calibrating tools for energy monitoring, irrigation monitoring, tillage, weeding, spraying, or other cultural practices.</li> <li>• Create financial plans, marketing plans, enterprise budgets using software or other tools.</li> <li>• Create marketing signs, logos, merchandising displays, print or web ads.</li> <li>• Critique observations made on site visits, about case studies, mock-ups of samples, or aspects of benchmark enterprises. E.g. different marketing displays, signage, advertising; animal handling, crop management, marketing enterprises, labor and time management on farms. Videos could be used for observations as well as live sites. Have groups discuss – “What might you do differently and why? What had the most/least impact on your learning? What questions would you have for the operator?”</li> <li>• Engage participants in role-playing exercises. E.g. buyer/seller roles, farmer/advisor roles. Debrief after activity to highlight key points.</li> <li>• Include video training shorts followed by discussion. E.g. Social styles of communication. How do you interact with people? How do you learn others styles and respond?</li> </ul> | 3, 4                     |
| Incorporate “fun facts,” brief quiz questions/tests of knowledge about topic area before sessions, or before field/tour stops.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1, 2                     |
| Provide choices in group or individual learning activities. E.g. Choice of enterprise to budget for, management scenario to analyze, or format for sharing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5                        |
| Include adequate time for learners to report back on individual or group learning activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4                        |
| <b>Extra Tips for Webinars</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Practices Applied</b> |
| Have technical support person available at host site and at group sites, if using, to help with technology and troubleshooting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1                        |
| Monitor chat and questions to determine or narrow in on concerns, expectations – if a lot on one topic, try to expand there.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2, 3                     |
| Pose questions or mini-surveys or polls during presentation and share results.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2, 3                     |

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| Use group/hub viewing sites with facilitator to engage group interaction with questions, tasks; provide a discussion guide. | 4                        |
| Include opportunities for questions and interactions between groups/learning hubs.                                          | 1, 4                     |
| <b>Extra Tips for On-Farm Meetings/Tours</b>                                                                                | <b>Practices Applied</b> |
| Allow ample time and opportunity for host farmers to tell their stories.                                                    | 2, 3                     |
| Encourage participants to ask host farmers why certain practices are done, how decisions made, etc.                         | 3, 4                     |
| Ask participants to share situations they know of that are similar or contrasting to host-farm situation.                   | 3, 4                     |

| <b>What to do AFTER an event:</b>                                                                                                                                                                                                                                                                                                                                                                                        |                          |
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| <b>Tips for Workshops and Most Other Events</b>                                                                                                                                                                                                                                                                                                                                                                          | <b>Practices Applied</b> |
| End with learners having positive feelings, a desire to return, and to learn more. End with learners feeling that facilitator(s) are accessible afterwards.                                                                                                                                                                                                                                                              | 1                        |
| Plan time at end for learners to share their key learning and ideas for applying what they have learned. Ways to do this: <ul style="list-style-type: none"> <li>• Informal round-robin type sharing.</li> <li>• Ask a question on end-event survey.</li> <li>• In an “action planning” session as part of event – have learners leave with plans for putting learning into action and a timeline for action.</li> </ul> | 2, 3, 4                  |
| At end-of-event ask about additional learning needs, suggestions for future topics, or supports needed for action. Plan to provide supports.                                                                                                                                                                                                                                                                             | 2, 5                     |
| Provide resources and/or take home activities or assignments for continued learning and experimenting with content. E.g. software, budget tools, calibration sheets, workbooks for planning or how-to, data/observation recording sheets.                                                                                                                                                                                | 3, 4                     |
| Share participant contact information so learners can continue conversations, relationships.                                                                                                                                                                                                                                                                                                                             | 4                        |
| Conduct survey 1-, 3-, or 6-months post workshop, tour, or webinar to learn how expectations were met, whether content was appropriate and useful, how participants have applied new knowledge or skills, ways mental models may have changed, or new questions that have arisen.                                                                                                                                        | 2, 3                     |

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| <p>Develop an on-going community of learners through on-line listserve, Facebook page, blog or forum, or more face-to-face meetings. Facilitate continued dialogue, Q&amp;A, idea exchange. Ask participants to contribute photos, insights, experiences using what they learned, questions, etc. Share success stories, good ideas for implementation from 6-month follow-up survey and other ongoing interactive forums with all.</p> | <p>2, 3, 4</p>                  |
| <p><b>Extra Tip for Webinars</b></p>                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Practices Applied</b></p> |
| <p>If using facilitated hub sites, share information from post-webinar discussions or activities with learners from all sites.</p>                                                                                                                                                                                                                                                                                                      | <p>3, 4</p>                     |



## References

- Association of Research Libraries. (n.d.). Research libraries leadership development: Training skills support site. Retrieved August 2, 2006 from <http://www.arl.org/leadership/resources/training/factslearn.html>
- Eckert, E. & Bell, A.A. (2006). Continuity and change: Themes of mental model development among small-scale farmers. *Journal of Extension*, 44(1), article 1FEA2. Available at <http://www.joe.org/joe/2006february/a2.php>
- Eckert, E. & Bell, A.A. (2005). Invisible force: Farmers' mental models and how they influence learning and actions. *Journal of Extension*, 43(3), article 3FEA2. Available at <http://www.joe.org/joe/2005june/ent.shtml>
- Morris, T., Sheckley, B.G., & Bell, A.A. (2003). *Farmer-Run Research Organization for Southern New England*. 9/2000 to 9/2003. 3-year grant project sponsored by the United States Department of Agriculture.
- Wolfe, (2006). The role of meaning and emotion in learning. *New Directions for Adult and Continuing Education*, 110, 35-41.
- Zull, J. E. (2006). Key aspects of how the brain learns. *New Directions for Adult and Continuing Education*, 110, 3-9.

