



# Train the trainer

..... notes on good practices and ideas

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## We are going to look at .....

### Learning needs

- Ensemble forecast interpretation and use
- Verification of forecasts and interpretation

### Learning outcomes

### Learning solutions

### Learning assessment

*WMO – Training systems and management – online course 2015*

## Learning needs

**Training Needs Assessment** is the process of determining when and what training is required. Needs assessment should be a first step before making any training decision.

For example:

- new or existing staff members lack the knowledge and skills required by their posts (through some form of competency assessment)
- changes either within and outside an organization require changes to jobs or job processes
  - *political* changes, such as a new organizational structure
  - *economic* changes, such as staffing changes due to budget or pressures to perform more efficiently
  - *societal* changes, such as demands for higher quality or different services from customers
  - *technological* changes, such as new tools and information sources
  - *legislative* changes, such as new regulations or standards,
  - *environmental* changes, such as needs for new services driven by a changing climate.

## Determining learning needs

**A performance gap:** difference between the desired and actual performance of one or more of an organization's staff members. Gaps must be examined to determine the sources and how best to address them, or even *if* to address them.

**Not all performance gaps are critical** to address for each individual. For example, even if training could help, the gap might be more easily addressed by shifting responsibilities among individuals.

What can be done to address 'gaps':

- If the gap is caused by a **lack of tools, poor motivation, or ineffective processes**, they must be addressed through organizational change (training alone won't help, but it might be useful to accompany organizational change with training)
- If the gap is caused by a **lack of experience**, they must be addressed through additional practice, accompanied by coaching or mentorship if necessary
- If the gap is caused by a **lack of knowledge or skills**, they must be addressed through **training**

## Determining learning needs (ensemble forecasting)

\*

a) How important is the topic in the forecaster daily task?

1=important

b) How well do I master it?

7=very important

Topic	a	b
Understanding general concepts of ensemble forecasting		
Understanding ensemble products		
Interpreting ensemble products		
Using elements of uncertainty in my tasks		
Communicating uncertainty		
Introducing new ideas/products as result of my use of ensemble forecasting		
Teaching/showing to colleagues ensemble products		

## Determining learning needs (verification) \*

a) How important is the topic in the forecaster daily task?

1=important

b) How well do I master it?

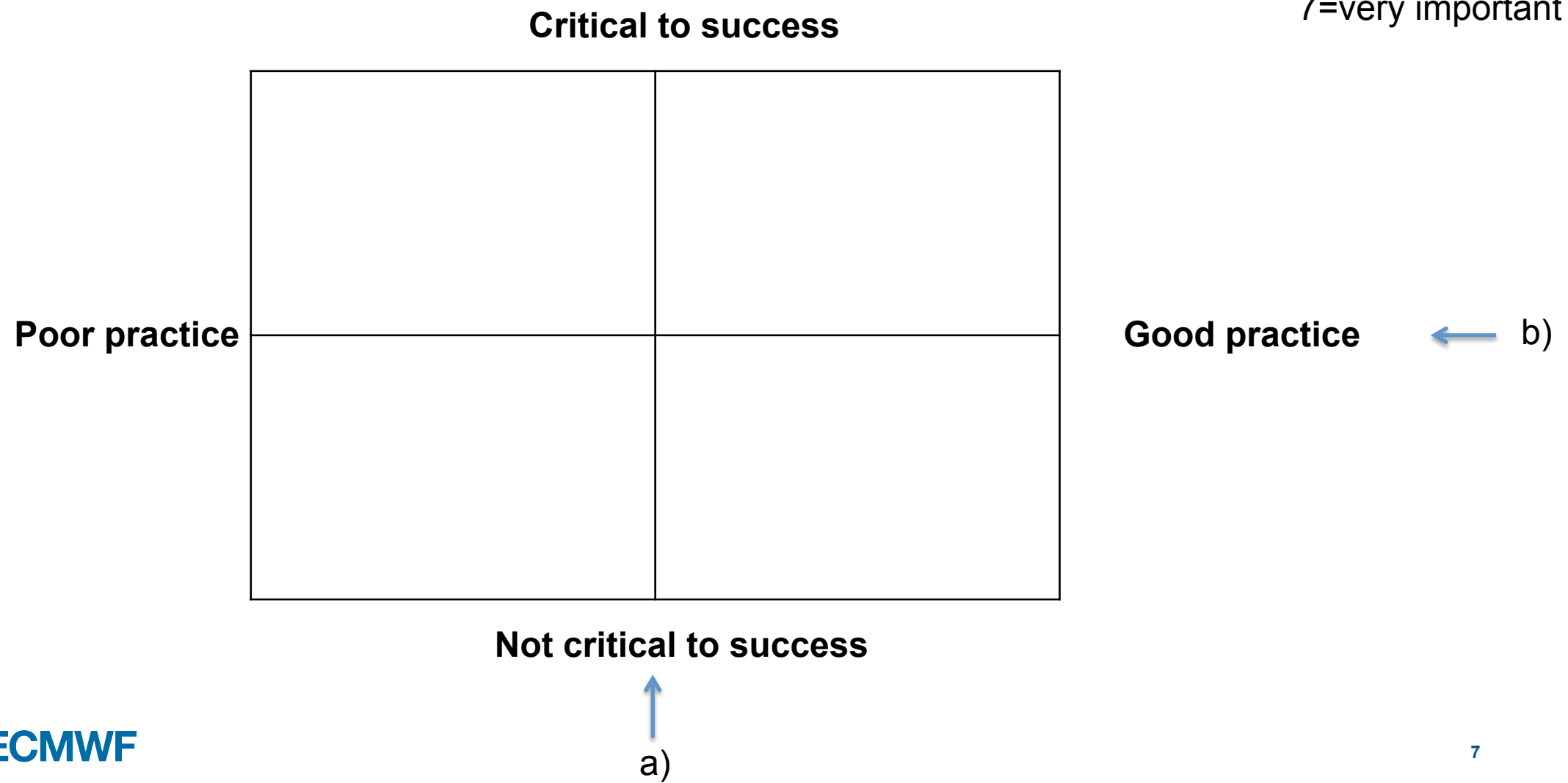
7=very important

Topic	a	b
Understanding general concepts of verification		
Understanding what each score show		
Interpreting performance measures		
Using results from scores		
Introducing new verification approaches (user oriented)		
Teaching/showing to colleagues verification methods		

## Determining learning needs

- a) How important is the topic in the forecaster daily task?
- b) How well do I master it?

\*  
1=important  
.  
.  
7=very important



## Identify the desired competencies .....

### **Competencies**

- Their main focus is on key aspects of job tasks
- They stem from work processes and procedures
- Can be 'observed' (SMART criteria: Specific, Measurable, Achievable, Relevant, Time-bound)

### **Transferrable skills**

- For example: communicating, project management, motivating, facilitating, supporting, mentoring, .....

### **Professional standards**

- They comply with ethical and professional standards
- They maintain the professional credibility

*Jeff Wilson, WMO*



## Why competencies?



## NWP competencies (ensemble forecasts)

\*

To use ensemble forecast products, we need to be able to:

Elements:

1. Understand which products are available to me so that I can select the right one
2. Understand model strength and weaknesses (quantification of uncertainty)
3. Identify scenarios and their probability
4. Link scenarios to local weather (impact to local weather)
5. Extract knowledge from local distributions and probabilities (point forecast)

## Element 1

\*

Understand which products are available to me so that I can select the right one

Performance components (Competencies)

- Identify products available
- Locate documentation relative to products
- Classify weather situation and suggest appropriate products to add value to the forecast

Skills, techniques and knowledge requirements

- *Knowledge of English (reading)*
- *Use appropriate channels to find information on ensemble forecasting*
- *General knowledge of 'why ensemble forecasting'*

## NWP competencies (verification)

\*

To use verification scores effectively, we need to be able to:

Elements:

1. ....

2. ....

3. ....

....

## Learning outcomes

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..... These are what teachers and trainers intend learners to achieve during any particular education or training event, such as a class, course, or programme of study.

Think do feel table

Bloom taxonomy

**Bloom's Taxonomy of Educational Objectives** (1956) is one **traditional framework for structuring learning outcomes**. Levels of performance for Bloom's cognitive domain include *knowledge, comprehension, application, analysis, synthesis, and evaluation*. These categories are arranged in **ascending order of cognitive complexity** where evaluation represents the highest level.

## Bloom Taxonomy

Level	Description
<b>Knowledge</b> <i>(represents the lowest level of learning)</i>	To know and remember specific facts, terms concepts, principles or theories
<b>Comprehension</b>	To understand, interpret, compare, contrast, explain
<b>Application</b>	To apply knowledge to new situations to solve problems using required knowledge or skills
<b>Analysis</b>	To identify the organizational structure of something; to identify parts, relationships, and organizing principles
<b>Synthesis</b>	To create something, to integrate ideas into a solution, to propose an action plan, to formulate a new classification scheme
<b>Evaluation</b> <i>(represents the highest level of learning)</i>	To judge the quality of something based on its adequacy, value, logic or use

*Adapted from California State University, Bakersfield, PACT Outcomes Assessment Handbook (1999)*

## Bloom taxonomy

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
define/ state	classify	apply	analyze	arrange	appraise
identify	describe	compute	appraise	assemble	assess
indicate	discuss	construct	calculate	collect	choose
know	explain	demonstrate	categorize	compose	compare
label	express	dramatize	compare	construct	contrast
list/label	identify	employ	contrast	create	decide
memorize	locate	give examples	criticize	design	estimate
name	paraphrase	illustrate	debate	formulate	evaluate
recall	recognize	interpret	determine	manage	grade
record	report	investigate	diagram	organize	judge
relate	restate	operate	differentiate	perform	measure
duplicate	review	organize	distinguish	plan	rate
select	suggest	practice	examine	prepare	revise
underline	summarize	predict	experiment	produce	score
tell	translate	inspect	propose	select	argue
translate	cite	inventory	set up	value	critique
sketch	question	articulate	infer	model	interpret
read	distinguish	assess	solve	perform	criticize
use	solve	collect	test	integrate	defend

*Adapted from California State University, Bakersfield, PACT Outcomes Assessment Handbook (1999)*

## Learning solutions

### Formal solutions .

- Short/Long classroom courses, one week or less (can include workshops, seminars, etc.)
- Online courses: synchronous or asynchronous (made up of live presentations or webinars)
- MOOCs (courses open to large numbers of participants and having limited instructor assessment)

### Informal solutions

- online seminars or webinars (often less than a day, but might be grouped in a series)
- conferences or seminars (in-person meetings)
- self-directed learning (the learner accesses information and learning resources as assigned or under their own initiative)
- on-the-job training (job practice under the guidance of an experienced person)
- mentoring and coaching (a more experienced person provides periodic guidance over an extended period of time)
- working in teams (with peers or more experienced colleagues) or independently (and trying new things to improve work outcomes)

**BLENDED**