# 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

# 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?

b)How well do I master it?

1=important
.
.
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?

b)How well do I master it?

1=important
.
.
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

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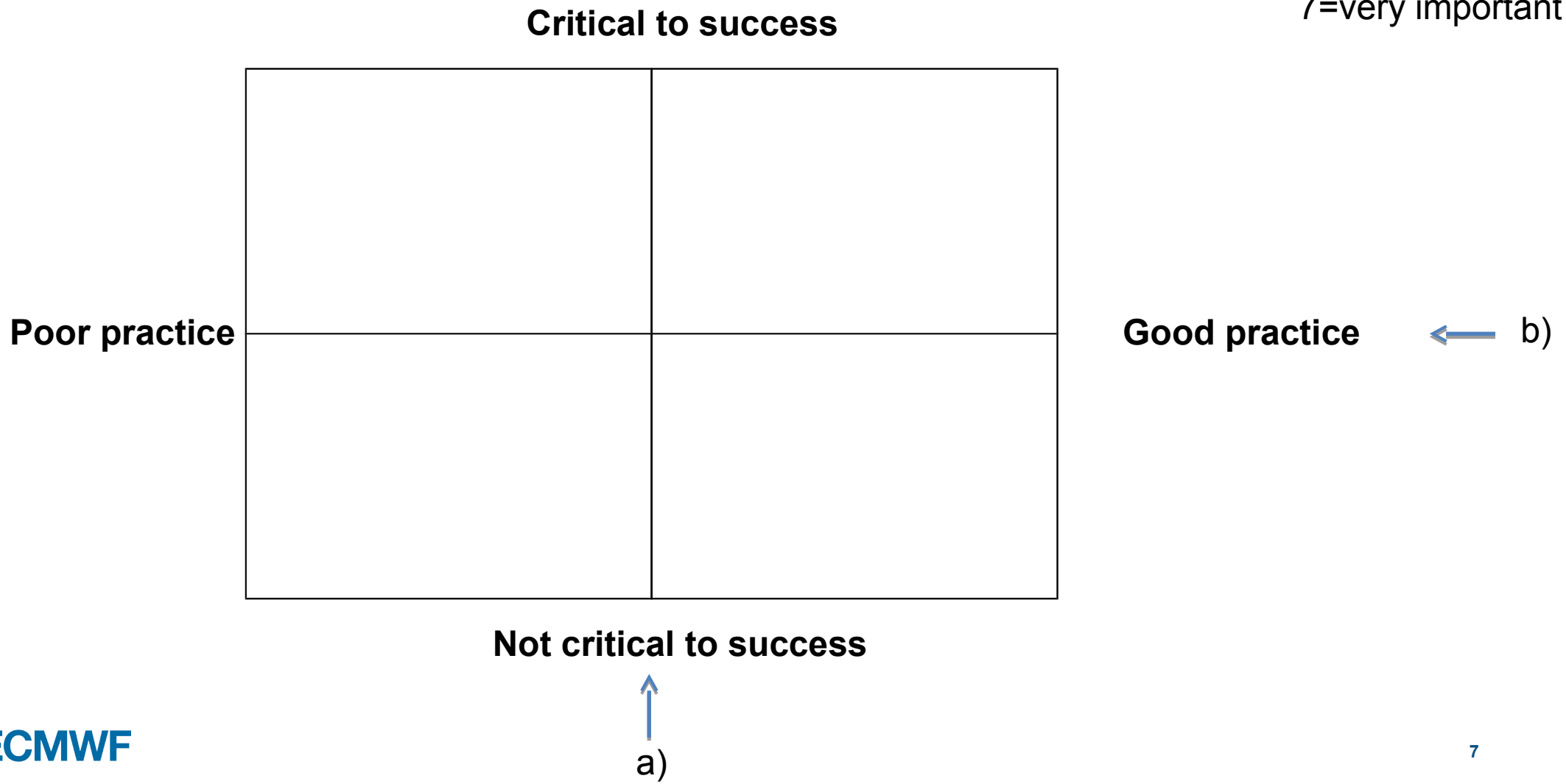

# Identify the desired competencies ……..

**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?


*Jeff Wilson, WMO*

# 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 (prioritise products, depending on FC range or weather situation)
2. Understand model strength and weaknesses (quantification of uncertainty, performance in view of calibration)
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)
6. More about customers and their needs and communicating to them
7. Understand user needs and choose the best products for them
8. Communicating uncertainty
9. Understanding model climatology vs local climatology
10. ENS products are incorporated into daily work to build up experience on how to use them
11. Assessing flow predictability
12. Feedback to producers to report weaknesses of models

# 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

….. 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 |
|---|---|
| **Knowledge** *(represents the lowest level of learning)* | To know and remember specific facts, terms concepts, principles or theories |
| **Comprehension** | To understand, interpret, compare, contrast, explain |
| **Application** | To apply knowledge to new situations to solve problems using required knowledge or skills |
| **Analysis** | To identify the organizational structure of something; to identify parts, relationships, and organizing principles |
| **Synthesis** | To create something, to integrate ideas into a solution, to propose an action plan, to formulate a new classification scheme |
| **Evaluation** *(represents the highest level of learning)* | 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)*

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# 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)