

**Improve approaches
to train SHE principles, strategies and rules**

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Dr. Bert Hoogveld

CELSTEC Learning & Cognition
Open University in the Netherlands

Centre for Learning Sciences and Technologies
celstec.org



Purpose and agenda of intro & workshop

- Intro: causes of the problem that SHE knowledge, although being intensively trained is not correctly applied in problem situations and how to improve your training approach?
- Workshop part 1: collect cases of non-recognition and analyse causes
- Workshop part 2: collect examples of experts' approaches for proper risk diagnosis, risk imagination, risk alertness and risk recognition
- Discuss the findings



Intro: the problem and its causes

- Hazards, once recognized or diagnosed, are dealt with correctly, the way they have been trained
- The problem is that hazards are not recognized or diagnosed properly



Examples comparable to hazard recognition

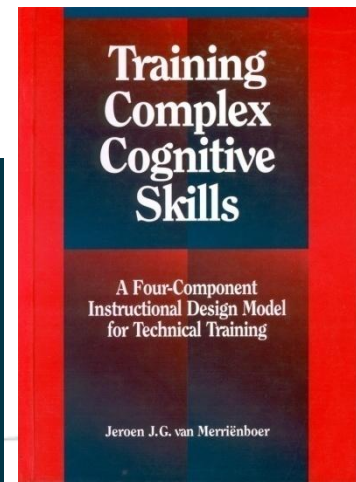
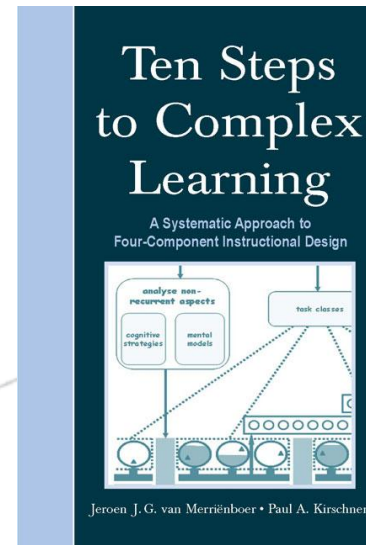
- Air traffic controller
- Train driver
- Cook in a restaurant kitchen
- Car driver



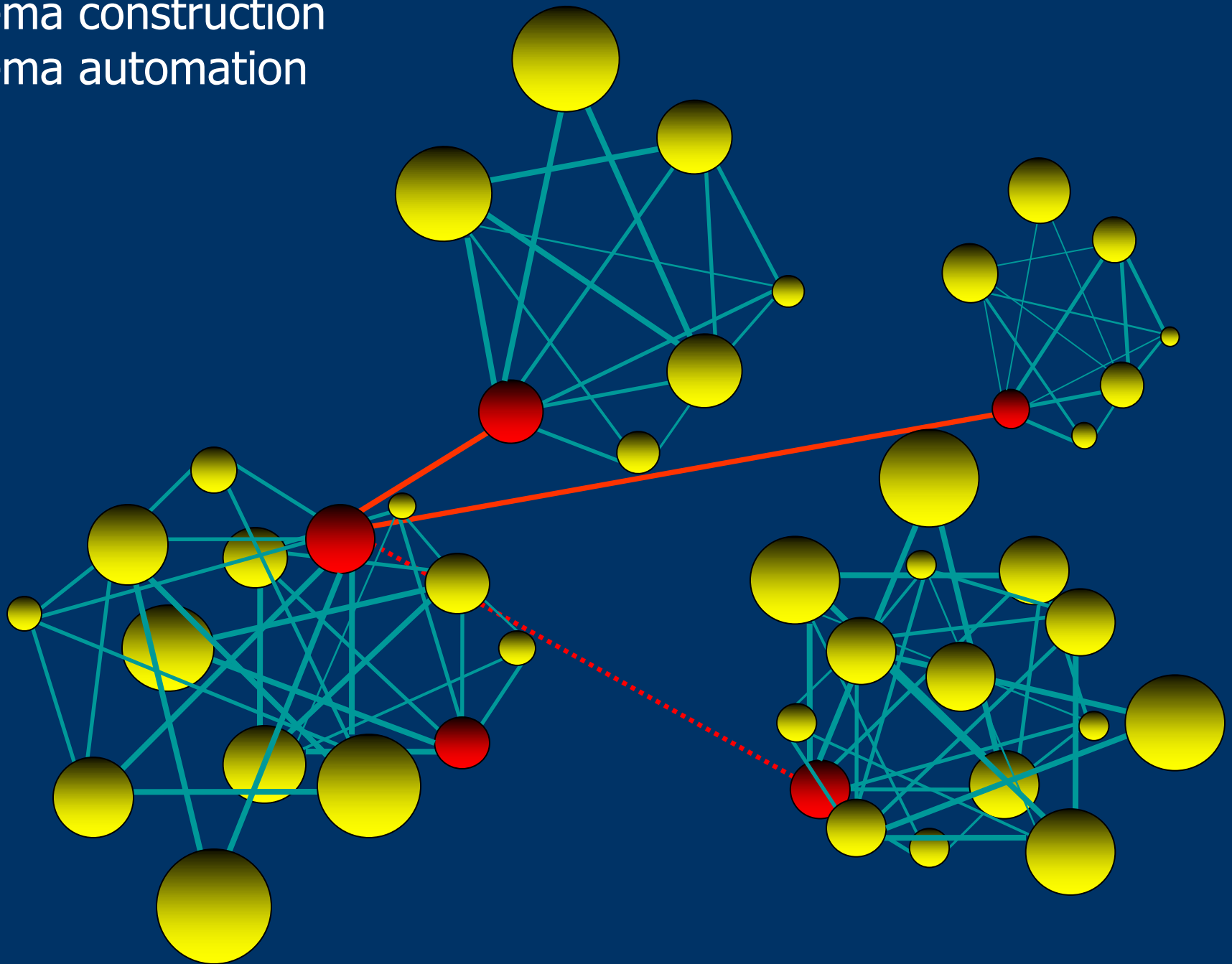
Intro: the problem and its causes

Reasons for this problem from an instructional design perspective (Merrill, Sweller, van Merriënboer):

- Hazard recognition is not trained in an meaningful **authentic context** (workplace)
- The trainees have not exercised the full **variety** of contexts in which hazards will occur
- Hazard recognition might suppose **too complex** reasoning, not having practiced safely
- **Transfer** of training not occurs
- There is no or too **little feedback** on proper recognition principles



Schema construction
Schema automation



learning to drive a car

applying traffic rules in a situation

mastering car in traffic situations

drive from A to B

recognize situation

apply rules

drive

drive away on a hillside

parking in between

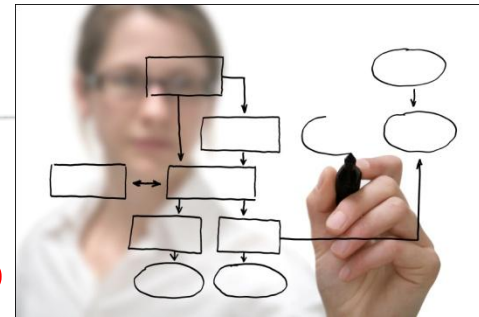
passing by

Recognize/know where you are

Determine next direction

Improve training designs: routines and non-routines

- Routines: rule based behavior
IF-THEN patterns: train trainee that,
IF event X occurs, he THEN takes the procedures card Y to see which **rules** he has to follow
or that he in case of Z just follows the rules specified for Z
- Non-routines: reasoning based behavior
 - characteristics of imagination and recognition of risk
 - **approaches** of risk-analysis and diagnosis
 - complexity of risk patternsDemonstrate appliance of risk observation methods
 - analyze causes of non recognition, give rules of thumb



In the workshop we will work out some examples of
non-routines: analysis of typical 'forgotten' risky situations



Improve training designs: learning task construction



- Learning tasks:
 - Construct enough of different **cases** to let the trainee experience what to do in realistic conditions and to form proper 'cognitive schemata'
 - first learning task is always a demonstration of approach (e.g. risk assessment)
 - following tasks are strongly supported (e.g. partially solved hazard diagnosis)
 - last tasks to exercise are to be done independently
 - give enough feedback on use of proper mental schemata

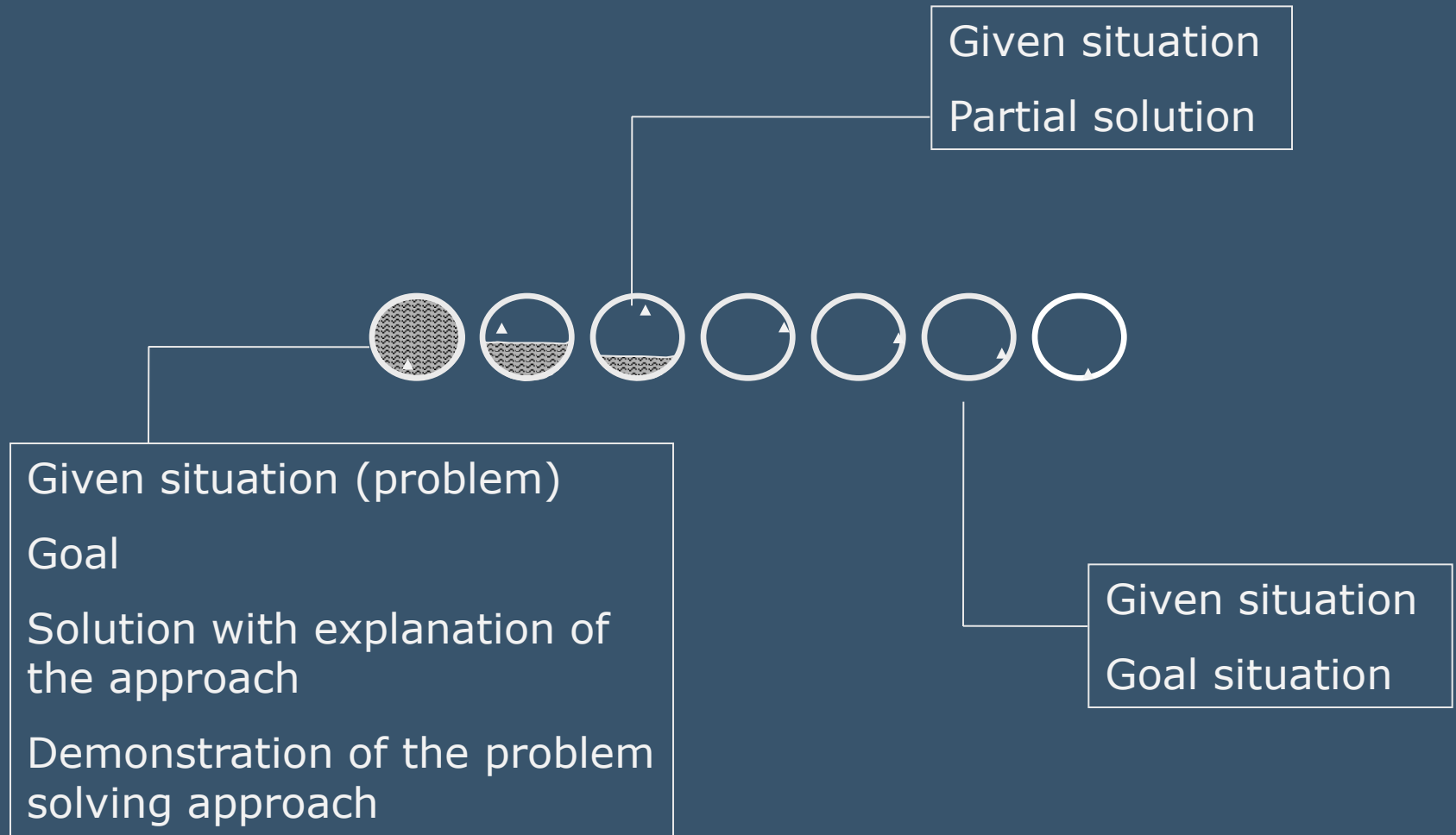


Learning tasks



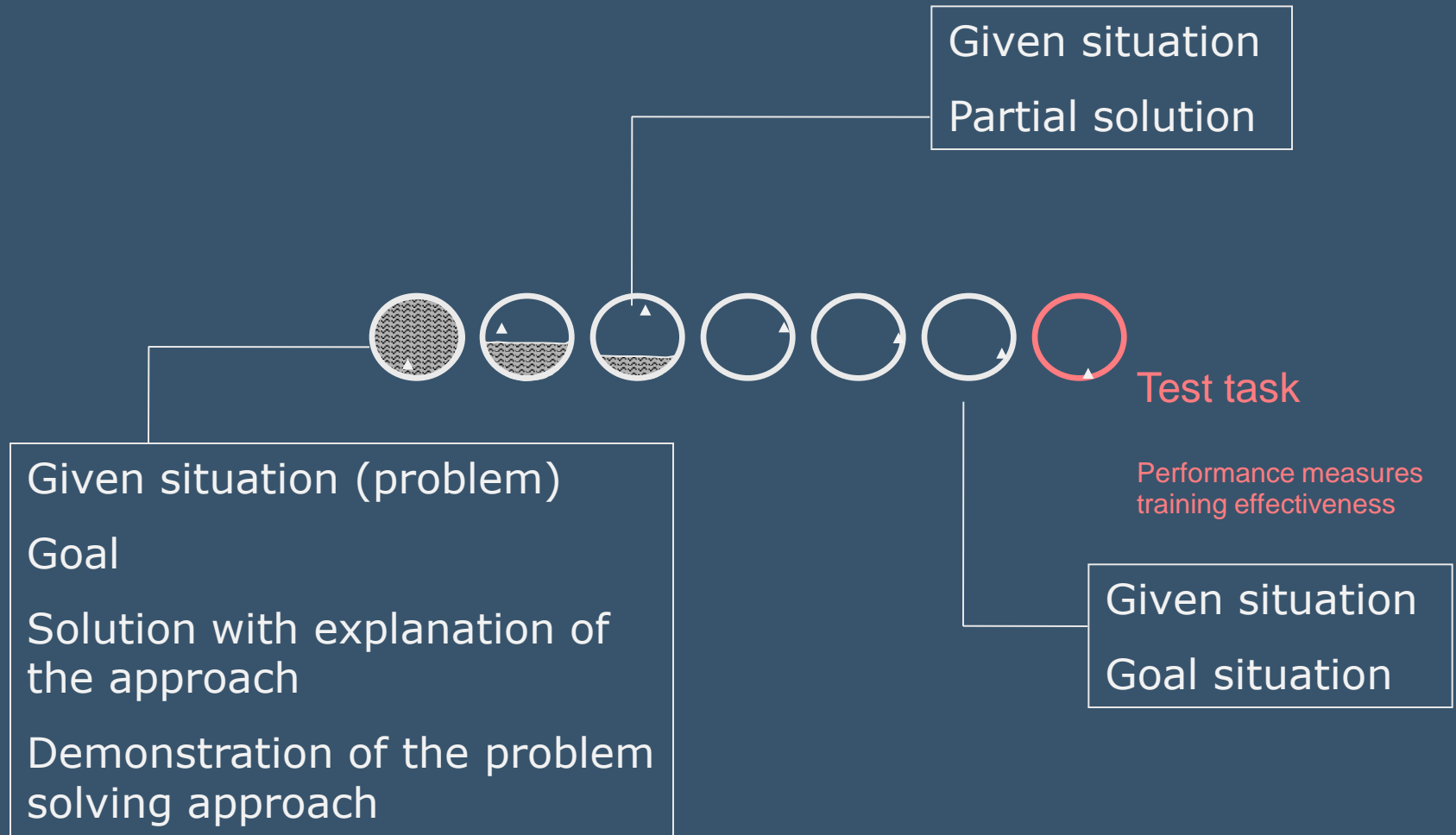
Design of learning tasks for a training

Promoting schema formation by
Providing support



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To summarize

Improper schema construction presumable cause training problem

To improve training design:

- Promote schema construction: by practicing to apply methods for hazard recognition and hazard alertness
- Analyze complexity of hazard diagnosis tasks in workplace
- Promote transfer of training by variation in tasks
- Use authentic problem cases in a supported environment
- Give always feedback on task performance (coaching)



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Workshop part 1

- Please divide into small groups of mixed origin about 10 persons
- Assign per group a chair and a secretary
- 45 minutes to assignment
- Secretary reports in plenary session

- Assignment: place yourself in the working situation. In a role as an operator, manager, plant manager. Collect situations where risks were not recognized properly. Try to analyse why this occurred. Prioritize non-routine recognition/diagnosis of hazard
- Select after discussion 1 or 2 situations to report
- Report shortly, written on the report format



Discussion causes

- Report of cases
- Discussion of causes:
 - never experienced risk in working situation
 - not prepared properly for the unexpected
 - not the attitude of the train driver: he is hit as first! Danger seems not present, cannot be observed without measuring methods
 - only know risk analysis never did a systematic risk assignment in practice
 - scope of all potential risks is to big
 - topic is too complex
 -
- Conclusions
- Are these causes to be taken away by improved training design?



Workshop part 2

- Same group constellation. But now 25 minutes
- Assignment: place yourself in the working situation. In a role as an operator, manager, plant manager, this time as a SHE expert. Try to solve the problem cases from workshop part 1 as an expert. Analyse Non-routines: reasoning based behavior
 - characteristics of imagination and recognition of risk
 - **approaches** of risk-analysis and diagnosis
 - complexity of risk patternsCan you demonstrate as an expert the appliance of risk observation methods? Do you have rules of thumb?
- Use the report format to report your group's solution
- Deliver both of the report to Huang Ling, conference block manager.
- The outcome will be sent to all of you and will form a first series of learning tasks, for everybody's use.



First series of Learning tasks for SHE training

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Thank you for co-operating!
Have a nice conference.

- Contact
- bert.hoogveld@ou.nl

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