EVIDENCE-INFORMED BUILDING BLOCKS FOR LEARNING DESIGN

Moving From Fake to the Cherry on the Cake!

Mirjam Neelen
HELLO!

Twitter:
MirjamN

LinkedIn:
https://www.linkedin.com/in/mirjamneelen/

Blog:
3starlearningexperiences.wordpress.com

Book:
Evidence-Informed Learning Design
How are you already using SCIENTIFIC evidence from the LEARNING SCIENCES in your work?
FAKE IS REAL
REAL IS FAKE

Resource: https://kingdomecon.wordpress.com/2018/07/02/real-science-vs-fake-science/

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The Evidence: Effective Training

The Science of Training and Development in Organizations: What Matters in Practice

Eduardo Salas1,2, Scott I. Tannenbaum3, Kurt Kragier4, and Kimberly A. Smith-Jentsch1

1Institute for Simulation & Training, University of Central Florida; 2Department of Psychology, University of Central Florida; 3The Group for Organizational Effectiveness, Albany, NY; and 4Department of Psychology, Colorado State University

Summary
Organizations in the United States alone spend billions on training each year. These training and development activities allow organizations to adapt, compete, excel, innovate, produce, be safe, improve service, and reach goals. Training has successfully been used to reduce errors in such high-risk settings as emergency rooms, aviation, and the military. However, training is also important in more conventional organizations and implemented can greatly influence its effectiveness. That well-designed training is impactful is important as continuous learning and skill development are now a way of life in modern organizations. To remain competitive, organizations and countries must ensure that their workforce continually learns and develops. Training and development activities allow organizations to adapt, compete, excel, innovate, produce, be safe, improve service, and reach goals. In the United States alone,
The goal is a sustainable change in behaviour and cognition.
The goal of effective training is a sustainable change in behaviour and cognition.

Planned and systematic activities

Salas et al, 2012
The goal of effective training is a sustainable change in behaviour and cognition.

Planned and systematic activities

Instruction, demonstration, practice, and feedback
TRAINING, THE FAKE WAY

We default to training
TRAINING, THE FAKE WAY

We default to training

We design poor training for the wrong reasons
TRAINING, THE FAKE WAY

We default to training

We design poor training for the wrong reasons

We bash training in general
What the evidence for effective training means for our practice

- Behaviour or cognitive change
- Process, not event
- Learning solutions vs performance support
We Have a Ladder Safety Problem On Our Hands
We Have a Ladder Safety Problem On Our Hands

Adapted from Shank, 2017

Objectives

1. Decide which ladder is best to use given the context and nature of the job
2. Inspect the ladder before use
3. Use the ladder safely
4. Make a hazardous situation safe
We Have a Ladder Safety Problem On Our Hands

<table>
<thead>
<tr>
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# We Have a Ladder Safety Problem On Our Hands

Activities are mapped to each objective separately

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Your reaction, please?

This design is (in)effective, because...

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The Evidence:

Effective Design for Complex Learning
Atomistic design does not work.

Instead ...
The Evidence: Effective Design for Complex Learning

1. Atomistic design does not work.
   Instead ...

2. Use real-life authentic tasks
   And ...

Van Merriënboer & Kirschner, 2018
The Evidence: Effective Design for Complex Learning

1. Atomistic design does not work. Instead ...

2. Use real-life authentic tasks And ...

3. Provide problem-solving guidance and scaffolding
DESIGN FOR COMPLEX LEARNING,
THE FAKE WAY

We reduce tasks to simpler/smaller components
DESIGN FOR COMPLEX LEARNING, THE FAKE WAY

We reduce tasks to simpler/smaller components

We map activities to each objective separately

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DESIGN FOR COMPLEX LEARNING, THE FAKE WAY

We reduce tasks to simpler/smaller components

We map activities to each objective separately

We distinguish between knowledge, skills, and attitudes

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What the evidence for ‘design for complex learning’ means for our practice

- Real-life tasks and situations
- “Easy to difficult” sequencing
- Variability of practice
- From highly scaffolded to independent practice
1. Training Research
2. Complex Learning
3. Self-Regulated Learning
The Evidence: Self-Regulated Learning

1. Paradox

Ertmer & Newby, 1996
Torrano et al, 2004
The Evidence: Self-Regulated Learning

1. Paradox

Learners with little domain knowledge:
- are bad at judging their own knowledge,
- have faulty mental models, and
- struggle with judging their learning outcomes.

Ertmer & Newby, 1996
Torrano et al, 2004
The Evidence: Self-Regulated Learning

Paradox:

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The Evidence: Self-Regulated Learning

**1. Paradox**

A learners with little domain knowledge:
- are bad at judging their own knowledge,
- have faulty mental models, and
- struggle with judging their learning outcomes.

**2. Guidance to help learners regulate own learning**

Ertmer & Newby, 1996
Torrano et al, 2004
Zimmerman, 2000
SELF-REGULATED LEARNING, THE FAKE WAY

We incorrectly assume that we acquire learning skills on our own
SELF-REGULATED LEARNING, THE FAKE WAY

We incorrectly assume that we acquire learning skills on our own

We throw ‘learning stuff’ at people and they need to figure it out
SELF-REGULATED LEARNING, THE FAKE WAY

We incorrectly assume that we acquire learning skills on our own

We throw ‘learning stuff’ at people and they need to figure it out

We don’t ensure symbiotic relationship

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What the evidence for ‘self-regulated learning’ means for our practice

- Support integration
- Environment that supports people
- Alignment between workers’ performance goals and organizational goals
• Behaviour or cognitive change
• Process, not event
• Learning solutions vs performance support

• Real-life tasks and situations
• “Easy to difficult” sequencing
• Variability of practice
• From highly scaffolded to independent practice

• Support integration
• Environment that supports people
• Alignment between workers’ performance goals and organizational goals
Discount: 20%

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Enjoy!
REFERENCES


