The Decisive Dozen
Research-Supported Learning Factors

Why?

How?

Why Not?
Your Radar-Damage-Assessment students have to take a paper-and-pencil certifying exam in one week.

The exam will be held in the Pilot’s Cabin in the Officers Club.

If you want to maximize your students’ scores, where should you hold your one-week course?

A. In the Pilot’s Cabin.
B. In any distraction-free room.
C. In a room with radar equipment and computers that can show radar photos/video.
How Learners Encode Learning Stimuli

How Background Stimuli Triggers Retrieval of Learned Information

Retrieval = Learning – Forgetting

+ Spontaneous Remembering

Utilizing the Aligning-Contexts Notion

By aligning contexts we can create:

spontaneous remembering

1. Change learning context to make it similar to performance context
2. Change performance context
3. Provide multiple learning contexts
4. Add transportable cues to learning context and performance context
What level of expertise do you have about Human Learning?

- I know the topic so well I could teach it.
- I know the topic well, but I’m eager to learn more.
- I know a modest amount.
- I know a little.
- I don’t need to know it.
- I can look it up on Wikipedia.

How much do instructional designers need to know about Human Learning?

How much can we expect them to know?

Trainers, eLearning Developers, Teachers... Learning Professionals.
| 1. Content | Baseline |
| 2. Exposure |  |
| 3. Guiding Attention | Engagement & Understanding |
| 4. Creating Correct Conceptions |  |
| 5. Repetition |  |
| 6. Feedback |  |
| 7. Variation |  |
| 8. Retrieval Practice |  |
| 9. Context Alignment | Remembering |
| 10. Spacing |  |
| 11. Persuasion | Application |
| 12. Perseverance |  |
Who will perform better by remembering more on June 4th?

A. **Wide Spacing**
   Person who spends 12 hours (3/day) learning and *relearning* relevant material on Feb 4, Mar 4, April 4, May 4?

B. **Narrow Spacing**
   Person who spends 12 hours (3/day) learning and *relearning* relevant material on May 1, 2, 3, and 4?

C. **Both will perform about the same.**
   Because both get the same learning events, both will remember similar amounts.
“The spacing effect is one of the oldest and best documented phenomena in the history of learning and memory research.”

Harry Bahrick & Lynda Hall
Journal of Memory and Language

So, why don’t we use it more?

Research Example


Retention 2 weeks Performance

Memory Retrieval

1st Event

2nd Event

3rd Event

1st Event

2nd Event

3rd Event

2 weeks

123456789 1 0 1 1 1 2 1 3 1 4 1 5
The Decisive Dozen
for Learning Design and Learning Measurement

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http://is.gd/ddResearch
**Two Topics:** Employment Law (EL), and Antitrust Counseling & Compliance (ACC)

**Want to Add Learning Objectives – to Present to Learners**

**What Happens – Add EL Objectives Only**

**Adding EL Objectives**

A. Info on both EL and ACC will be better recalled (compared to course with no LO’s).

B. Info on EL will be better recalled while info on ACC will be recalled about the same (compared to no LO’s).

C. Info on EL will be better recalled but info on ACC will be more poorly recalled (compared to no LO’s).

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**There are many types of Instructional Objectives**

**For Learners**

- Table-of-Contents Objective
- Performance Objective
- Motivation Objective
- Focusing Objective

**For Developers**

- Instructional-Design Objective
- Evaluation Objective
- Situation Objective
- Organization Objective
Focusing Objective

**Definition**

A statement presented to learners before they encounter learning material—

Provided to help guide learner attention to the most important aspects of that learning material.

**Examples**

You will learn:

- The role of implementation intentions in health behavior change.
- The importance of providing both goal intentions AND implementation intentions.
- Etc.

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**Learner presented with focusing objectives** → **Learner pays attention to learning material**

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Focusing Objective Research


You will learn about how wheat was once threshed by hitting it with a flail.

How do Focusing Objectives work?
Besides Learning Objectives and Prequestions, What can We Do to Guide Our Learner’s Attention to the Most Critical Information We’re Teaching?

### The Decisive Dozen

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When is the best time to give feedback?

A. *Immediately after each question.*

B. *At the end of the test.*

C. *After a delay of two hours or more.*

D. *After a delay of a day or more.*

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*Feedback Research*

What’s more important?

In most circumstances, what is more important, giving feedback on correct or incorrect answers?

A. Equally important.
B. Correct answers more important.
C. Incorrect answers more important.

Research Example
Feedback

Research Example Feedback


Is Feedback Enough?
If NOT, what else should we provide?

Feedback Summary

- Feedback Provides Significant Benefits
- Feedback More Important for Corrections
- Feedback Supports Retrieval Practice
- Provide Retrieval Practice After Feedback
- Immediate or Delayed Feedback?

When is the best time to give feedback?

A. Immediately after each question.
B. At the end of the test.
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D. After a delay of a day or more.


**Feedback Research**

Would you give different feedback for hard versus easy material?

For learners new to material vs. learners more knowledgeable?
Early in Learning Complex Material

• More Feedback Needed
• More Elaborate Feedback
• More Emotional Support
• More Important to Give Feedback on Correct Answers

Later in Learning Simple Material

• Less Feedback Needed
• Less Elaborate Feedback
• No/Less Emotional Support
• Less Important to Give Feedback on Correct Answers
Goal Setting vs. Trigger Setting

- Setting a Goal = “I intend to Lose Weight”

- Setting a Trigger =

  “I intend to Walk for 30 Minutes on Monday, Wednesday, and Friday as soon as I wake up.”

- IF Situation, THEN Action


Reviewed 94 separate experiments and found a medium-to-high magnitude ($d = .65$) for the benefits of implementation intentions. 92 of 94 experiments showed positive results!!

Attending a workshop, self-examination, buying organic, recycling, exercise, diet, solving law cases, taking vitamins.

Set a Trigger
Prepare to Use What You’ve Learned

**GOAL:** To consider threat-finance issues in my work as an intelligence analyst.

**SITUATION:** The next time I review message traffic, I will do the following:

**ACTIONS:**

A.
B.
C.
D.
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Baseline
Engagement & Understanding
Remembering
Application

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Simplicity is the Ultimate Sophistication

Leonardo da Vinci
What a Model Needs to Be

Simple:
Simple enough to be understood, practical, and easy to convey

Informed:
Based on empirical or testable evidence

Clarifying:
Guides thoughts and actions appropriately

Better:
Produces better results than other models or practices

Bold Claim:
“If you put all 12 of these factors into practice, your learning interventions are likely to be more effective than 95% of all workplace learning interventions currently being utilized!!”

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• Most Learning Interventions don’t provide sufficient REPETITIONS, even though repetitions often improve learning results by over 100%.

• Most Learning Interventions don’t provide sufficient REALISTIC PRACTICE, even though retrieval practice has been shown to improve learning results by over 100% with an additional 50% improvement when learning and performance contexts are properly aligned.

• Most Learning Interventions don’t provide effective FEEDBACK, even though feedback easily improves learning results by over 50%.
1. **Content** – When learners learn, they ought to learn from content that is correct and true.
2. **Exposure** – When learners need to learn, they must be exposed to the right learning content.
3. **Guiding Attention** – When we guide learners’ attention to the most critical information, their learning improves.
4. **Creating Correct Conceptions** – When we structure learning so that learners can quickly build correct understandings, they learn more effectively and more efficiently.
5. **Repetition** – When we provide repetitions, learners more effectively understand and remember.
6. **Retrieval Practice** – When we provide practice in memory retrieval, learners are better in future memory retrieval.
7. **Context Alignment** – When we integrate workplace cues in learning, future memory retrieval is more likely to be triggered.
8. **Feedback** – When we utilize feedback appropriately, we correct learners’ misconceptions and support correct retrieval.
9. **Variation** – When we vary the learning materials, learners stay more engaged and memory retrieval is improved.
10. **Spacing** – When we space repetitions of content over time, future memory retrieval is improved.
11. **Persuasion** – When we persuade learners about the importance of what they are learning, they will be more likely to reinforce memory accessibility and persevere during future on-the-job implementation attempts.
12. **Perseverance** – Most meaningful learning requires that learners persevere over time with energetic goal-directed metacognitive effort; whether that effort is utilized in training or in self-directed learning.
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Which two are you already good at?
Which two would you like to work on?

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50 minutes
The Decisive Dozen
Research-Supported Learning Factors

Questions??

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