

# Welcome to the Durable Learning Seminar Series





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# Meet our Learning Science Team

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Adonis Wazir



Satria Nur Sya'ban



Meredith Ratliff



Sarah Haidar

# Seminar Topics and Applications of Learning Science

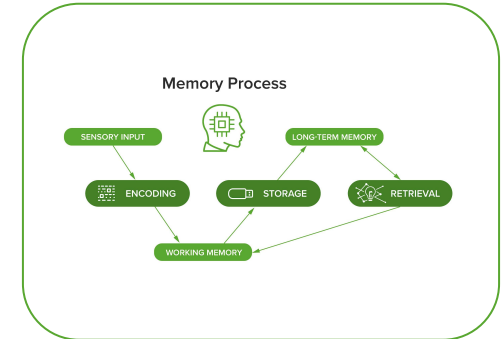
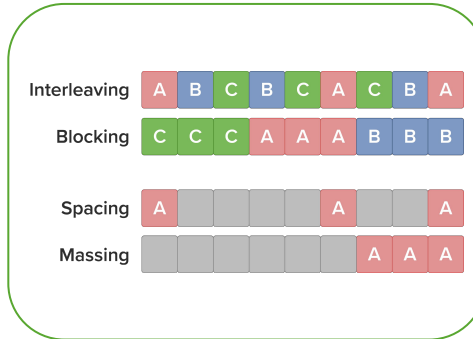
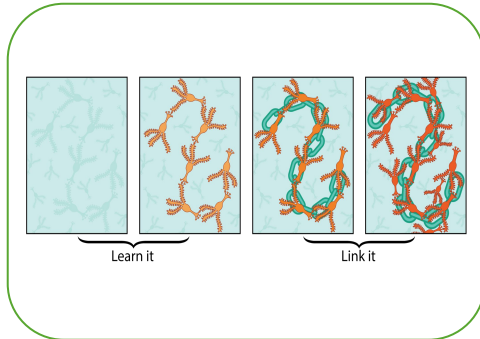
**Cognitive Science & Neuroscience**



**Instructional Design & Learning Strategies**



**Durable Learning**



Lecturio

# Instructional Design: How to Best Optimize the Learning Process

May 11, 2022  
Online Seminar



## Dr. Atsusi “2c” Hirumi

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# ***ID Fundamentals: Unlocking the Potential of Emerging Trends and Technology***

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Lecturio Global Seminar Series  
May 11, 2022  
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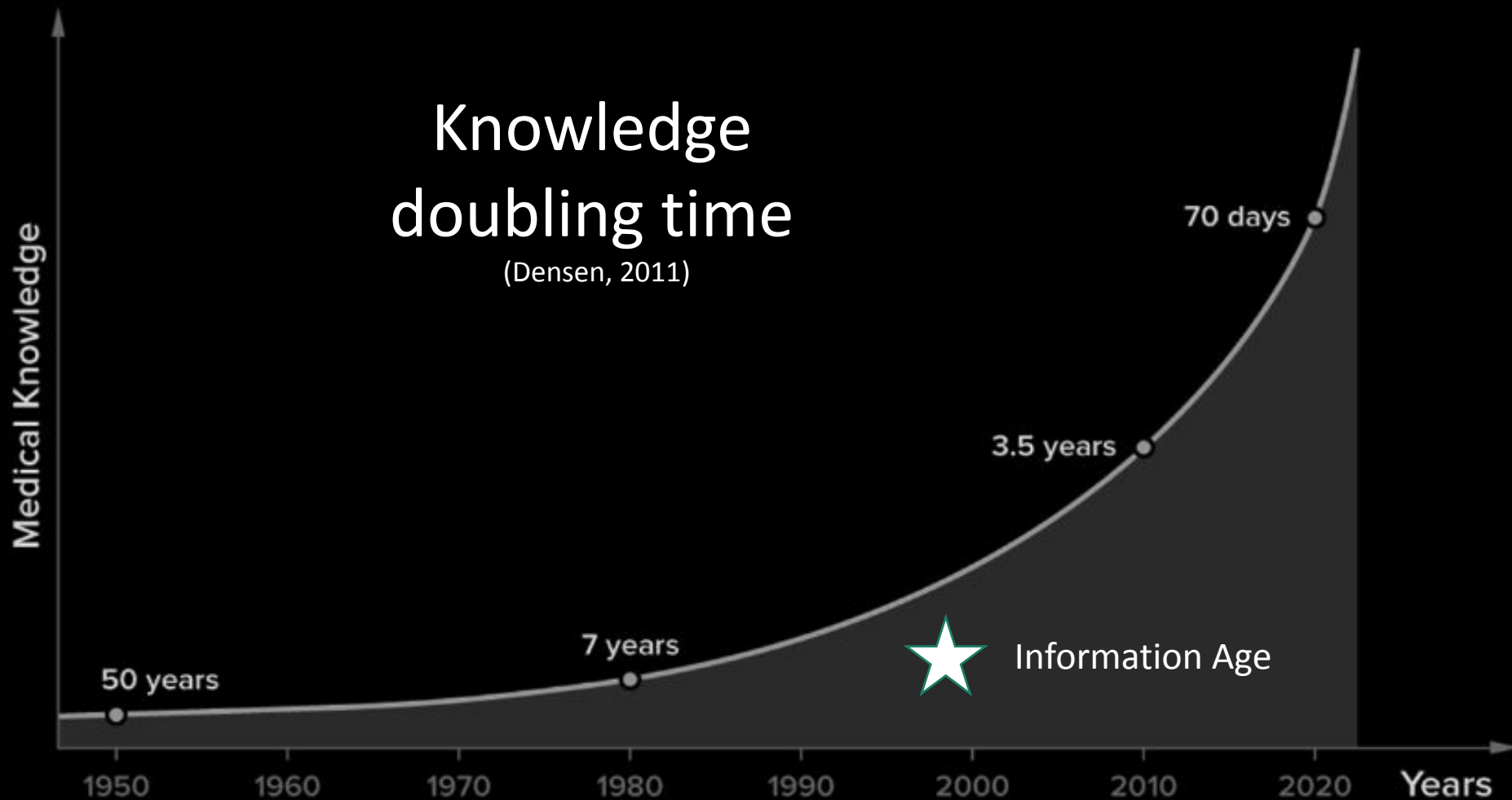
# Challenges & Uncertainties





# Knowledge doubling time

(Densen, 2011)





## **Competing Requirements**

- Increasing documentation
- Rising insurance rates,
- Varying data systems,
- Altering health plans,
- Rising patient and family expectations,
- Loss of autonomy,
- Demands to decrease costs while increasing revenue.

# Constraints due to COVID-19

**Ethics (Lecture 1: Introduction)**

- What is Ethics (Philosophy)?** – systematically do what the Greeks did: uncover moral principles.
  - Normative Ethics** is concerned with what we ought to do and things about particular moral issues.
  - Descriptive Ethics** is concerned with what sorts of moral considerations are important, generally, e.g., which principles we ought to act on, and/or how this morally good to be.
  - Metaethics** is concerned with what is going on when we do normative and applied ethics: either formally or informally, and also has some questions about, e.g., the meaning of moral language, whether there are any objective moral truths, how we know about what the right moral principles are, etc.
- Universality** – one of the core of moral philosophical ideas – if the same principle, this will be the same moral principle worth thinking about. (Because it is a branch of philosophy which clearly engages with something of universal concern)
  - But to be moral is a task... – according to someone, also will be a reason to doubt the universality is as much to offer. (Moral people manage to think about moral issues quite well without studying moral philosophy: why should we think that philosophers know more morality than anyone else?)
- Making use of moral theories and arguments, some use as they do: (questions determined by practical moral dilemmas they face) or perhaps the importance of moral philosophy for moral thinking more generally is that moral thinking makes use of – or could easily make use of – moral theories and arguments.
- Generality of moral theories** (but can moral theories be any use in moral thinking?). Are they too general to be of use? Aren't all moral issues different?
  - Even if all the issues are different in many respects, it does not follow that there are no general principles which govern them.
  - And finally, there is no reason to think that all moral theories are: (a) equally general; (b) moral theories often address very specific issues, without showing adequately general theories; (c) some theories are theories about very specific things.
- One often hears I must personal? Do personal a question – morality thinking of ideas a couple might not mean it, or consequences, is quite might of them.
- Moral theory and evidence** – method in science mode “scientific”, design a quite utilized data scientific method. Rather than making unproved predictions, moral are tested by observation, and of theory deliver results which we can test for their applicability in particular cases.
- Moral philosophy is difficult** – not because it involves a great many technical requirements, but because it is an interdisciplinary work philosophy of language, but because it calls for good judgement. There is not a mechanical algorithm or technique for good judgement involving what is worth doing, seeking or morally calls for sensitivity, flexibility and experience of actual moral thought. (These are not things which very philosophers have)



## Emergency Remote Teaching



# Emerging Trends & Technologies

- Global Health
- Telehealth & Telemedicine
- Interprofessional Education
- Health Systems Science
- Symptoms-based Curriculum
- Longitudinally Integrated Clinical Experiences
- Inclusion, Diversity, Equity, and Accessibility
- Blended, Active and Mobile Learning
- Artificial, Virtual and Mixed Reality
- Big Data Analytics, AI, Machine Learning





Trends and technology may increase access,  
productivity, and affordances...



But cannot guarantee  
the quality of the  
educational  
experience



But cannot guarantee  
the quality of the  
educational  
experience





Unlock the potential of emerging  
educational trends and  
technology?



Ensure quality of the  
educational experience?

Given emerging educational trends and technology, you will be able to...

- Depict three approaches for ensuring high-quality learning experiences.
- List conditions for and benefits of evidence-based educational practices.
- Distinguish three domains and three criteria for acquiring and appraising evidence.
- Contrast agile methods for acquiring, appraising, and applying evidence



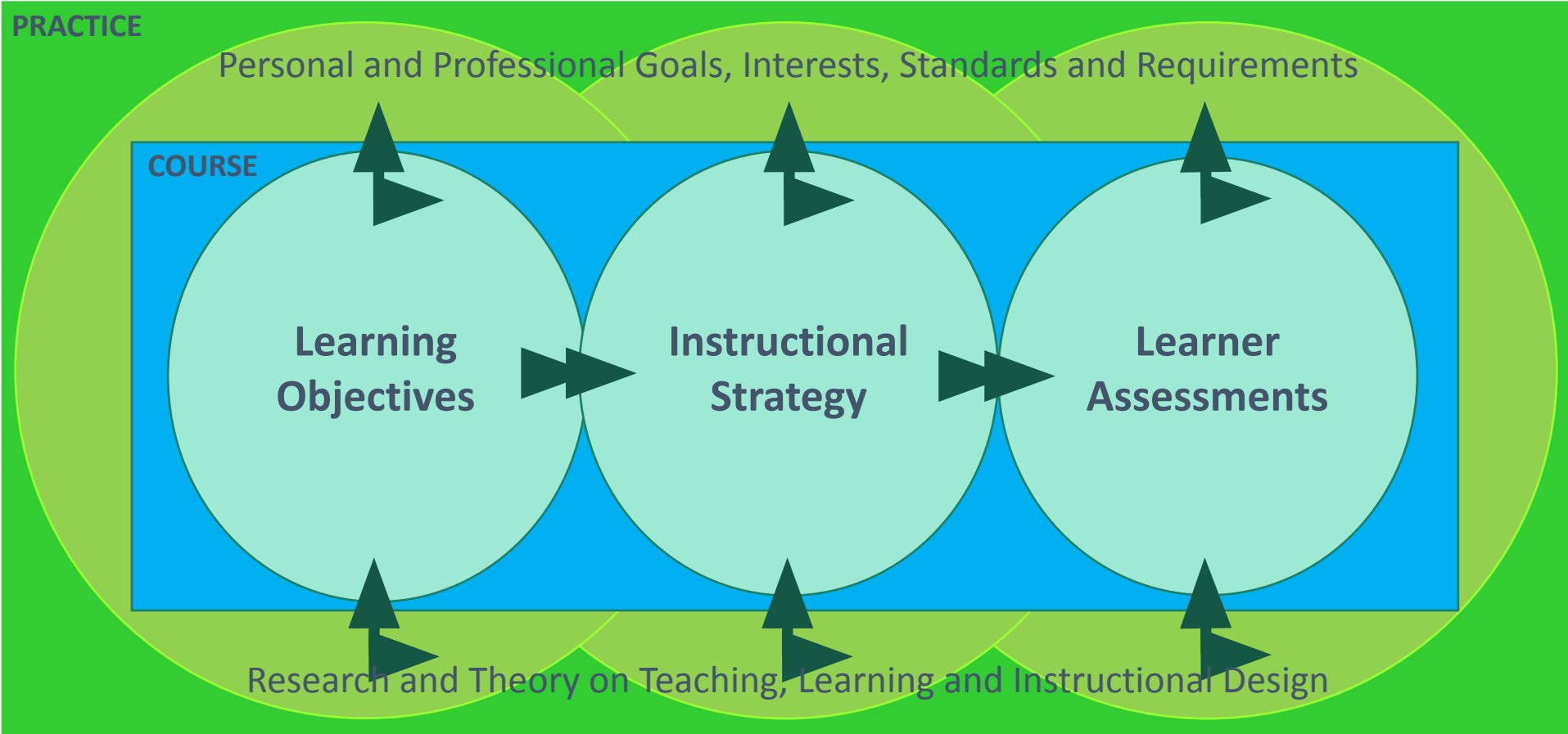


Figure 1. Vertical and horizontal alignment of instructional elements characteristic of high quality (*effective, efficient, and engaging*) learning experiences (Hirumi, 2021)

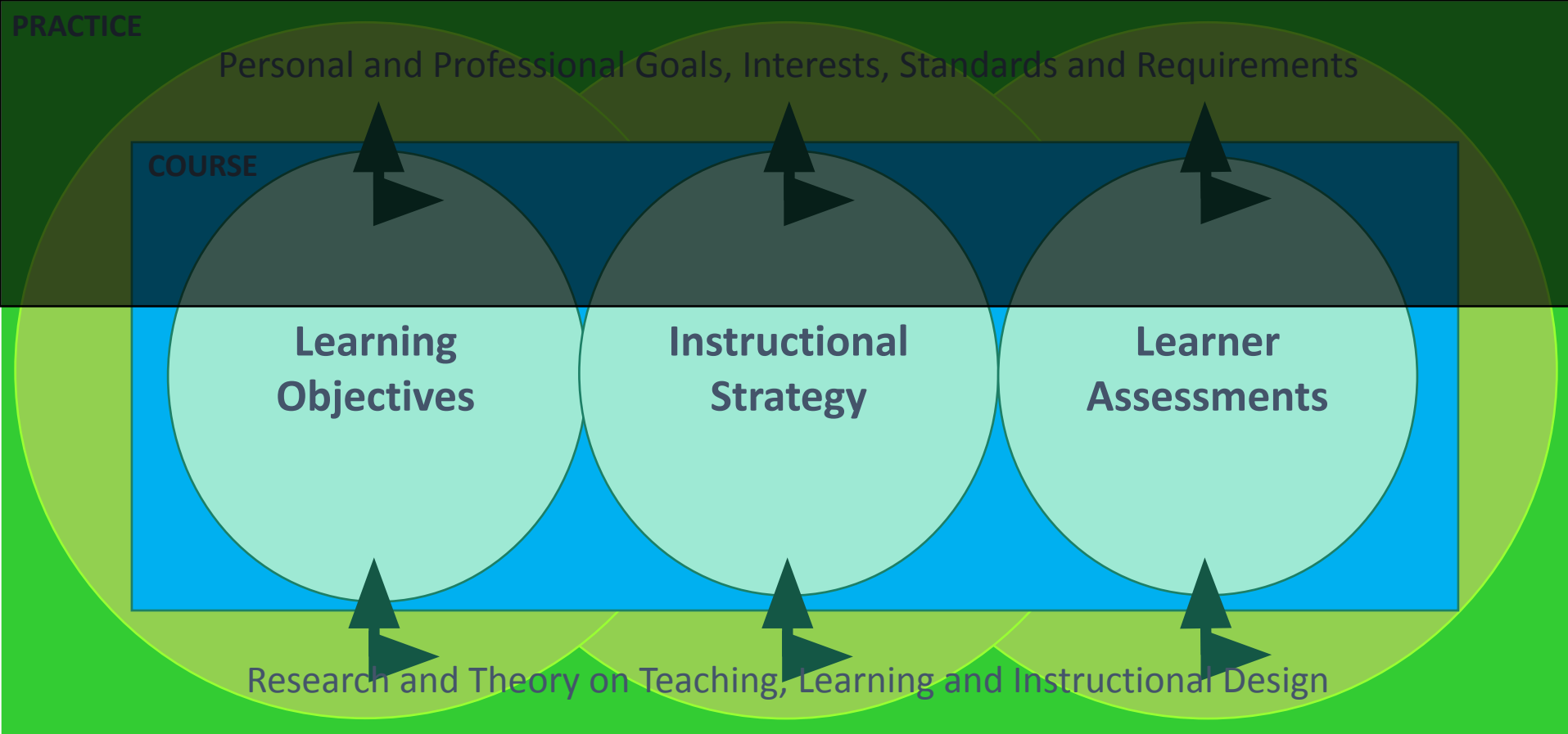


Figure 2. **Effective** learning is grounded in research and theory (evidence-based) to ensure achievement of objectives and return on investment (replicable methods and materials)

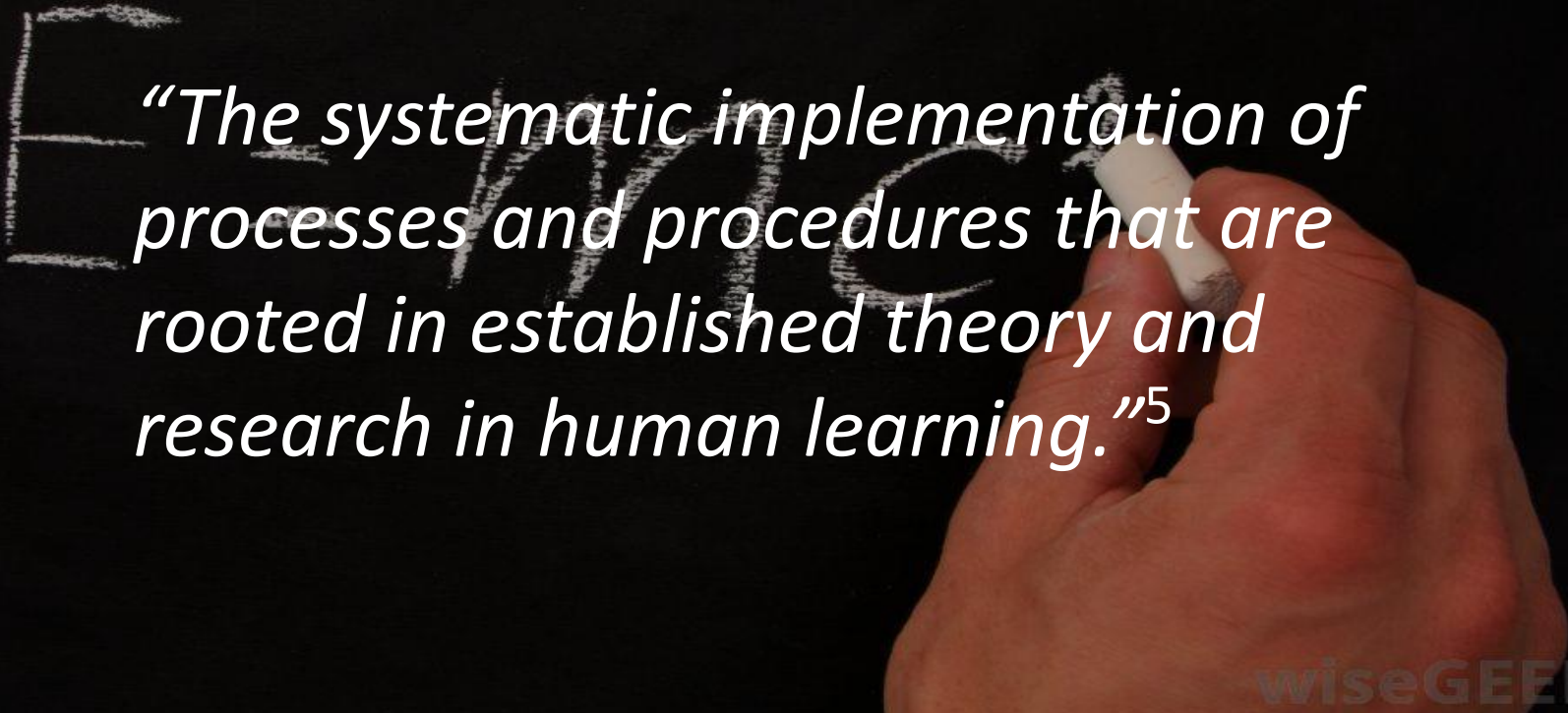
What percentage of healthcare professionals do you think practice evidence-based medicine?



What percentage of health science  
educators do you think practice  
evidence-  
based medical education?



# Grounded (Evidence-based) Design



*“The systematic implementation of processes and procedures that are rooted in established theory and research in human learning.”<sup>5</sup>*



# Grounded (Evidence-based) Design

## Conditions

- Rooted in defensible theoretical framework
- Consistent with research findings
- Traceable evidence-based design decisions
- Validated with successive implementations
- Based on learning outcomes and approach

# Grounded (Evidence-based) Design

## Significance

- Aligns research, theory, and practice
- Explains and predicts results
- Allows systematic study, continuous improvement
- Replicable and generalizable beyond unique conditions (ROI)
- Provides empirical and pedagogical foundations for key design decisions (for publishing/presenting)

# Agile Evidence-based Design (AVIDesign)

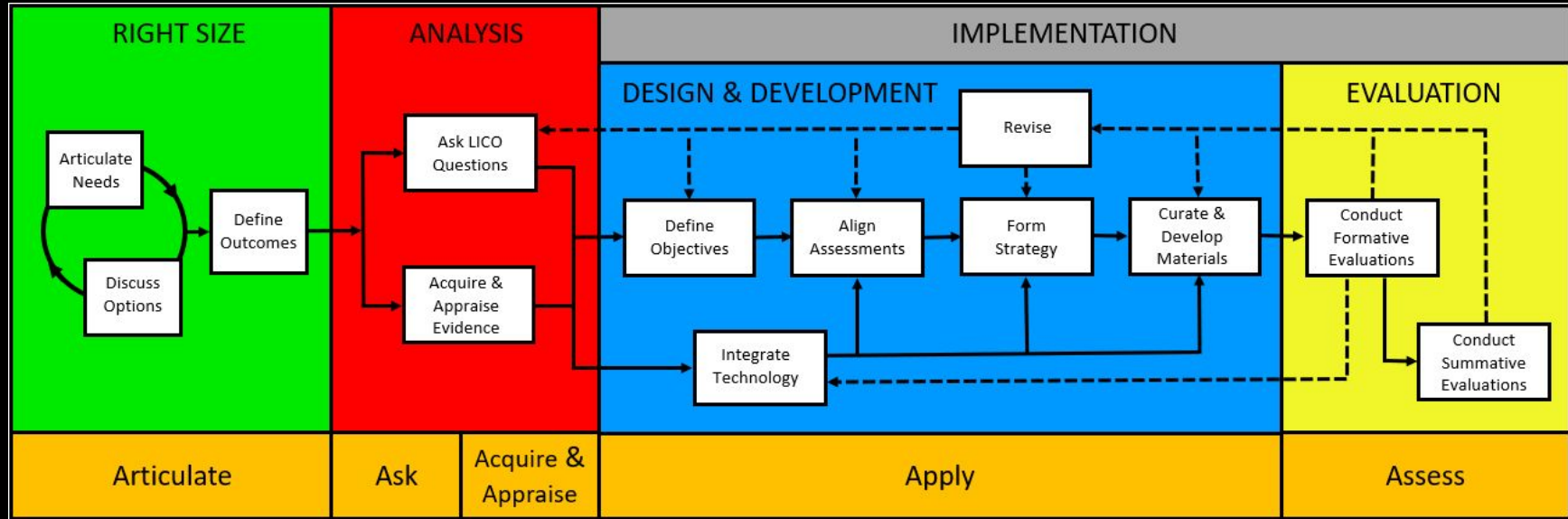


Figure 3. Agile design process for ensuring the quality of learning experiences

# Agile Evidence-based Design (AVIDesign)

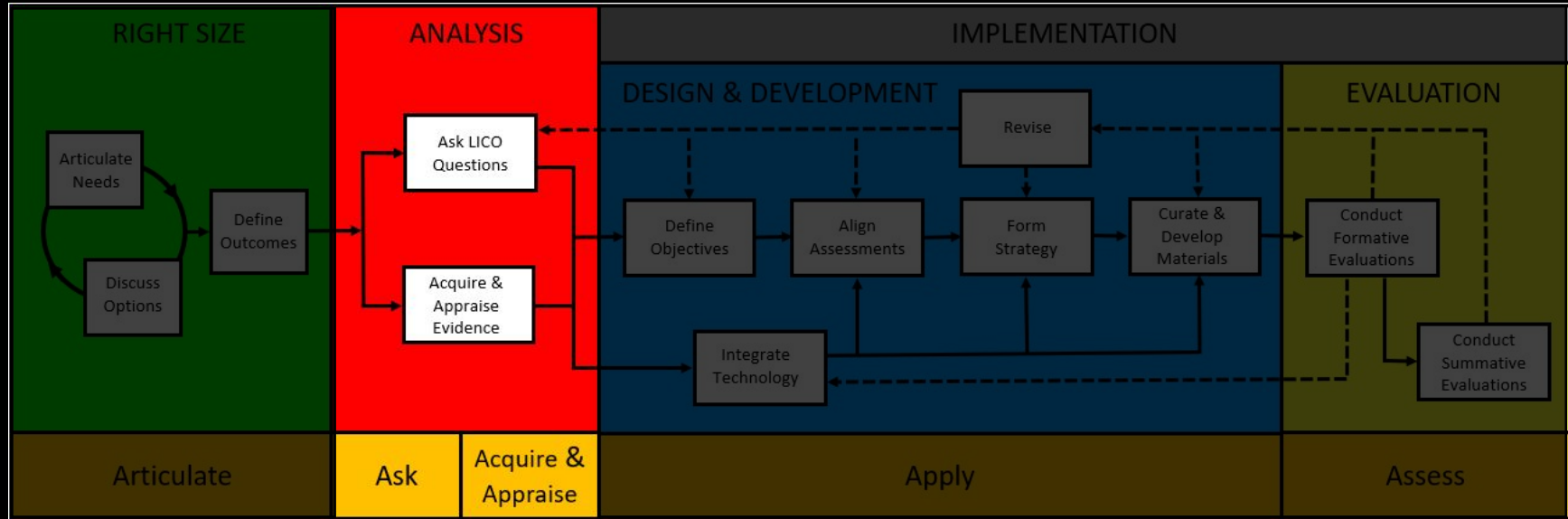


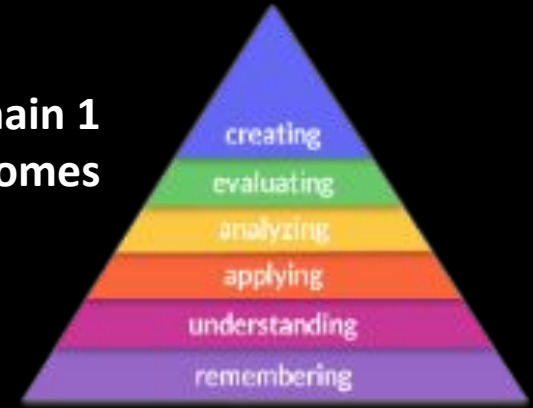
Figure 4. Vital steps for ensuring effectiveness—the vertical alignment of theory, research, and practice.

# Domains of Evidence

(Hirumi, 2021)



## Domain 1 Learning Outcomes



## Domain 2 Learning Approaches

## Domain 3 Learning Theories

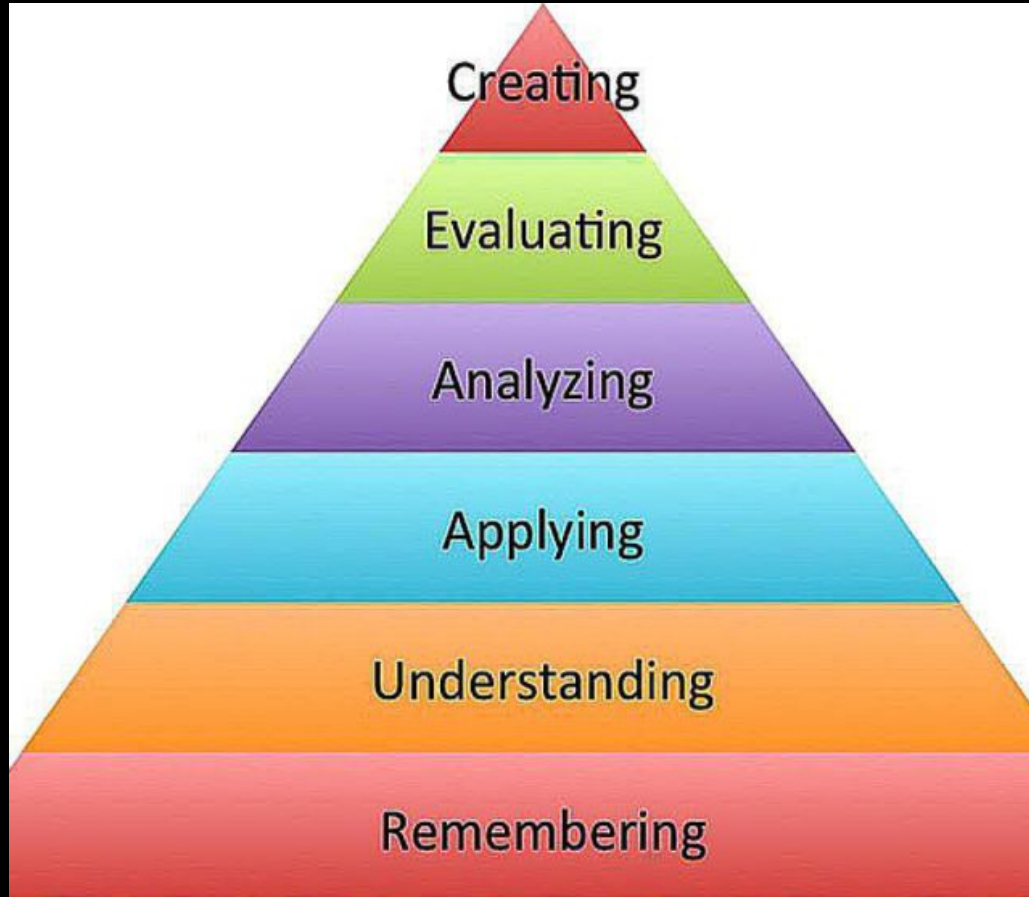
Behaviorist  
1890's-1960's

Cognitive Info Processing  
1970s'-1990's

Cognitive Constructivist  
1930's-present

Science of Learning  
2000's-present

Neurobiological  
1990's-present



## Domain 1 Learning Outcomes.

What does research say about achieving your specified educational goal?

- Aspegren K. BEME Guide No. 2: Teaching and learning communication skills in medicine - a review with quality grading of articles. *MEDICAL TEACHER*. 1999;21(6):563-570.
- O'Dunn-Orto A, Hartling L, Campbell S, Oswald AE (2012). Teaching musculoskeletal clinical skills to medical trainees and physicians: A Best Evidence in Medical Education systematic review of strategies and their effectiveness: BEME Guide No. 18. *Medical Teacher*.;34(2):93-102.



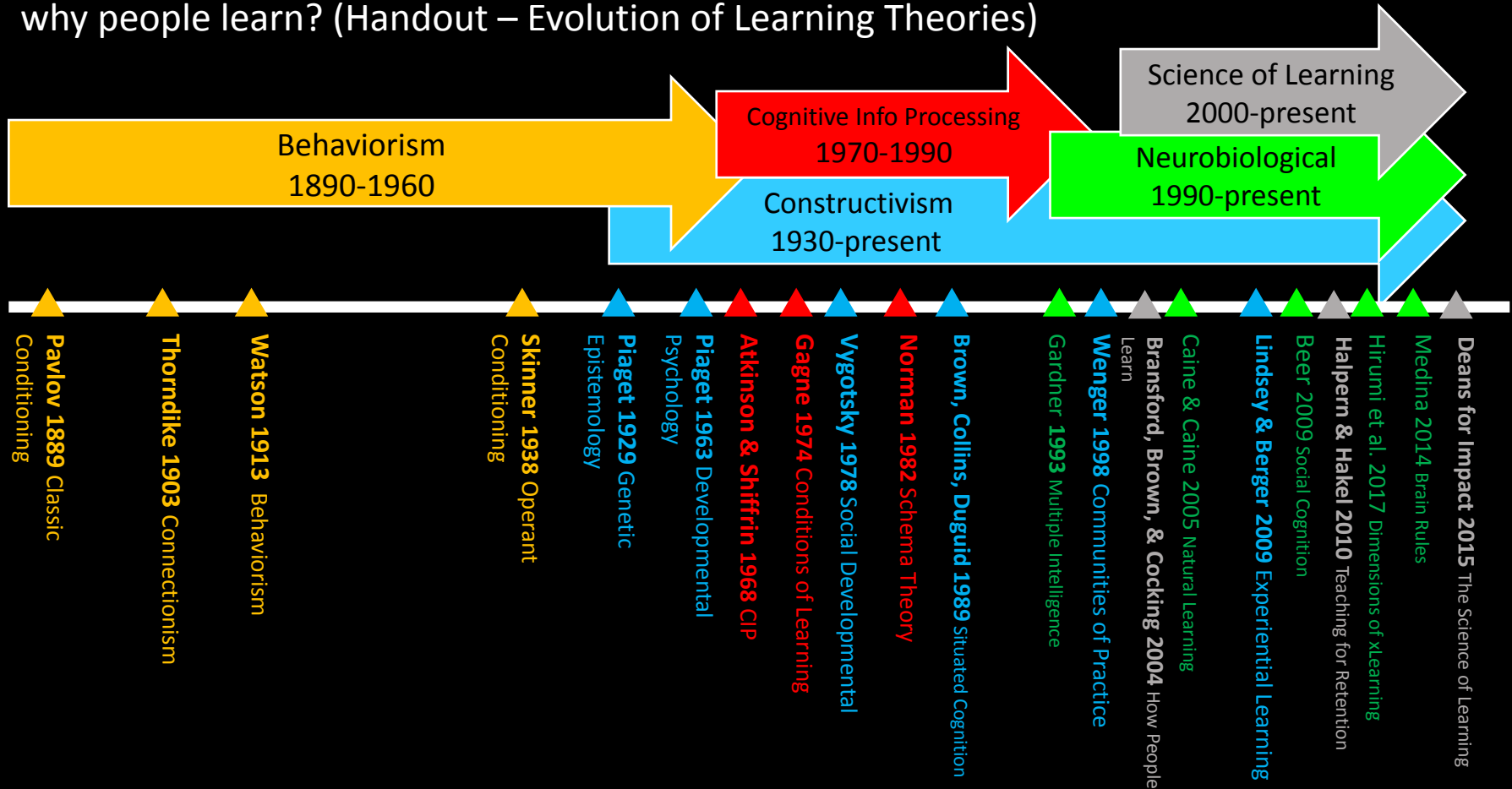


**Domain 2 Learning Approaches.** What does research say about your planned methods (e.g., self, experiential, problem-based learning) or means (e.g., simulations, online, blended)?

- Bernard RM, Abrami PC, Borokhovski E, Wade CA, Tamim RM, Surkes MA, and Bethel EC. A Meta-Analysis of Three Types of Interaction Treatments in Distance Education. *Review of Educational Research*, 2009;79(3): 1,243–89.
- Cook DA, Erwin PJ, Triola MM. Computerized virtual patients in health professions education: A systematic review and meta-analysis. *Academic Medicine*, 2010;(85):1602–15890.

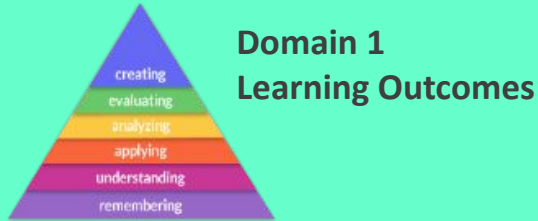


## Domain 3 Learning Theories. What does research and theory say about how and why people learn? (Handout – Evolution of Learning Theories)



Findings from  
Steps 1 & 2 of  
EBME process

## Step 3b – Appraise Evidence



## Domain 2 Learning Approaches

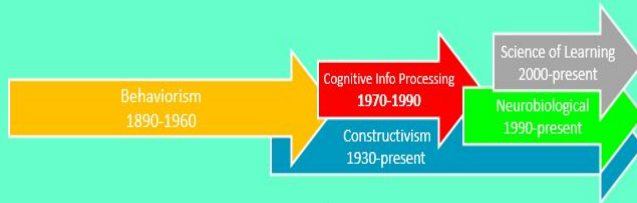


Table 1. Dimensions for appraising evidence

| Scale  | Factors  |
|--|--|
| <b>Quality of Evidence</b><br>Ranging from 1—2—3<br>low---high   | Are the sample sizes, sampling methods, data collection procedures, data analysis methods, and conclusions appropriate? Are the instruments reliable and valid?  |
| <b>Strength of Evidence</b><br>Ranging from 1—2—3<br>low---high  | Is the evidence based on a meta-analysis or systematic review of research, or experimental and quasi-experimental studies, or case studies and ethnographies, or professional judgement and anecdotal reports? |
| <b>Relevance of Evidence</b><br>Ranging from 1—2—3<br>low---high | Do the reported methods (including subjects, intervention, and measured outcomes) match the target learner population, intervention, outcomes, and context?  |

## Step 3a – Acquire Evidence

Design  
requirements  
informing Step 3

## Step 3 Acquire & Appraise Evidence (Handout: ID Principles):

- **Level 3** – Time and interest

Let's go fishing

- **Level 2** – Some time and interest

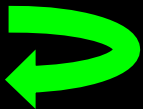
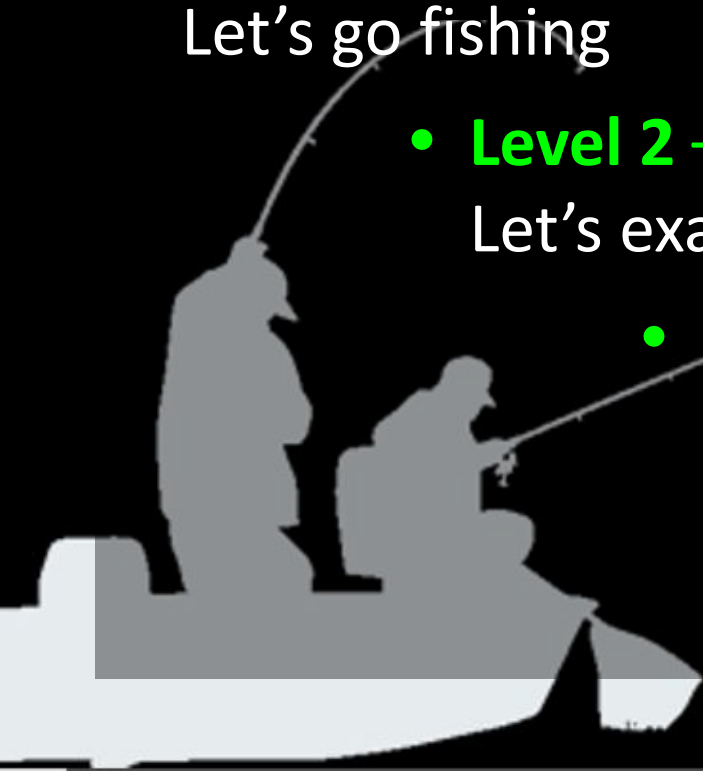
Let's examine the menu

- **Level 1** – Little time but some interest

Please serve me fish

- **Level 0** – No time or interest

No fish please



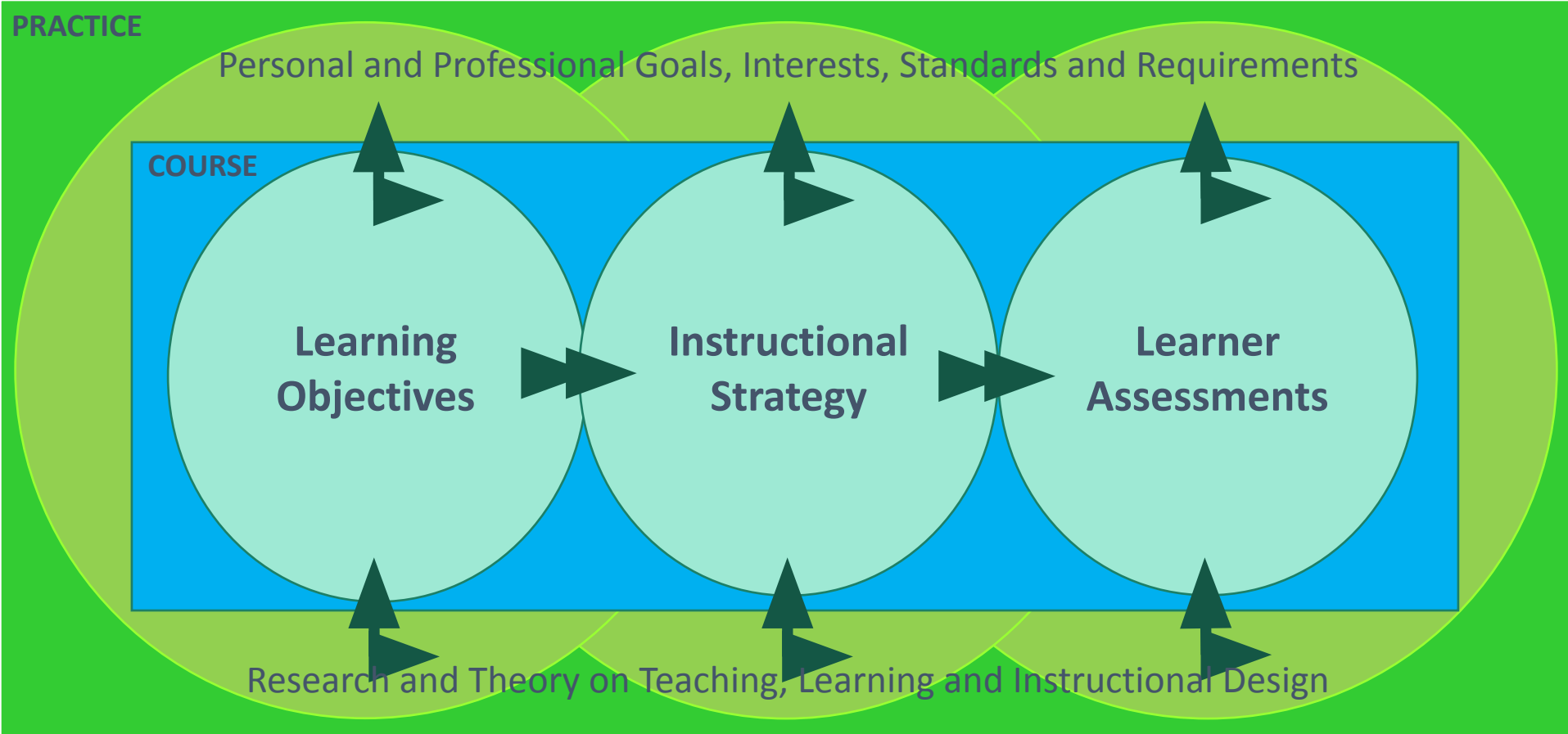


Figure 1. Vertical and horizontal alignment of instructional elements characteristic of high quality (*effective, efficient, and engaging*) learning experiences (Hirumi, 2021)

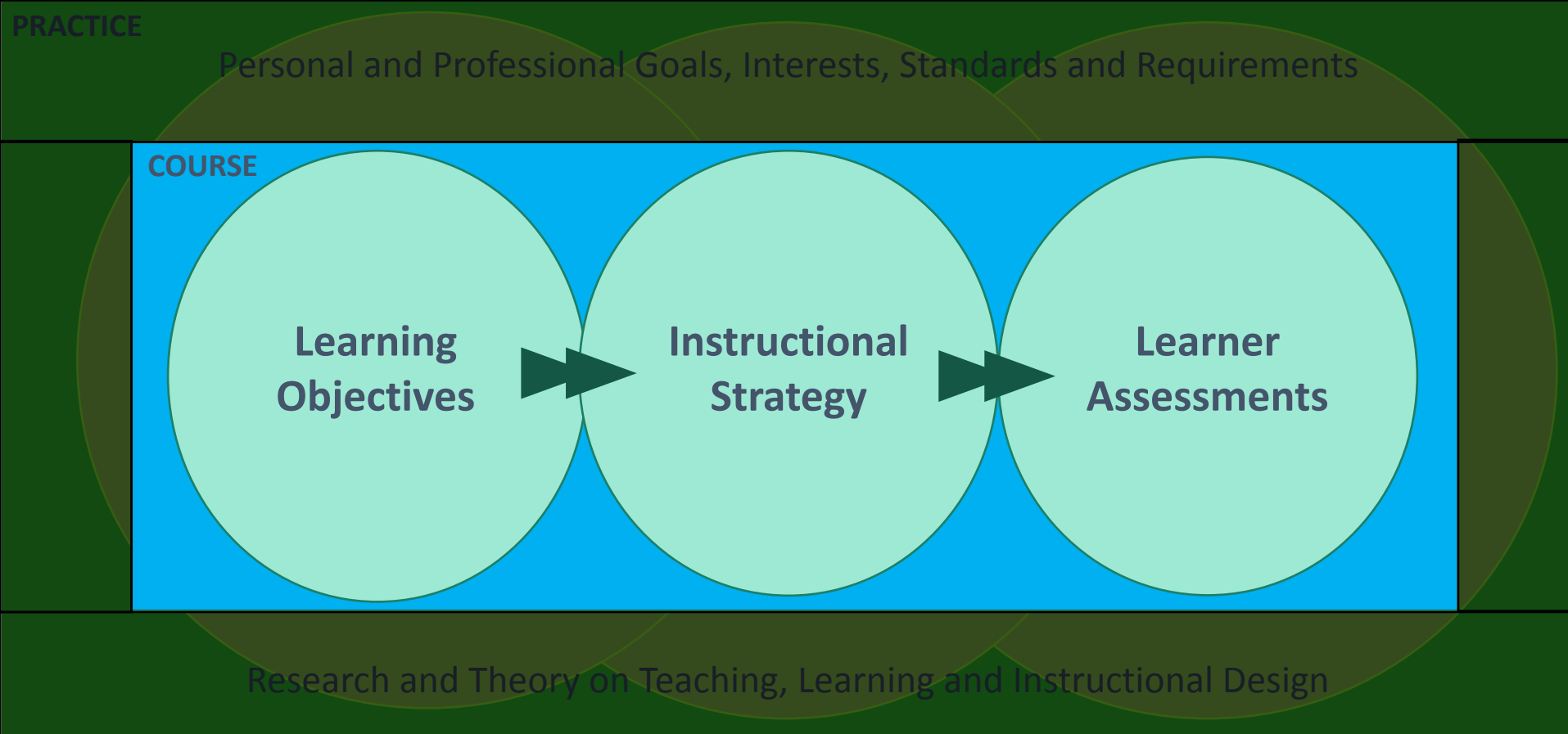


Figure 5. To be *efficient*, educators and instructional materials must clearly communicate and satisfy expectations by ensuring the horizontal alignment of instructional elements.

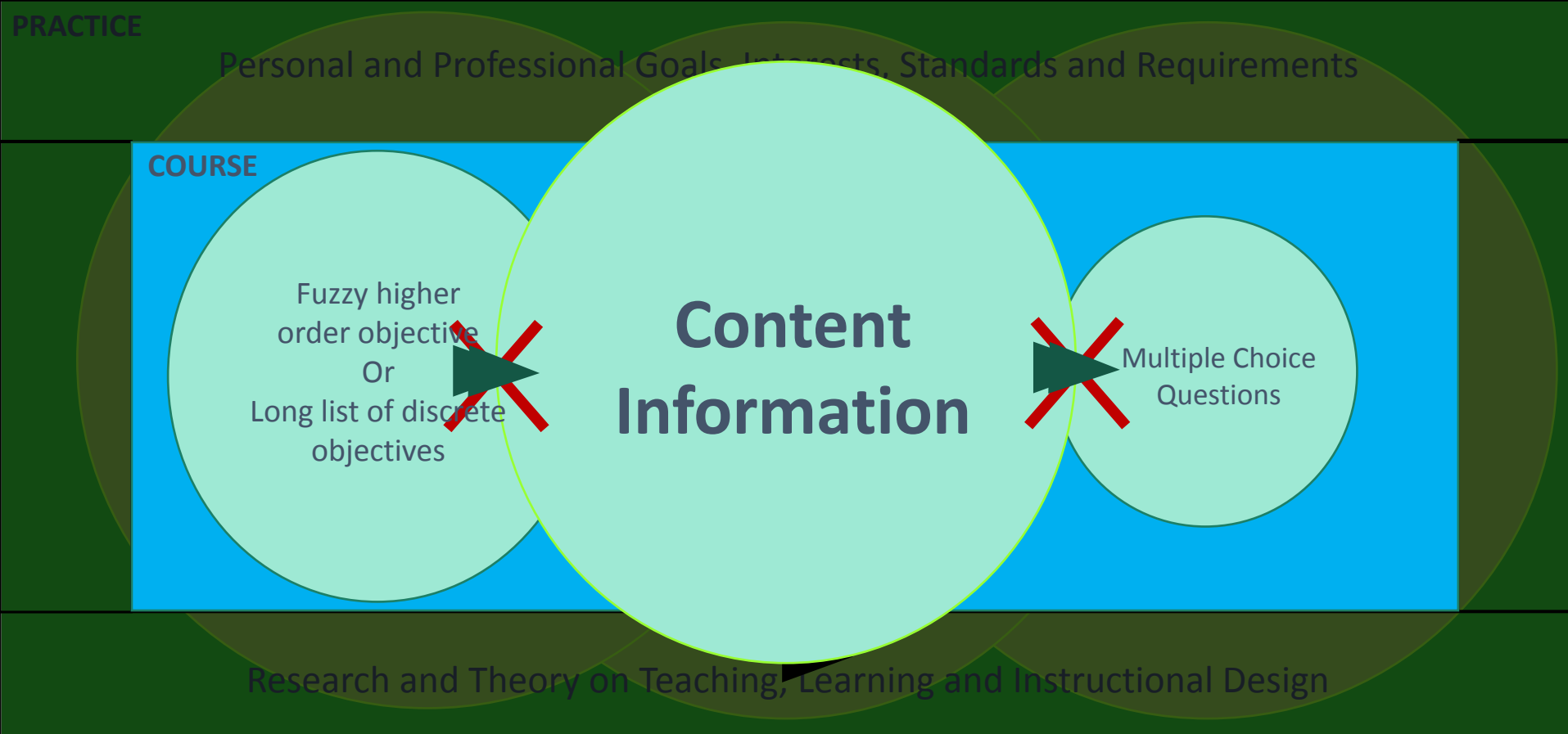


Figure 6. Common flaws in design (misalignment of instructional elements)

# Agile eVidence-based Instructional Design (AVIDesign)

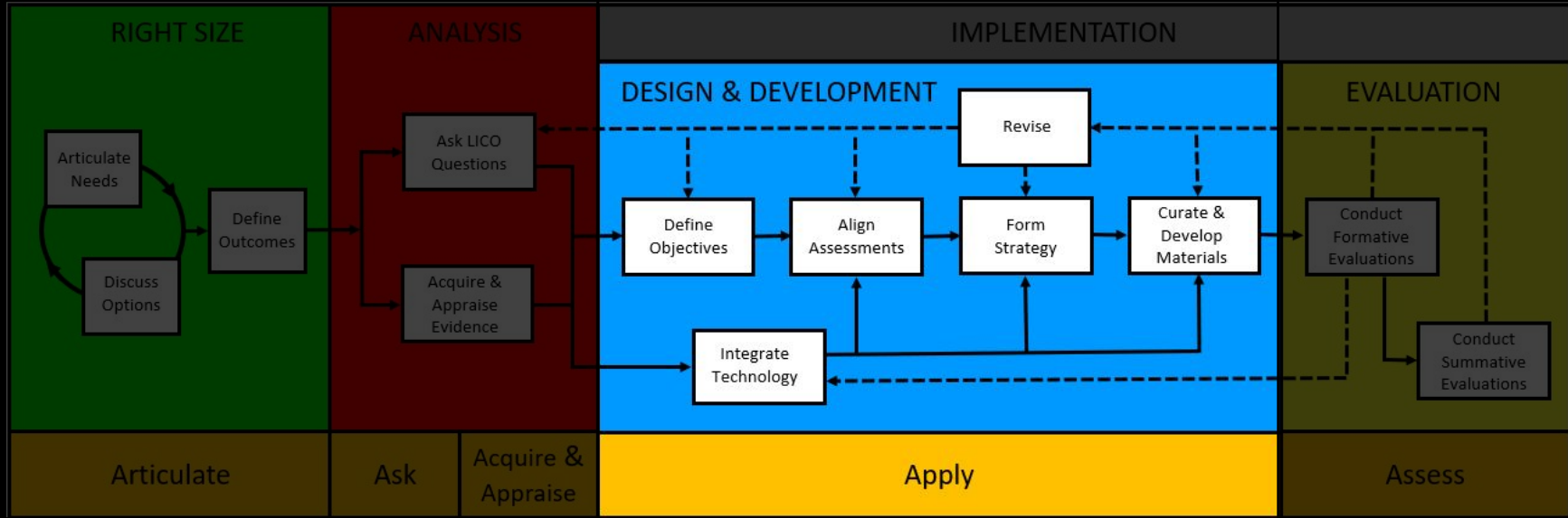


Figure 7. Steps for ensuring the horizontal alignment of objectives, assessments, and instructional strategy (including content information)



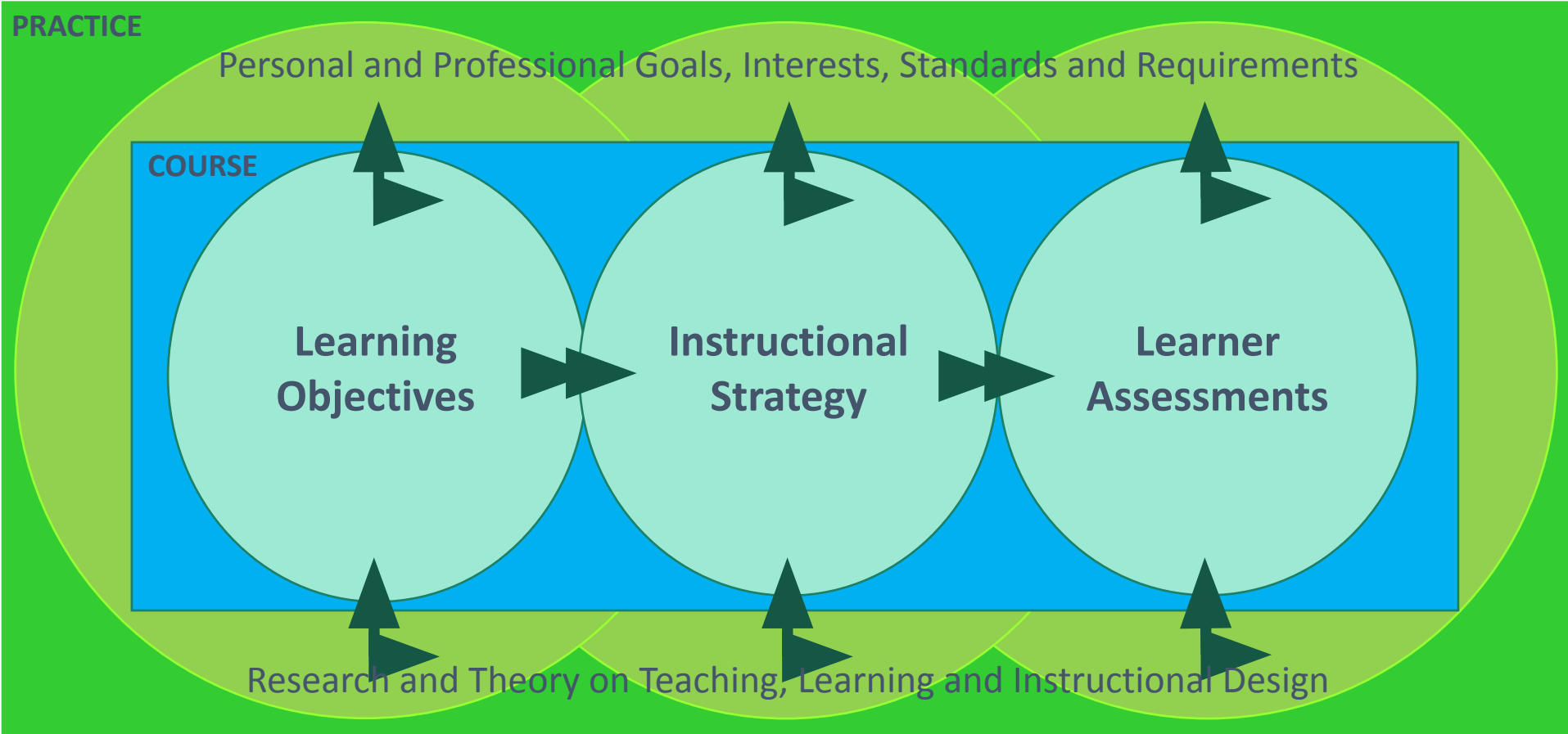


Figure 1. Vertical and horizontal alignment of instructional elements characteristic of high quality (*effective*, *efficient*, and *engaging*) learning experiences (Hirumi, 2021)

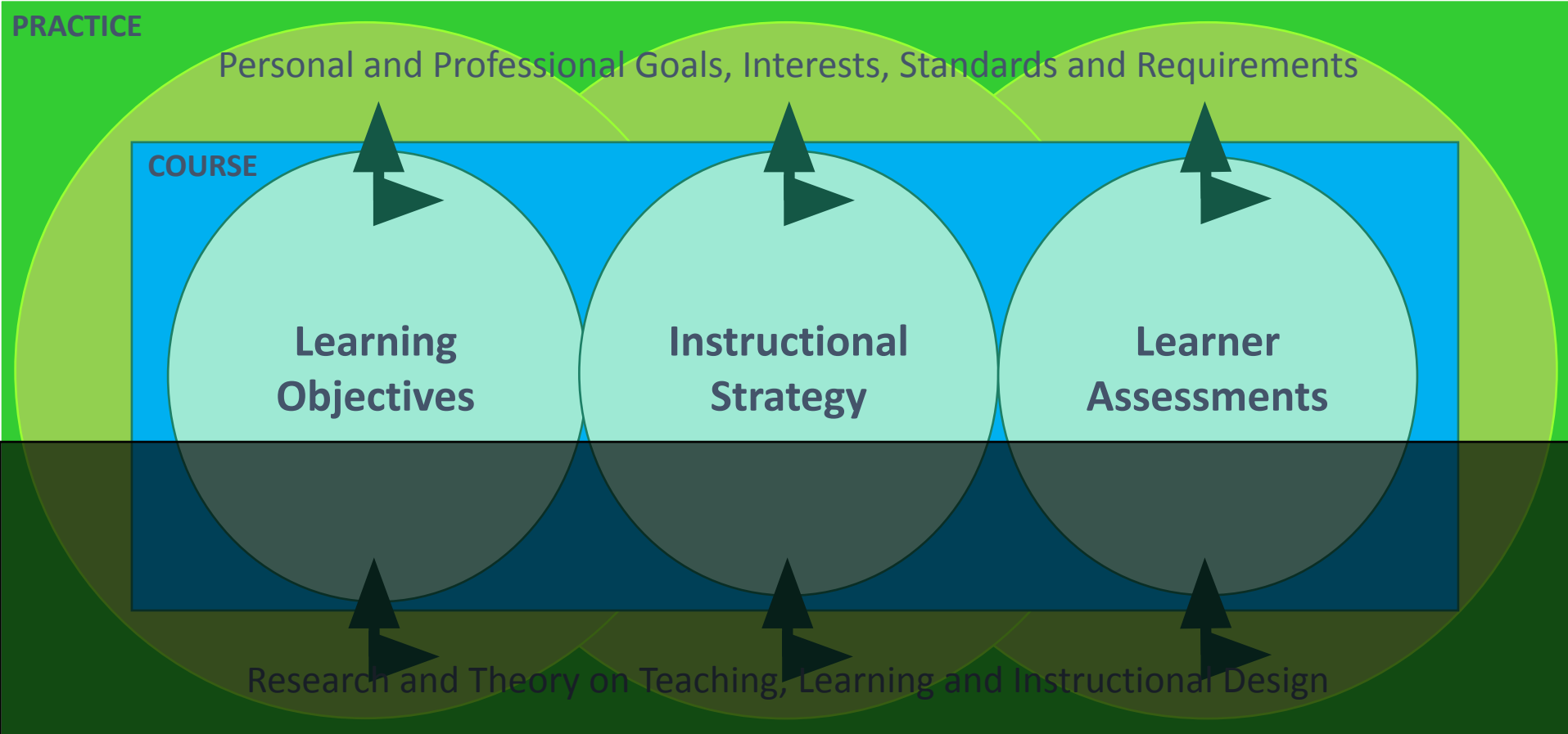


Figure 9. **Engaging** learning experiences motivate students by ensuring the alignment of instructional elements with personal and professional requirements and interests

Traditional educational  
methods fail to engage  
today's 21<sup>st</sup> century learners



# ARCS Model of Motivational Design

A close-up, high-resolution photograph of a human eye, focusing on the iris and pupil. The eye is looking slightly to the right. The skin around the eye is visible, showing fine lines and texture. The background is dark and out of focus.

To motivate students to learn,  
your instructional methods  
and materials must...

- Gain **A**ttention
- **R**elevant to Needs
- Foster **C**onfidence
- **S**atisfy Expectations

# Agile Evidence-based Design (AVIDesign)

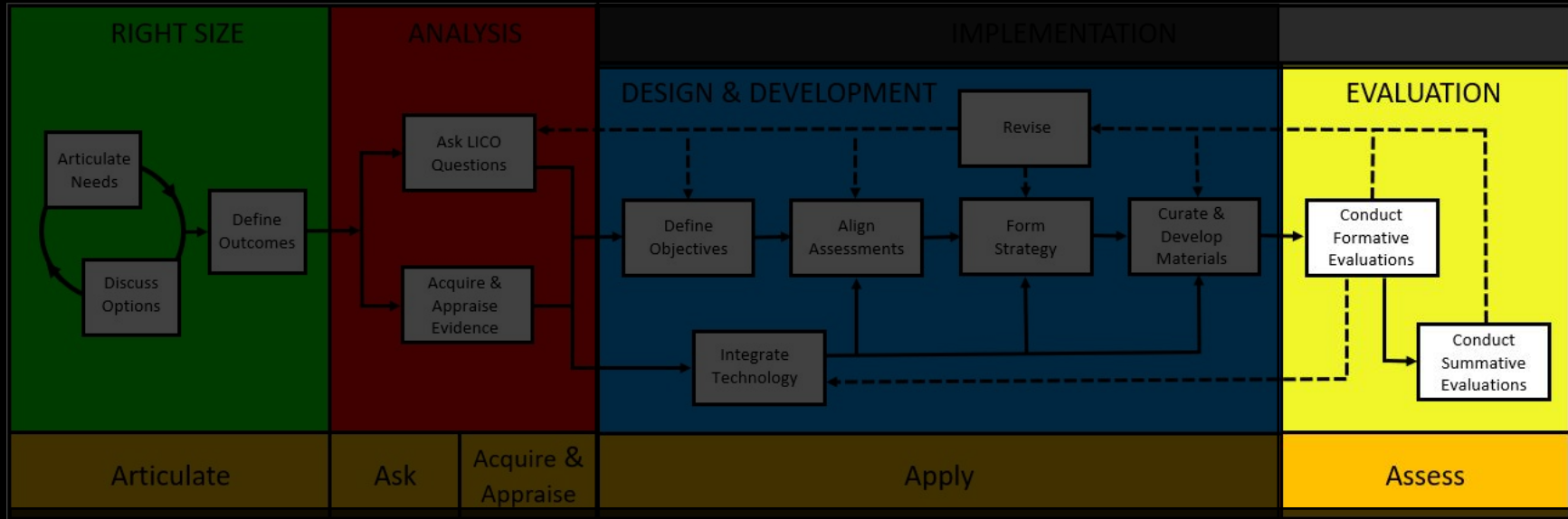
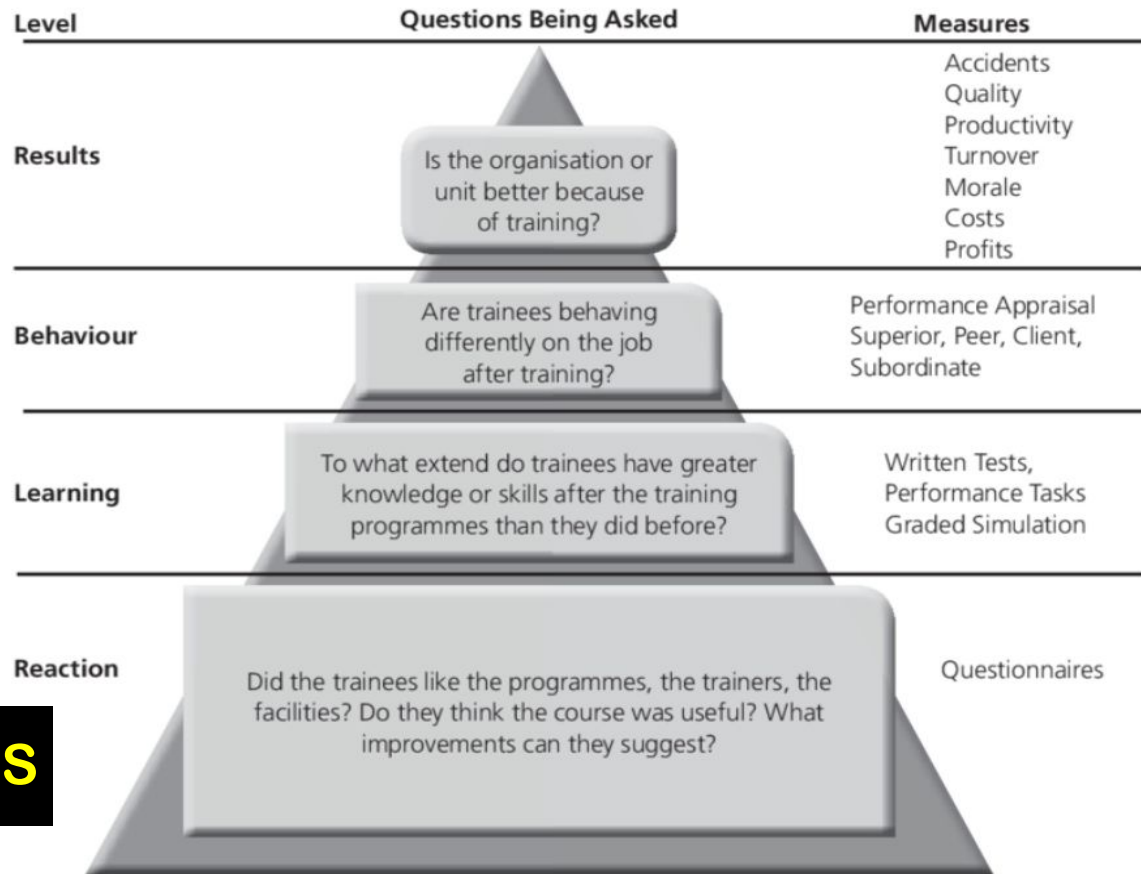


Figure 10. Steps for ensuring the vertical alignment of objectives, assessments, and instructional strategy (including content)

# Levels of Evaluation

(Kirkpatrick &  
Kayser-Kirkpatrick, 2016;  
Lovato, 2014)

**ARCS**



# Summary (ID Fundamentals)

- Challenges and uncertainties facing medical/health science educators
  - Trends and technology may increase access, productivity and affordances but does not guarantee quality
    - Fundamental ID tools and techniques for ensuring...
      - Effectiveness
        - \* Evidence-based medicine vs. evidence-based medical education
        - \* Grounded design conditions and benefits
        - \* *AVIDesign*: Acquiring and appraising evidence
        - \* Fishing analogy (Role of ID)
      - Efficiency
      - Engagement







# Important Post-Event Information

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- **Follow-Up:** Please fill out the survey you will be receiving shortly as it will be used as a guide for future presentations and formats.
- **Certificates:** An attendance certificate for the seminar can be requested on the survey form.

# Are You Interested in Our Future Events?

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**Are you interested in contributing to learning science?**  
**Join our Learning Science team's research endeavors!**

Contact us: [learning-science@lecturio.com](mailto:learning-science@lecturio.com)

# Lecturio's Implementation of Instructional Design

Join our **regional demonstration sessions** to learn how you can use Lecturio to foster **instructional design abilities** in your teaching.

To participate, please choose a breakout room for one of the following **regional sessions**:

- USA, Canada, and Caribbean
- Europe and Middle East
- Latin America
- Asia, NZ, Australia
- Africa

*If you are having trouble joining your preferred room, please let us know in the chat and we will transfer you to the correct session.*





Contact us

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Learning Science Team  
[learning-science@lecturio.com](mailto:learning-science@lecturio.com)



RESERVE SLIDES



On a scale from 1-5 (low to high):  
To what degree did today's session...

1. Gain and sustain your **attention**
2. Address your needs and interests (**relevance**)
3. Increase your **confidence** in facilitating evidence-based education
4. **Satisfy** your expectations?





On a scale from 1-5 (low to high):  
Please rate your level of interest for...



5. (3hr) Workshop on acquiring, appraising, and applying evidence
6. (1hr) Seminar on tools and techniques for ensuring efficiency
7. (3hr) Workshop on tools and techniques for ensuring efficiency
8. (1hr) Seminar on tools and techniques for engaging learners
9. (3hr) Workshop on tools and techniques for engaging learners

# Are You Interested in Our Future Events?

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**Save the date** for our upcoming  
Durable Learning Seminar

## **Presentation Efficacy: A Tool to Hook Your Audience**

July 20, 2022, 9:00 PDT | 12:00 EDT | 18:00 CEST

**Are you interested in contributing to learning science?**  
**Join our Learning Science team's research endeavors!**

Contact us: [learning-science@lecturio.com](mailto:learning-science@lecturio.com)



Sharing Outcomes and Takeaway Messages





## SUMMARY



## Breakout Sessions: Instructions for Participants

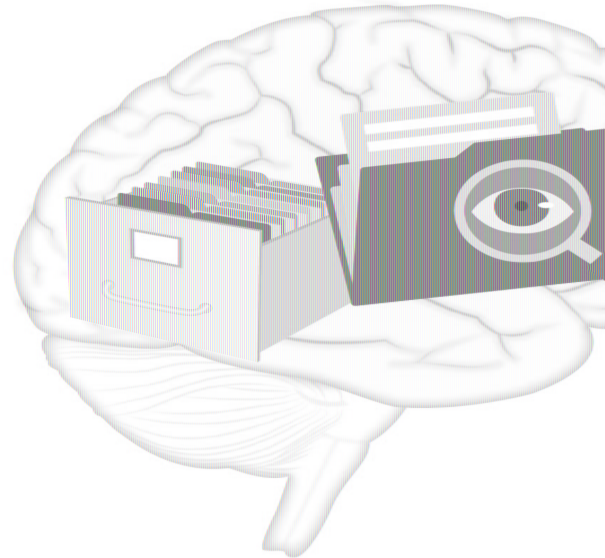
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- This [room](#) is for you to share and discuss how to foster metacognition in your classroom and the challenges you have encountered.
- The discussion will focus on **2 topics**:
  - **(1)** How you monitor and evaluate your students' learning in your classroom?
  - **(2)** How might you use metacognitive principles in your course design?
- Please keep your response to **under 1–2 minutes** so that your fellow educators can participate too, the time being limited. Also please add your comments and questions to the Padlet
- Try to stick to the question and avoid changing the topic.
- We will return to the main room in **10 minutes**.
- Use Zoom's "raise hand" feature when you would like to share an idea or question.
- Use the chat to share your thoughts if you would prefer not to speak.
- Don't be shy—your colleagues are interested in your experiences and thoughts!

## Discussion Group Question 1

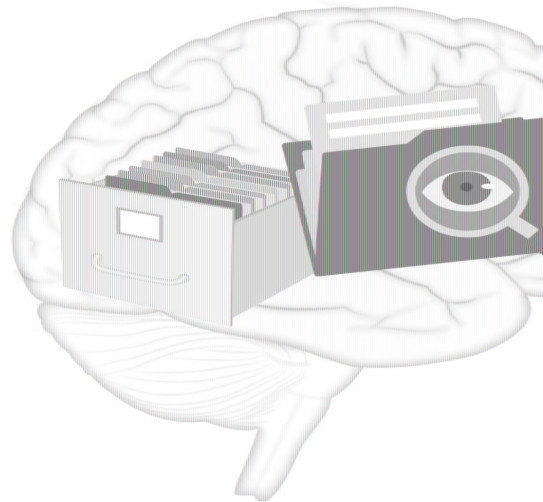
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Do you use course data to monitor and evaluate your students' behavior in learning? If yes, please share how



## Discussion Group Question 2

Based on what you have learned, how could you make metacognition part of your course design?





## Breakout Sessions: Instructions for Participants

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Head to your respective rooms, and we will reflect when we return from the discussion groups.

# Specific Objectives

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1

2

3



## Breakout Sessions





## Our Chat Platform Today: Padlet

- Please **scan the QR code** with your phone, or **click the link in the chat** to open Padlet in your browser.
- If you have a second screen, please open the Padlet tab there.