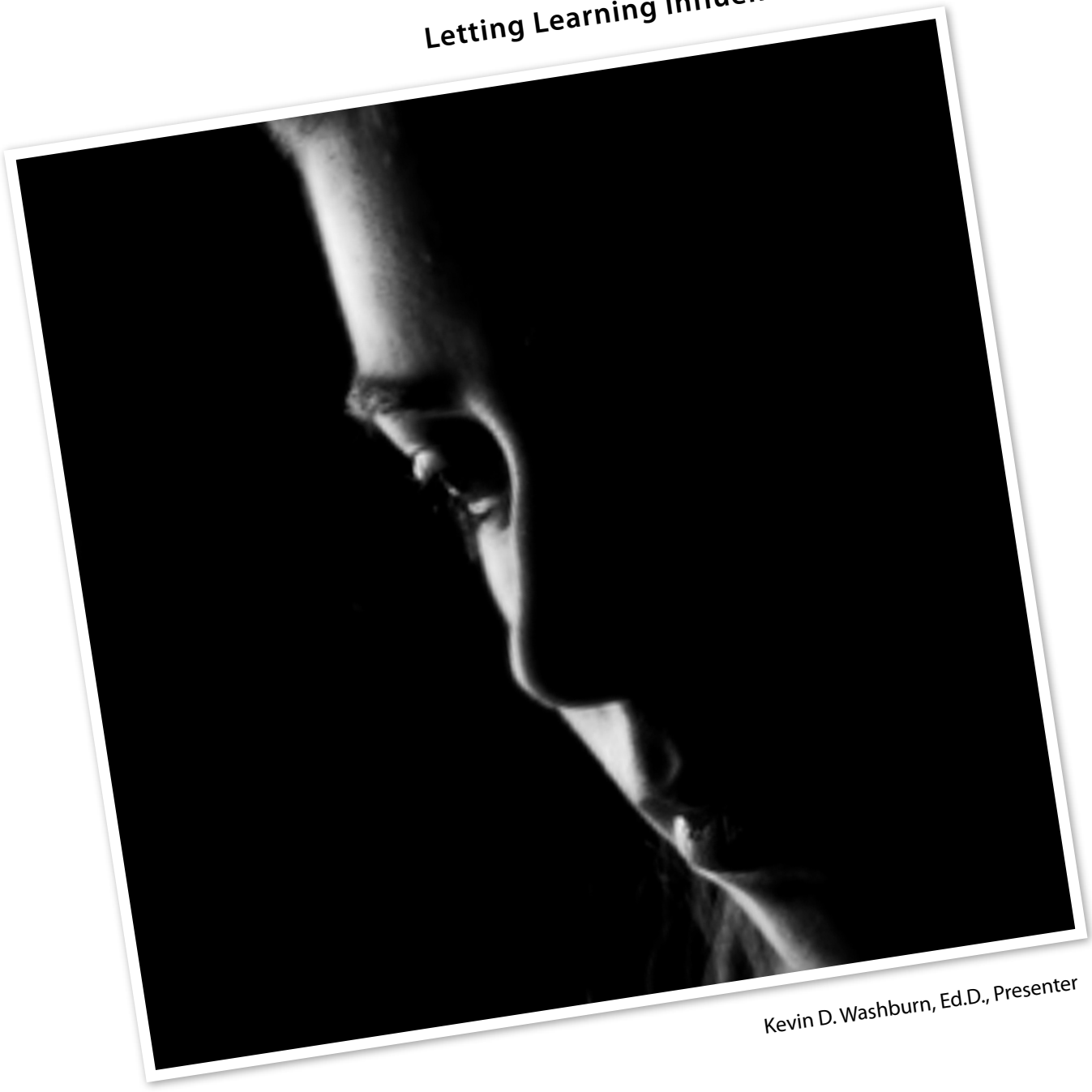
Getting to the Core:

Letting Learning Influence Teaching



Kevin D. Washburn, Ed.D., Presenter

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CONSIDERING THE CARDS

Most card games begin in a similar way:

- a dealer shuffles and then deals the cards to each player
- each player sorts the cards that have been dealt
- each player examines the cards to note any patterns and outliers
- each player plays the cards during a round of play

What is the relationship of each step to its predecessor?

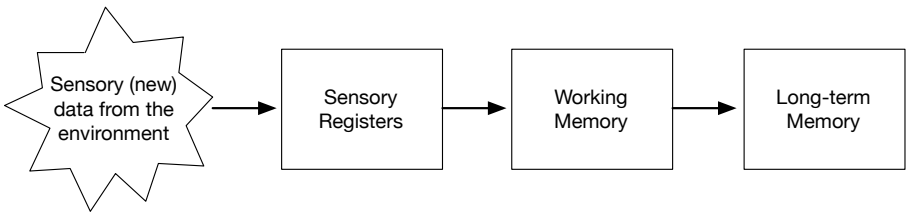
What is the relationship of all the steps and the desired result of playing the game?

THE CORE PROCESSES OF LEARNING

When we intentionally engage in learning, our cognitive activity often includes four processes that interact and enable one another.

Experience

- Experience happens anytime data enters the brain, either through immediate, concrete sensory experience or the recalling of previous experiences.
- The brain has limits on the amount of data it can process. In a constant data stream, the brain will lose most information before it has a chance to process it and construct memory of it.
- By itself, experience is not learning. To learn, the brain must do more with data. Learning requires mental activity.
- Engagement matters. What is *attended to during experience* determines what is processed to the point of learning.



Downtime

- the human brain requires periods of processing, especially following periods of intense input

- is a period of reflection in which focus is directed toward constructing knowledge and understanding of new data

Comprehension

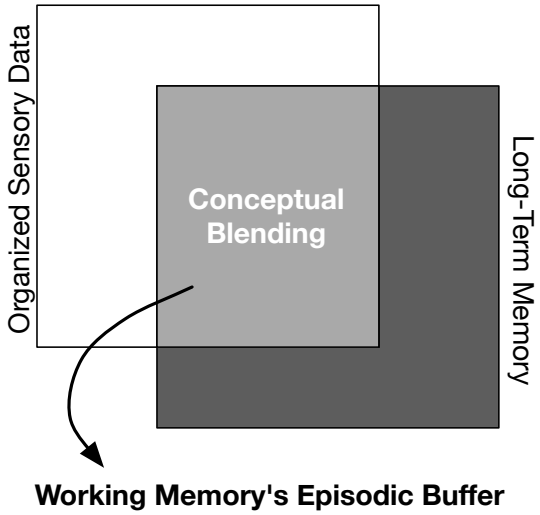
- Comprehension occurs as the brain identifies, labels, and sorts incoming data.

- When we initially, intentionally, and consciously process new data that we desire to understand and remember, we generally use language-based thought.

- Labeling data naturally leads to sorting, classifying, and organizing. The brain categorizes data according to shared characteristics, and patterns begin to emerge as the brain categorizes the data.

- If repeated enough, comprehension can lead to low-level learning.

- Organizes data in such a way that additional processing can be engaged.



Working with data visually

- structuring content to recognize and illustrate relationships

  What is the relationship between experience and comprehension? Use a visual tool of your choosing or design to show this relationship.

Elaboration

- During the process of elaboration, the brain examines comprehended (i.e., labeled and sorted) data to identify patterns, uses the patterns it recognizes to recall relevant instances from long-term memory, and overlays or blends the new data with known experience.

- Learning is strengthened when the process is intentionally initiated with the learner consciously analyzing the similarities and differences between the new data and the associated long-term memories. By connecting common elements of the new data and long-term memories, the brain constructs understanding.

  Identifying Similarities & Differences

  - comparison
  - metaphors, analogies

    Compare the process listed in the first column with the activity listed in the second column. Explain how the first is like the second.

Process	is like…	Explanation
experience	receiving cards being dealt	
comprehension	sorting cards in my hand	
elaboration	examining the sorted cards for patterns	

  Changing the Form

  - re-present concepts mathematically, musically, bodily-kinesthetically, graphically, etc.

    Re-present experience, comprehension, and elaboration in a different form. You may choose to use one form for all three or use a different form for each.

Application

- Application, often called practice, allows a student to show her understanding within an instructional setting.
- While practicing a skill is essential for mastery, moving to the application stage too quickly is a common mistake.

Summarizing

In this session, we…

1.

2.

3.

I learned…

I think…

I plan to…

Practice & Homework

Sort it out. Review the notes on learning's core processes. In the space below, create a 4-box flow chart of the core processes. You may use 2-letter abbreviations for the process names (ex, co, el, ap).

Write your own definition for each process either above or below the flow chart's individual boxes,.

Identify an illustration from your experience that could serve as a metaphor for each process.

Put it to use. Think of something you recently taught. Which of the core processes did you intentionally include? Were any excluded? How might you design that lesson differently to include all the core processes?

Think about at least three common activities you've used in your teaching (e.g., reading a textbook chapter). Consider the cognitive activity of students completing each activity. Can you identify the main core learning process engaged during the activity (e.g., textbook reading would mostly engage students in experience).

DESIGNING INSTRUCTION TO ENGAGE LEARNING'S CORE PROCESSES

Experience

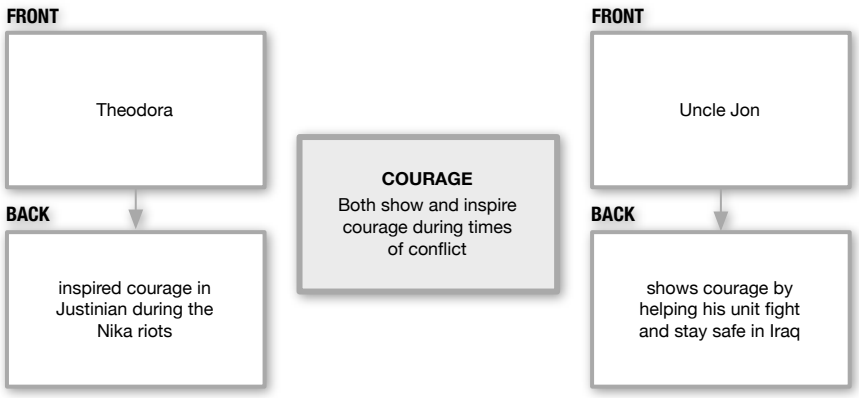
The students read textbook sections devoted to the Byzantine Empire. The teacher follows up the textbook reading with lectures that present additional material and help connect the various details. The teacher also shows a brief documentary video on Justinian the Great. Mindful of the students' need to process the material in limited chunks, the teacher plans multiple "processing pauses" that feature activities emphasizing comprehension and elaboration.

Comprehension

As a new individual from the Byzantine Empire is presented, each student writes the name on an index card. On the other side of the index card, the student records the important information about the individual, including significant actions and their results. The index cards are then sorted into a timeline based on each individual's important actions (i.e., the actions are the basis for the sequence).

Elaboration

For homework, the students create index cards for contemporary people they know—family members, friends, politicians or celebrities—who are notable for their significant traits or actions. In the next class session, the students pair each Byzantine individual with a contemporary individual and use a third index card to explain the comparison of the two.



Application

Using the resulting Byzantine-contemporary pairings as a guide and reference, students develop written summaries of the Byzantine Empire's key individuals. The summaries may include references to the contemporary comparisons to make the summaries more interesting and meaningful.

For example: Theodora and Michelle Obama seem to have much in common. Both married men who became leaders. Theodora's husband, Justinian I, ruled over the Byzantine Empire. Michelle Obama's husband was elected President of the United States. As a result, both women possess influence even though they were/are not in official positions of leadership. Both women also demonstrate confidence. When Michelle Obama spoke during the campaign to elect her husband she always seemed self-assured enough to ignore those who criticized her. Theodora showed amazing confidence during the Nika riots. When her husband and his empire were in danger, she spoke confidently and convinced Justinian to stay and fight rather than run and hide. Though they are separated by thousands of years of history, both women influenced their worlds.

The **Architecture of Learning Basic Course** is recommended for instructional designers, school leadership, and K-12 educators of all content areas. Graduate credit through a fully accredited institution is available for all interested participants. This three-day instructional design course explores:

- The neurocognitive process of constructing understanding
- The concept of cognitive blending and its relationship to learning
- The relationships between experience, comprehension, elaboration, application, and intention
- The various types of subject matter and the learning processes associated with each
- Instructional design using Architecture of Learning Blueprints
- The development of assessments based on the process of teaching, which is based on the process of learning, creating instructional coherence and validity

The Architecture of Learning Basic Course will be hosted at the Training Center of the ACSI northeast regional office, located in Lancaster, PA, the heart of Amish country. We are excited about this co-sponsored event and look forward to developing a network of Architecture of Learning schools from the surrounding areas. For more information on this event, go to http://www.clerestorylearning.com/prof-development/architecture-of-learning/basic-course/aol-basic-register/

Written for teachers, educational leaders, and instructional designers, ***The Architecture of Learning: Designing Instruction for the Learning Brain*** uses applied research from neuroscience and cognitive psychology to explain how the brain constructs new learning: sorting and labeling new data, comparing it with prior experience, and using resulting understandings to interact with the environment. The Architecture of Learning introduces a series of blueprints to strategically guide instructional planning. The resulting instruction capitalizes on the brain's penchant for patterns, helping students recognize a reference point to construct new understanding and equipping them to apply new learning in the "real world." For additional information, go to http://www.clerestorylearning.com/prof-development/architecture-of-learning/the-book/

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