I. Educational Theories

1. Introduction
   a. Teacher-Centered & Learner-Centered
   b. Feet, Hands, Ears, & Eyes

2. Lecture Types
   a. Formal/Paper-Reading Lectures[1]
   b. Storytelling Lectures[2]
   c. Discussion-Based lectures[3]
   d. Visually Enhanced lectures[4]
   e. Demonstration Lectures[5]
   f. Online Lectures[6]
   g. Interactive Lectures[7]

3. Pedagogical Potpourri
   a. Dunning-Kruger Effect
   b. Hitchhiker's Guide to the Educational System (by Matt Might)
   c. Bloom's Taxonomy
   d. Closets, Hangers, Clothes, & Maintenance, or Cabinets, Folders, & Files
   e. Encoding (Learning), Storage (Memorizing), Retrieval (Accessing)

II. Best Practices

1 Encoding (Learning new things)
   a. Connecting to prior information
      i. Pretests or Quick Quizzes
      ii. "Dusting off the Cobwebs" Exercise[8]
      iii. Explicit ~~Lyrics~~ Links
   b. Capturing attention
      i. Open with your best trick (the hook)

[1] "The professor typically stands behind the lectern and reads a paper or summary of the material to be learned…Information is presented orally, and visual aids are not typically included with this lecture approach." (Harrington & Zakajsek, 20)
[2] "The storytelling approach allows professors to identify characters or situations that provide meaning to the content…the example or context becomes the primary point of focus, and the course content is secondary in terms of organization." (Harrington & Zakajsek, 22)
[3] "Faculty assign readings prior to class, and students are expected to come to class ready to actively participate in a large-group discussion." (Harrington & Zakajsek, 24)
[4] "The slides serve as a backdrop for the lecture content." E.g., Ted Talks. (Harrington & Zakajsek, 26)
[5] "A professor [illustrates] how to complete a task while explaining it." (Harrington & Zakajsek, 27)
[6] "As with face-to-face lectures, there are many different formats and types of online lectures." "Dey, Burn, and Gerdes (2009) found no significant difference in student learning when students viewed a narrated PowerPoint presentation with and without the instructor's image." (Harrington & Zakajsek, 29)
[7] "A combination of lecturing and brief, active leaning opportunities. Any of the previously noted types of lectures may have an interactive component." (Harrington & Zakajsek, 31)
[8] Discuss what you learned with a partner. The partner fill in the gaps. Then share with the class and the whole class fills in gaps via class discussion.

ii. Think about the audience's perspective in the physical environment
iii. Distribution of visual aids

c. Focusing on and clarifying new information
   i. Give the big picture (*gestalt*)
   ii. TOC for the class session

d. Using multimedia effectively
   i. For Books:3R & SQ3R[9]
   ii. For the Web: Teach discernment of sources
   iii. Coherence Principle: Less is more. They're *visual aids*, not *visual scripts*.
   iv. Signaling Principle: Emphasize important points. "1st, 2nd, 3rd." "Therefore." Write it on the board.
   v. Personalization Principle: Simple, personal language for novices. Advance language as they advance.
   vi. Modality Principle: Quiet Time: Give 5-6 seconds to process questions
   vii. Image only > Text only
   viii. Polling Tools: Poll Everywhere, Kahoot!
   ix. Crowd-sourcing as a teaching strategy: get them to provide examples, images, illustrating reading/lecture material. Even drawing sketches on notes works.
   x. Post lectures & slides before the lecture (they'll still need you)

2 Storage
   a. Provide two examples for each big idea
   b. Incorporate case studies & small-group discussions of those studies
   c. "Make It Meaningful" teams. Individuals or groups are responsible for creating an example that is meaningful and relevant to them. They can share it with the class
   d. Think, Pair, Share. Think of an example related to content, share w/ partner. Then share as a class.
   e. Example Tables: Give them a blank two-column table. Column 1 is for identifying the big idea from the lecture, and column 2 is for examples of the big ideas.
   f. Tweet-style summaries of: main idea, or related concept, or an example of the concept, or a confusing concept.

3 Retrieval
   a. The most important part of learning
   b. One-Minute Papers:

[9] **Survey**: Preview the TOC, chapter headings. **Question**: Form questions based on the preview. **Read**: Read the chapter. **Review**: Close book & take notes on your reading. **Review**: Reread the chapter & fill in Review Notes with missing content.

i. "What are the most important concepts from today's lecture?" & "What concepts from today are not clear to you?"
ii. "What is an example of this concept?"
iii. "How does this concept relate to a previously learned concept?"
iv. "What is the most interesting fact or skill you learned today?"
v. "A classmate contacts you because he or she was unable to attend class today. What were the big ideas from today's lecture that you would share with your classmate?"

c. Index Card Fast Pass
   i. Same questions as above, but they write on an index card.
   ii. Then stand & mingle, exchanging cards until you say stop.
   iii. Partner & discuss content of the cards.
d. Think, Pair, Square: Like Think, Pair, Share, but last step is 2 partner groups rather than whole-class discussion.
e. Review & Compare Notes
   i. Pause midlecture & have them share notes with neighbors.
f. Peer Instruction
   i. Every 15-20 min, give multiple-choice question, then have them vote.
   ii. Before answering, give time to discuss with neighbor why their answer is correct.
   iii. Vote again as a class, then give the answer.

a. Brief Presentations ("Popcorn" or "Cutthroat" class exercise)
   i. Students give mini lecture or presentation (2 minute presentation). No notes or slides. Can warn them ahead of time, and then pick randomly to give a 2 minute summary of what you just taught. Will encourage doing that day's reading, also note taking during lecture.
b. One-Page Summary
   i. They summarize most important points of lecture during last 5-10 minutes of class.
   ii. No notes allowed. They do it from memory.

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Bloom's Taxonomy

1. Knowledge/Remembering: Retrieving, recognizing, recalling information
    a. What do you remember about _____?
    b. How would you define_____?
    c. How would you identify _____?
    d. How would you recognize _____?

2. Comprehension/Understanding: Constructing meaning through interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining
    a. How would you generalize_____?
    b. How would you express _____?
    c. What can you infer from _____?
    d. What did you observe_____?

3. Application/Applying: Using a procedure through executing, implementing
    a. How would you demonstrate ____?
    b. How would you present ____?
    c. How would you change ____?
    d. How would you modify ____?

4. Analysis/Analyzing: Breaking material into constituent parts by differentiating, organizing, attributing
    a. How can you sort the parts _____?
    b. What can you infer_____?
    c. What ideas validate _____?
    d. How would you explain _____?

5. Synthesis/Evaluating: Making judgment based on criteria by checking and critiquing
    a. What alternative would you suggest for ___?
    b. What changes would you make to revise___?
    c. How would you generate a plan to ___?
    d. What could you invent___?

6. Evaluation/Creating: Reorganizing elements through generating, planning, producing
    a. What criteria would you use to assess _____?
    b. What data was used to evaluate _____?
    c. How could you verify _____?
    d. What information would you use to prioritize _____?

For more questions based on the New Bloom's, see "Revised Bloom's Taxonomy – Question Starters" at https://education.illinoisstate.edu/downloads/casei/5-02-Revised%20Blooms.pdf

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