Planning Summary – Powerful Teaching by Pooja Agawal, Patrice Bain

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Content	Do This/Remember This
Introduction: You will gain: deep understanding of powerful teaching strategies, knowledge of key findings of cognitive science, insight into effective implementation, and tools to share with students. All with minimal additional prep/grading	
Chapter 1 Discover the Power Behind Power Tools (PTs): Cognitive scientists use 'Encoding/ Storage/ Retrieval' as a simplified model of learning, PTs are Retrieval Practice, Spacing, Interleaving, Feedback-Driven Metacognition, all backed by findings from the science of leaning. Distinguish short term vs long term learning (LTM) for you and the students. Resources at https://www.retrievalpractice.org/powerful-teaching/	
Chapter 2 Build a Foundation with Retrieval Practice: Encoding (E) = initial learning, Storage (S) = how long retained, Retrieval (R) = bringing info to mind. Easy to focus on E but R practice (RP) is more effective than many strategies (re-reading/highlighting - students (Ss) often overestimate their power), backed by research in classrooms, Lemov definition "RP occurs when learners recall and apply multiple examples of previously learned knowledge or skills after a period of forgetting". Can facilitate Higher Order Thinking (HOT), RP can include HOT. RP boosts transfer to other settings (near and far). RP different from formative/summative assessment (though similarities)	
Chapter 3 Empower Teaching with Retrieval Practice Strategies: Strategies are: Brain dumps – everything they know + think/pair/share, Two Things – things you've learned today/before or examples in real life etc., Retrieve Taking – take notes after the presentation/ review/ amend , Retrieval Guides – booklets used in the same way, Mini/Weekly Quizzes – with variety of questions. Systems to use are: Bell work/exit tickets, Colored Index Cards (like clickers), Mini-whiteboards. Make sure ALL Ss engaged. Research – boosts learning with all types of question, effect of pre-testing on LTM unclear, RP better than concept mapping	
Chapter 4 Energize Learning with Spacing and Interleaving: Cramming works in the short-term only. **Spacing (gaps between retrieval)** strategies: Pre-test, Blast from the Past (Turn & Talk about a previous topic), Big Basket Quiz (BBQ – lots of questions from all parts of the course, choose 10). Timing: best practice = a few days after teaching, then weeks, then months. Spacing = saving time – they remember more, quicker. **Interleaving: = mixing up with spacing.** Promotes discrimination, increases learning in the middle of the unit. **Strategies**: Use dice/pulling out questions from hat/fast paced quiz on multiple topics	
Chapter 5 Engage Students with Feedback-Driven Metacognition: …so students are aware of what they know and don't know. Illusions –students can predict what they got correct/confidence in sync with learning. Feedback: right/wrong answers, elaborative (good by time-consuming, immediately OR delayed, normalize making mistakes in low stakes testing. 4 steps of metacognition: identify what you do/don't know, do what you know, look up what you don't, check. Encourage reflection in retrieval.	

Chapter 6 Combine Power Tools and Harness Your Toolbox: Reviewing is *not* retrieving, cumulative exams are *not* spacing + interleaving. Teacher toolbox: essential question, need to know, retrieving, spacing, interleaving, metacognition. Student toolbox: mnemonics. Combine PTs: brain dumps+last lesson+turn/talk, write+leave+retrieve. Tech doesn't necessarily improve learning – choose wisely (clickers can increase gamification not learning)	
Chapter 7 Keeping It Real: Use Power Tools to Tackle Challenges, *Not* Add to Them: Worrisome things: prep time, grading time, coverage, grades, inclusion, cost, complexity, overlap, support. Answers: no more time prep/grading (sometimes less), retrieval = faster as teaching = learning, initial student struggle = better learning, PT really help diverse learners + boost self esteem, no cost, start small+ expand, beware neuroscience	
Chapter 8 Foster a Supportive Environment: Use Power Tools to Reduce Anxiety and Strengthen Community: Sources of student anxiety: infrequent testing, high stakes, correct or incorrect. Create support by emphasizing: it takes time + mistakes + risks + help to learn. Build trust by: modelling – make mistakes, explaining how we learn, redefining 'struggle' as good, change 'smart' to 'mastery'. Reduce anxiety by: regular retrieval, multiple opportunities to add to grade, eliminate competition, no right/wrong questions	
Chapter 9 Spark Conversations with Students About the Science of Learning: Empower students by: sparking conversation/modelling PTs/explain how PTs work/encourage use inside AND outside classroom/encourage planning+implementing+reflecting on their PTs. We are teaching them how to learn, learning is a joint responsibility: teacher + encoding, student + retrieval. Four key phrases: let's have a pointless conversation/let's learn OUTformation not just Information/what did you learn yesterday/let's flip retrieval from – to +. Share why it works: use it or lose it/desirable difficulties/know vs don't know. Ownership by: having names for the PTs, explaining why some things *don't* work, review all the study strategies with reasons, conversations about planning+reflection	
Chapter 10 Spark Conversations with Parents About the Science of Learning: Opportunities: PT conferences/seminars/email/informal. What to say: mini-lesson on PTs, strategies: tell me three (things you learned), flashcard use. Research snapshots to share: retrieval practice, spacing, interleaving, metacognition, combining PTs, each with research evidence	
Chapter 11 Powerful Professional Development for Teachers and Leaders: No quick fixes in policy making BUT policy makers/future teachers/principles + superintendents must use evidence from cognitive science. Goals: an informed teacher is a powerful leader/lead your own PD/lead PD for others using the PTs/reflect to spark powerful conversations/use PT implementation checklists	
Chapter 12 Do It Yourself Retrieval Guide: Get the book and fill in this section to check your understanding	
Conclusion: Re image on cover: four sparks are the PTs, the fifth spark is YOU!	