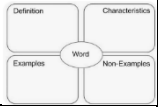


Planning summary by Helen Reynolds @itslearningcurve.education

| Book/theory                                                                                                                                                          | Main points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Do this                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <b>Rosenshine's Principles</b><br>Rosenshine (1982)<br>Author: <b>Tom Sherrington</b> , July, 2020<br>Contribution: <b>Direct instruction (di)</b>                   | <ul style="list-style-type: none"> <li>• <b>10 Principles</b>: Daily review, small steps, ask questions, provide models, provide practice, check for understanding, high success rate, scaffold difficult tasks, indep. Practices, weekly/monthly review</li> <li>• <b>4 strands</b>: 1. <b>Sequencing concepts and modelling</b> – present material in small steps, give clear/detailed instructions/explanations, think aloud/model steps, many examples, re-teach when necessary 2. <b>Questioning</b> – ask a LOT of questions, get them to explain what they've learned, check response of ALL, provide systematic feedback and corrections, 3. <b>Reviewing material</b> - begin with a review of previous learning, re-teach if necessary, 4. <b>Stages of practice</b> – high level of practice, guided at first, prep &amp; monitor indep. practice</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>• link abstract to concrete/tacit</li> <li>• use writing frames/scaffolds</li> <li>• anticipate errors/misconceptions</li> <li>• plan questions and answers to check for the understanding you want</li> <li>• revisit list of 'probes' often</li> <li>• use 'what have you understood by...' to encourage talk (with self/others)</li> <li>• review in different formats for transfer</li> <li>• craft the transition to independent practice/work – needs careful planning</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Generative Learning</b><br>Fiorella & Mayer (2015)<br><br>Authors: <b>Zoe &amp; Mark Enser</b> , Oct 2020<br><br>Contribution: <b>Generative learning concept</b> | <ul style="list-style-type: none"> <li>• <b>Generative learning</b> involves 'making sense' of our experience by testing it against what we already know (constructing schema).</li> <li>• <b>SOI = Select, Organise, Integrate</b> (Mayer's model of memory) = generating learning, but taking into account cognitive load (CL). Mighty 'Ms' = <b>metacognition</b> and <b>motivation</b>, to promote self-efficacy + independence/motivation. Use SOI to structure strategies w/effect size/e.g.: 1. <b>Teaching</b>/0.77, get them to teach others 2. <b>Imagining</b>/0.65, actively try to make a mental model 3. <b>Mapping</b>/ 0.62, use half-filled in maps, 3. <b>Self-testing</b>/0.62, make flash cards, SLOP 5. <b>Self-explaining</b>/ 0.61, self-Socratic questioning 6. <b>Enacting</b>/ 0.51, concrete models to help concrete-abstract 7. <b>Summarising</b>/0.5, Cornell notes 8. <b>Drawing</b>/ 0.4, turn text into drawings. Teachers (Ts) ensure students (Ss) have <b>requisite background knowledge</b> (BK) to implement strategies &amp; avoid misconceptions, (from my reading of original F &amp; M) notice the <b>Boundary Conditions</b> of any study cited.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• make the metacognition explicit as they're working</li> <li>• introduce SOI</li> <li>• teach effective note taking</li> <li>• use video clips as opportunities to practice summarizing</li> <li>• longer infrequent summaries &gt; short and often</li> <li>• use concept maps, knowledge maps, graphic organizers (@olicav book)</li> <li>• prefill maps to reduce cl</li> <li>• uses as spaced learning</li> <li>• use gesturing/encourage enacting</li> <li>• try structured self-explaining</li> <li>• try structured imagining</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Cognitive Load Theory</b><br>John Sweller (1988)<br><br>Author: <b>Oliver Lovell</b> , Oct 2020<br><br>Contribution: <b>Cognitive load theory</b>                 | <ul style="list-style-type: none"> <li>• "CLT is the <b>single most important thing</b> for teachers to know."</li> <li>• Dylan Wiliam (2017).</li> <li>• <b>Maximize learning</b>: reduce extraneous load, <b>optimize</b> intrinsic load. <b>Purpose of instruction</b> is to <b>increase K in long-term memory (LTM)</b>. Think about cognitive load (CL) in terms of:</li> <li>• <b>Architecture</b> – environment = <b>unlimited</b> external store of info, <b>LTM</b> = <b>unlimited</b> internal store, <b>WM</b> is <b>limited</b>, new info takes <b>lots</b> of WM</li> <li>• <b>Biology</b> – bio <b>primary</b> = speaking, faces etc. is <b>automatic</b> (can't be taught), bio <b>secondary</b> = reading, math etc <b>is not</b> (has to be taught),</li> <li>• <b>Categorization</b> – of load into <b>intrinsic CL</b>, <b>ICL</b> (due to nature of task) – reduce by keeping as simple as possible, <b>extraneous CL</b>, <b>ECL</b> (not to do with the task), monitor WM overload due to both.</li> <li>• <b>Domains</b> – domain-<b>general skills</b> = bio <b>primary</b>, domain-<b>specific skills</b> = bio <b>secondary</b>, <b>experts have</b> domain-specific <b>K</b> that <b>novices don't</b> have, so <b>can't use same strategies</b> for novices as for experts, <b>expertise-reversal effect</b> – novices need worked examples not problem solving (or they're slowed down), experts need the opposite, can learn with/ from more ECL/more variation</li> <li>• <b>Elements</b> – element interactivity = source of CL associated with <b>elements</b> + level of complexity of <b>interactions</b></li> <li>• In reducing ECL, redundancy will mean ECL (more for experts than novices), use modality effect - brain uses parallel visual/auditory channels in parallel which helps WM = dual-coding when in LTM.</li> </ul> | <ul style="list-style-type: none"> <li>• use practice to move to LTM</li> <li>• don't confuse bio primary and bio secondary</li> <li>• optimize ICL through <ul style="list-style-type: none"> <li>○ good curriculum sequencing</li> <li>○ pre-teaching vocab/ content/skills</li> <li>○ chunking/break down skills (part→whole)</li> <li>○ overview first (whole→part)</li> <li>○ chaining: forwards – teach skills in order they will meet them, or backwards</li> <li>○ snowball – pick up previous stuff</li> <li>○ manipulate the emphasis to suit task</li> </ul> </li> <li>• reduce ECL <ul style="list-style-type: none"> <li>○ stop talking when they're reading</li> <li>○ integrate text with images (dual coding)</li> <li>○ care with effects: split-attention/ transient/modality</li> <li>○ do an example then get them to do similar one immediately so they 'borrow from an expert'</li> <li>○ make worksheets that include self-explanation of how to solve problems</li> <li>○ use more goal-free problems (with restricted actions, rapid feedback) to reduce element interactivity, focus on learning</li> </ul> </li> </ul> |
| <b>Cognitive Apprenticeship</b><br>Collins et all (1991)<br><br>Author: <b>John Tomsett</b> , Feb 2021                                                               | <ul style="list-style-type: none"> <li>• <b>Experts</b> identify essential features/what to ignore/codify essential features into model/work logically to solve problems/synthesize . <b>Cognitive apprenticeship</b> = <b>Making Thinking Visible</b> environment has</li> <li>• <b>Subject content</b>: 1. <b>Domain K</b> 2. <b>Strategic K</b> = <b>heuristics</b> (tricks of the trade)/<b>control</b> (using <b>metacognition</b>) + how to learn heuristics or metacognitive strategies.</li> <li>• <b>Teaching methods</b>: 1. Change their brains with <b>modelling</b> (externalizing the internal)/ <b>coaching</b> (helping them)/ <b>scaffolding</b> (providing support) 2. Develop their skills with <b>articulation</b> (</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• tell students what you think when you start a problem specifically: <ul style="list-style-type: none"> <li>○ how you identify the essential</li> <li>○ how you codify</li> <li>○ how you solve (not just this one)</li> </ul> </li> <li>• be explicit about heuristics/metacognition</li> <li>• start with an overview – zoom in/zoom out</li> <li>• <b>deliberately</b> decide types and order of tasks</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| Book/theory                                                                                                                                                           | Main points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Do this                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <b>Cognitive Apprenticeship continued</b><br><br>Contribution: <b>Assimilation theory</b>                                                                             | answering questions, talking about strategies) / <b>reflection</b> (comparing to experts or other students (Ss)) 3. Encourage autonomy with <b>exploration</b> (trying it on their own).<br>• <b>Sequencing</b> : 1. Global (map of terrain) <b>before</b> local (tasks or bits of task) 2. Increasing <b>complexity</b> (skills need are harder) 3. Increasing <b>diversity</b> (need lots of different skills).<br>• <b>Sociology</b> : 1. <b>Situated</b> learning (contexts should reflect uses of K in the domain) 2. <b>Community</b> of practice (sharing experience) 3. <b>Motivation</b> (becomes <b>intrinsic</b> in a community, they set personal goals) 4. <b>Cooperation</b> (working together to achieve goals)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>plan for increased complexity in examples/tasks</li> <li>explicitly coach them</li> <li>be able to articulate why the environment you create promotes cognitive apprenticeship</li> <li>regularly zoom in/out to situate learning throughout, and later</li> <li>describe journey from novice to expert, model types of responses</li> <li>focus on what it means to 'see it like I see it'</li> <li>novices are not mini-experts</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>MARGE Model of Learning</b><br>Shimamura (2018)<br><br>Author: <b>Nimish Lad</b> , July 2021<br><br>Contribution: <b>MARGE model</b>                               | <ul style="list-style-type: none"> <li>Learning = our ability to <b>acquire K from sensory experiences</b>. Treat you subject as a <b>tour</b> and you are the <b>guide</b>. Can be <b>perceptual</b> - senses, <b>conceptual</b> – new info linked to prior K, <b>skill</b> – sport, music. Can be <b>bottom-up</b> using senses, inefficient, or <b>top-down</b> so prior K guides assimilation, efficient.</li> <li><b>Motivate</b> – help them <b>expand the spectrum of 'pleasure-seeking'</b> experiences/get them to <b>push themselves to explore</b> new stuff</li> <li><b>Attend</b> – attention requires <b>effort</b>, they need to know <b>what</b> to attend to, have <b>ways</b> to attend, <b>reasons</b> to attend</li> <li><b>Relate</b> – things <b>stick</b> when we can <b>relate</b> them to prior K so as to securing in LTM, or have <b>places to put them</b> in cognitive architecture</li> <li><b>Generate</b> – <b>memories</b> are <b>long-lasting</b> if they are <b>reactivated</b>, or <b>elaborated</b> on after initial learning, <b>use it or lose it</b></li> <li><b>Evaluate</b> – 'how do I know I've learned it?' metacognition important to develop, help them with self-regulatory strategies, distinguish between 'recollection' and 'familiarity' ≠ knowledge</li> </ul>                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>ask big picture questions</li> <li>tell stories</li> <li>ask questions that need an emotional response e.g. ethics</li> <li>ask qs about new places/ideas</li> <li>make learning goals explicit</li> <li>when chunking don't make it unrecognizable/overcomplicate</li> <li>do linking with compare/ contrast/ categorize</li> <li>visual images/metaphors stick</li> <li>use graphic organizers</li> <li>get them talking to each other</li> <li>teach difference between knowing and illusion of knowing</li> <li>use Frayer model →</li> </ul>                                                                                                                                                                                                           |
| <b>Five Formative Assessment Strategies</b><br>William and Leahy (2015)<br><br>Author: <b>Kate Jones</b> , Sept 2021<br><br>Contribution: <b>Formative assessment</b> | <ul style="list-style-type: none"> <li><b>Formative Assessment (FA)</b> = <b>range of evidence-informed strategies</b> we use to support learners to make progress, informs both, T/learner/peer: TLP</li> <li><b>Where are we going?</b> – TLP – clarifying, sharing, understanding <b>learning intentions</b> and <b>success criteria</b>, Lis may cover many lessons, should be clear, specific, desirably difficult, SC should be transparent, checked regularly with retrieval practice, beware toxic mutation = doing it every lesson, telling them exactly so it's no fun</li> <li><b>What do they know?</b> – engineering <b>effective discussions, tasks, activities</b>, RP, TLAC strategies, discussion SHAPE Sentences, Hand away from mouth, Articulate, Project, Eye contact + elaboration works, use MWBs often, care with MCQs,</li> <li><b>How should we feed back?</b> – they <b>don't</b> necessarily learn what we teach them, good feedback = understandable/ <b>acted on</b> by the learner/helpful/ <b>actionable</b>, Inside the Black Box/comment <b>only</b> marking, only grade when absolutely necessary, online works too.</li> <li><b>How can they collaborate/assess each other?</b> – S – collaboration/ peer tutoring/peer assessment can save time, enhance learning, be motivating, focus on Kind, Specific, Helpful feedback</li> <li><b>How can they own their own learning?</b> – S – we work towards our own redundancy, they leave with passion, online tools can help-</li> </ul> | <ul style="list-style-type: none"> <li>use Big Question for Lis</li> <li>make LI context free</li> <li>check for clarity, difficulty of SC</li> <li>check with RP/spaced/varied</li> <li>use Austin's butterfly/peers</li> <li>use TLAC techniques for questions</li> <li>get more talk, use SHAPE</li> <li>elaborate from MWB answers – bounce answers to other Ss</li> <li>use hinge questions for MCQ</li> <li>use 25% each: mark in detail, skim, self-assess + check, peer assess</li> <li>use detective work strategy</li> <li>redraft/redo, rehearse/repeat, revisit/respond, re-learn/re-test, research/record (Sherrington)</li> <li>use peer placement mats</li> <li>use think/pair/share, paired retrieval</li> <li>teach Ss to plan/monitor/evaluate</li> <li>use online Carousel, Seneca for practice</li> <li>teach metacognition and self-regulation skills</li> </ul> |
| <b>An Ethic of Excellence</b><br>Ron Berger (2003)<br><br>Author: <b>Sonia Thompson</b> , Feb 2022<br><br>Contribution: <b>Austin's Butterfly</b>                     | <ul style="list-style-type: none"> <li><b>Austin's butterfly</b> = <b>don't accept mediocrity</b>, especially from the disadvantaged, great model of <b>critique</b> and revision, how to give <b>specific feedback</b>, power of <b>perseverance</b>, power of <b>pushing on</b>,</li> <li><b>Culture of excellence</b> – ethics/values that compel Ss to achieve more, engender culture so it's cool to care about academic excellence, evidence informed practice = best research evidence + context + T experience, teaching as a craft that develops</li> <li><b>Work of excellence</b> – make <b>modelling</b> exemplify success criteria, make <b>multiple drafts</b> with time/guiding/collaboration produce evidence of progress, make goal of <b>critique</b> sharing K and skills to get fluency, make work public to value/appreciate/raise the bar/witness</li> <li><b>Teaching of excellence</b> – teaching is hard, doing it well needs reading/ researching/observing others/finding best practice</li> <li><b>Embed excellence</b> by: assigning work that matters/studying what excellence looks like/building a culture of critique/require multiple revisions/provide opportunities for public performance</li> </ul>                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>go for widespread equitable routines/procedures</li> <li>love learning and show it</li> <li>use models and intermediate steps</li> <li>drafts are about striving for excellence</li> <li>use critiquing of models/steps</li> <li>give time for comments</li> <li>beware expertise reversal effect – move from worked examples to problem solving</li> <li>talk about fluency as explicit goal</li> <li>'name it to know it'</li> <li>relish the scholarship needed to teach well</li> <li>school improve when teachers improve</li> <li>mastery of teaching (like anything) takes years, needs guidance</li> </ul>                                                                                                                                                                                                                             |

| Book/theory                                                                                                                                                        | Main points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Do this                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <b>The Extended Mind</b> Annie Murphy Paul (2022)<br><br>Authors: D. Goodwin, E. Turner, O. Caviglioli, May 2022<br>Contribution: <b>Embodied cognition</b>        | <ul style="list-style-type: none"> <li>Cognition extends beyond the brain to the body tools, environments.</li> <li><b>4 cognitions:</b> 1. <b>Embodied</b> - gestures enhance thinking and learning as movement (congruent, novel, self-referential, metaphorical) helps memory, the body stores information (interoception), capacity to regulate attention/behaviour/ movement is limited – cognitive load</li> <li><b>2.Situated</b> – external representations reduce transience/integrate cognitive loops, including drawing/note-taking/mapping, you do more, more tools, extend working memory we record memories like spaces, larger spaces reduce cognitive load</li> <li><b>3. Distributed</b> – running our thoughts through others' minds, cognitive apprenticeship, Lemov STAR, paired teaching/retrieval,</li> <li><b>4. Integrated</b> – intelligence = interactions brain/body/space/others, fluid (rises / declines) vs. crystallized intelligence (grows with effort).</li> </ul>                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>big up my use of gestures/get them to try it – plan for that</li> <li>watch their gestures movement for information</li> <li>finger tracing of maps/graphs</li> <li>remember CL and stillness</li> <li>utilize situation- transient effect</li> <li>use manipulatives (maps etc.)</li> <li>think about use of physical space</li> <li>care confirmation bias</li> <li>make my expert thinking visible</li> <li>learn how to do good group work</li> <li>more saying out loud</li> </ul>                                                                                                                                                                                                       |
| <b>Strengthening the Student Toolbox</b> Dunlosky (2013)<br><br>Author: Amarbeer Singh Gill, June 2022<br><br>Contribution: <b>Strategies that work</b>            | <ul style="list-style-type: none"> <li>Research identified '<b>spectrum of effectiveness</b>'. There are few 'bad' strategies – <b>less</b> effective strategies <b>done well</b> &gt;&gt; <b>more</b> effective strategies <b>done badly</b>. Willingham's model of learning → <b>expect forgetting</b>. Learning is <b>invisible</b> + is a <b>permanent change in LTM</b>.</li> <li><b>Most effective strategies</b> (reviewed by Dunlosky) are:<br/>             1/2. <b>Practice testing/Distributed practice</b> = <b>very effective</b> in lots of formats/ages/prior K/subjects/levels. 2. <b>Interleaved practice</b> = effective in maths/concept learning (needs more research (NMR)) 3.. <b>Elaborative interrogation</b>- NMR 4. <b>Self-explanation</b> – NMR 5. <b>Rereading</b> – <b>distributed rereading</b> ok, but time could be better spent 6. <b>Highlighting and underlining</b> – not very effective, can be a stepping stone 7. <b>Summarisation</b> – they must be taught how to do it, may not be worth time 8. <b>Keyword mnemonic</b> – short lived use in languages 9. <b>Imagery for text</b> – benefits limited to image laden text, NMR.</li> </ul>                                                                                                                                                                  | <ul style="list-style-type: none"> <li>teach Ss to consciously choose an effective strategy</li> <li>teach Ss the model of memory</li> <li>plan for forgetting (and get them to expect it too)</li> <li>don't confuse good retrieval strength for learning</li> <li>plan to improve storage strength through testing with feedback (immediate + delayed)</li> <li>space out testing, tell them</li> <li>interleave within the subject</li> <li>use similarities/differences, examples and non-examples</li> <li>make sure question order is not predictable</li> <li>questions should be planned in terms of distributed practice (to upset forgetting)</li> </ul>                                                                   |
| <b>Meaningful Learning</b> Ausubel (1963)<br><br>Author: Sarah Cottingham, July 2023<br><br>Contribution: <b>Assimilation theory</b>                               | <ul style="list-style-type: none"> <li><b>Goal</b> – Ss develop a <b>body of knowledge</b> (BoK) (vast, connected, organised, stable...)</li> <li><b>Meaningful learning</b> (ML) = <b>connecting new</b> information to <b>existing</b> K to make new meaning in the <b>minds</b> of Ss (which we can't see) – happens through <b>assimilation</b> → meaningful forgetting, leaving accessible and <b>dissociable</b> residue</li> <li>BoKs have hierarchy: <b>subsumers</b> (generalised/inclusive ideas) assimilate details = subsumptive learning.</li> <li>Initial meaning not enough – must <b>integrate</b> under correct subsumer</li> <li>Existing K = cognitive structure determines speed/ quality of ML, to do so requires <b>effort</b>.</li> <li><b>Organizers</b> can help: advance/ expository/ comparative ONLY if info is not already well organized. It is <b>links</b> that make meaning – be explicit</li> <li>Checking for <b>meaning</b> (rephrased) ≠ checking for <b>understanding</b> (CfU) (verbatim or as expected on rubrics), keeping meaning <b>alive</b> = <b>meaningful forgetting</b> – assimilated so no longer needed, needs <b>review</b> to <b>stabilize</b> memories.</li> </ul>                                                                                                                                | <ul style="list-style-type: none"> <li>elicit existing K/enable S to do so</li> <li>teach/indicate subsumers at start/end</li> <li>make similarities/ differences explicit to get under correct subsumer</li> <li>check for needed prior knowledge, and teach accordingly</li> <li>make links explicit</li> <li>identify subsumers at each level</li> <li>use organizers</li> <li>use self-explanation and concept mapping</li> <li>use recapping, re-reading, retrieval practice</li> <li>tell students why all this matters</li> <li>curriculum should be developed/organised with meaningful learning in mind</li> <li>aim for 'meaningful forgetting'</li> <li>plan for checking for meaning – usually via exposition</li> </ul> |
| <b>Desirable Difficulties</b> Bjork & Bjork (2011)<br><br>Authors: Jade Pearce, Isaac Moore, March 2024<br><br>Contribution: <b>Desirable difficulties concept</b> | <ul style="list-style-type: none"> <li>Performance (during/soon after instruction) ≠ learning (change in LTM)</li> <li><b>Storage strength</b> in LTM ↑ when <b>retrieval strength</b> ↓ (by forgetting)</li> <li>(undesirable difficulties: immediate performance ↓, learning ↓)</li> <li><b>Desirable difficulties:</b> immediate performance ↓, <b>learning</b> ↑ by<br/>             1. <b>Spacing</b> (spreading out teaching/testing - upset forgetting curve)<br/>             2. <b>Varying conditions</b> of practice (deeper understanding/ increased flexibility due to richer variety – NB they won't like this)<br/>             3. <b>Interleaving</b> (mixing different types of qs, egs challenges STM, but improves discrimination - short term performance ↓ <b>LTM</b> ↑)<br/>             4. <b>Practice testing</b> (testing effect is strong + desirable if retrieving not recognizing so use MCQs with caution or add confidence weighting)</li> <li>Ss will <b>NOT</b> use desirable difficulties when working <b>independently</b> <b>because</b> 1. Those strategies impede performance 2. they judge their learning inaccurately 3. they think people are just smart 4. they do the easy thing because they don't know any different</li> <li>Don't confuse 'desirable difficulties' with 'productive struggle'.</li> </ul> | <ul style="list-style-type: none"> <li>teach model of learning/memory to give language to discussions with Ss</li> <li>be aware of storage vs retrieval strength when asking qs/judging answers</li> <li>space homeworks/ tests/ make tests cumulative /revisit lessons</li> <li>switch up conditions – the place (home/school) / time/ way materials are presented examples/ explanations</li> <li>interleave content+ lots of varied compare/contrast</li> <li>do effortful spaced retrieval practice over time with feedback they process</li> <li>teach them why they should choose hard things, make it advantageous to do so</li> <li>encourage Ss to reflect on their progress</li> </ul>                                     |

| Book/theory                                                                                                                                                                   | Main points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Do this                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>Self-Efficacy Theory</b><br>Albert Bandura (1977)<br><br>Authors: <b>Dr Neil Gilbride</b> , Jan 2025<br><br>Contribution: <b>Self-Efficacy Theory</b>                      | <ul style="list-style-type: none"> <li>• <b>Definition</b>: “People’s <b>judgements</b> of their abilities to organise and <b>execute course of action</b> required to attain designated types of <b>performance</b>”: judgements may <i>not</i> be accurate.</li> <li>• <b>Key research</b>: how we interact with the environment/other people affects our behaviour (<b>Social Learning Theory</b>), what we believe about our ability affects our motivation, effort and success (<b>Self-Efficacy SE</b>), our learning and behaviour depends on personal/environmental factors/behaviour (Social Cognitive Theory)</li> <li>• <b>You are more likely to act if you believe you will be successful</b></li> <li>• You can understand others’ behaviour through the lens of self-efficacy</li> <li>• Interplay of SE <b>specific to the domain</b> or behaviour/we learn from <b>watching others</b>/self and environment <b>interacting/agency</b> can be developed (ours and others)/break the self-fulfilling prophecy cycle</li> <li>• SE is <b>NOT</b>: <b>confidence</b> (too general/ill-defined) or <b>self-esteem</b> (global evaluation/self-worth)</li> <li>• SE + <b>Instruction design</b> – insight: we learn by watching others (focus on attention, retention, reproduction, motivation, credibility)</li> <li>• SE + <b>Understanding practice</b> – insight: mastery and managing failure (focus on timing, chunking, scaffolding)</li> <li>• SE + <b>Understanding behaviour</b> – insight: SE affects behaviour and we can intervene (focus on using SE lens to interpret/intervene).</li> </ul>                                                          | <ul style="list-style-type: none"> <li>• ← remember definition!</li> <li>• SE is domain/behaviour specific</li> <li>• SE NOT fixed – modelling works</li> <li>• SE → Action → Agency → SE</li> <li>• SE is a lens to give us insights</li> <li>• develop S belief they can enact the behaviour we want, that will be successful</li> <li>• scaffolding helps bridge the lower SE at the start of learning</li> <li>• failure must be normalised – teach that it is necessary for progress</li> <li>• both the model + teacher must have credibility</li> <li>• success and motivation are bi-directional, but success helps to steer SE at the beginning</li> <li>• be explicit about how Ss actions/effort lead to success through feedback</li> <li>• adjust behaviour by <ul style="list-style-type: none"> <li>○ goal setting (specific to domain)</li> <li>○ role modelling (via grouping/whole class talk)</li> <li>○ pep talk (specific help/advice)</li> <li>○ practice (set up chances to succeed)</li> </ul> </li> </ul>                                                                                     |
| <b>Hidden Lives of Learners</b><br>Graham Nuthall (2007)<br><br>Author: <b>Bennie Kara</b> , Dec 2025<br><br>Contribution: <b>‘Three worlds of instruction/Rule of Three’</b> | <ul style="list-style-type: none"> <li>• Hard to judge teaching quality, there’s many <b>poor proxies</b> for learning</li> <li>• T gauging ‘<b>with-it-ness</b>’ in class <b>cannot</b> be replicated with AI</li> <li>• Ss have ‘<b>unique learning fingerprint</b>’ from <b>prior K (PK) + experience</b> (exp) + how they navigate their <b>cognitive framework</b> (CF)</li> <li>• Three worlds: <b>Public</b> (what the T sees), <b>Social</b> (roles Ss establish), <b>Private</b> (where they grow, learn, change beliefs - invisible)</li> <li>• <b>‘Rule of Three’</b> – need to <b>encounter learning material</b> in <b>at least 3 significant ways</b> in order to learn it (3 or 4), 80-85% accurate</li> <li>• <b>Determine PK</b>= v. important, <b>determine how S make meaning</b>= v.hard</li> <li>• Engagement with <b>cultures</b> (social/academic) <b>affects learning more</b> than <b>ability</b>, need to be positive, in a safe space</li> <li>• Feedback: written comments, grade, verbal comments, tech based all have <b>pros and cons</b>, + group/peer/individual, <b>metacognition vital</b></li> <li>• Individualisation = observing Ss, providing <b>multiple entry points</b></li> <li>• 3 x via <b>T-managed</b> or <b>self-generated</b> impactful activities</li> <li>• Model <b>culture of enquiry</b> – make mistakes, be openly curious</li> <li>• <b>Care</b> with <b>data</b> (learning not linear), + with <b>tech</b> (lacks social factors)</li> <li>• No single method works, <b>mix up direct instruction with interactions</b></li> <li>• Ethnicity ≠ ability, but <b>diverse perspectives</b> help to bridge gaps.</li> </ul> | <ul style="list-style-type: none"> <li>• use evidence-based, flexible methods + adapt to how Ss learn</li> <li>• mini-whiteboards, cold-calling, show-telling access Private world</li> <li>• address all 3 worlds in teaching</li> <li>• plan for variation: PK, exp, CF</li> <li>• use diagnostic tests, informal obs, misconceptions, metacognition to diagnose PK</li> <li>• quality interactions &gt; ability</li> <li>• feedback should be frequent and diverse, not just summative</li> <li>• talk about ‘how they learned it’</li> <li>• teaching = dynamic response to needs of all learners (PK, exp, CF)</li> <li>• clear up misconceptions early</li> <li>• avoid too much passive listening; optimise self-generated activities</li> <li>• learning is multi-layered.</li> </ul>                                                                                                                                                                                                                                                                                                                          |
| <b>Direct Instruction</b><br>Englemann & Carnine (1991)<br><br>Author: <b>Tom Needham</b> , Sept 2026<br><br>Contribution: <b>Direct Instruction</b>                          | <ul style="list-style-type: none"> <li>• <b>Direct Instruction (DI)</b> = 3 <b>factors</b>: <b>delivery</b> (review, CfU etc. = direct (di)/explicit instruction (ei) →observable), <b>structural</b> (homogenous grouping, time allocation →somewhat observable), <b>design</b> (choice of examples (e.g.s), sequencing→ least observable, <b>most</b> important)</li> <li>• Huge <b>evidence</b> base, Project Follow Through, effect size 0.59 (Hattie)</li> <li>• <b>Principles</b> of DI: <b>ALL Ss</b> can be taught/improve academically + self-image/succeed, low performers must go faster, T controls all details</li> <li>• <b>3 systems</b>: <b>knowledge</b> (T <b>analyses content</b> (C) <b>FIRST</b>→ structures under Big Ideas→efficient→ Ss can apply to new situations, can teach using spiral or stranded curriculum – pros/cons), <b>communication</b> (should be ‘<b>faultless</b>’, done via e.g.s, need <b>many</b> for breadth/limit, e.g.s AND <i>minimally different</i> non-e.g.s to <b>reduce ambiguity</b>, see book for technical details), <b>behavior</b> (DI lessons: 15% delivery, 85% practice = <b>overlearning</b> → <b>mastery</b> of C = 70% correct 1<sup>st</sup> time of new C, 90% of previous C, 100% of all C by end, place Ss by prior K→ <b>assess by reviews</b>: sufficient /distributed/cumulative/varied, Ss need <b>strategies</b> (steps to achieve a goal) →maximally useful/ generalisable, move to independence via: overt→ covert/ prompted → unprompted/simple → complex contexts/massed→ distributed practice /immediate → delayed FB/T→S as info for task.</li> </ul>                                             | <ul style="list-style-type: none"> <li>• great delivery/structure is <b>no use</b> without design</li> <li>• goal of DI that ALL students learn ALL material + gain positive self-image <b>EFFICIENTLY</b></li> <li>• check out <a href="http://www.nifdi.org">www.nifdi.org</a></li> <li>• basing instruction on DI principles <b>more effective</b></li> <li>• big Ideas link little ideas as an expert sees it</li> <li>• we must organize material to highlight sameness → increases efficiency</li> <li>• Ss learn by e.g.s + learn to generalize based on sameness of qualities too much = incorrect, too little = can’t transfer</li> <li>• definition not enough, need e.g.s to solidify idea</li> <li>• carefully choose e.g.s AND non-e.g.s AND do enough to enable generalisation</li> <li>• mastery = 100% for all – apply SAME standard for low/high performing Ss assessed over time</li> <li>• modelling strategies with visible thinking → tools Ss can use generally</li> <li>• Ss initially need scaffolding with strategies</li> <li>• actively choose strand planning/spiral curriculum</li> </ul> |