



Boosting Medical Performance: Feedback meets Adult Learning Theories and Systems Thinking.

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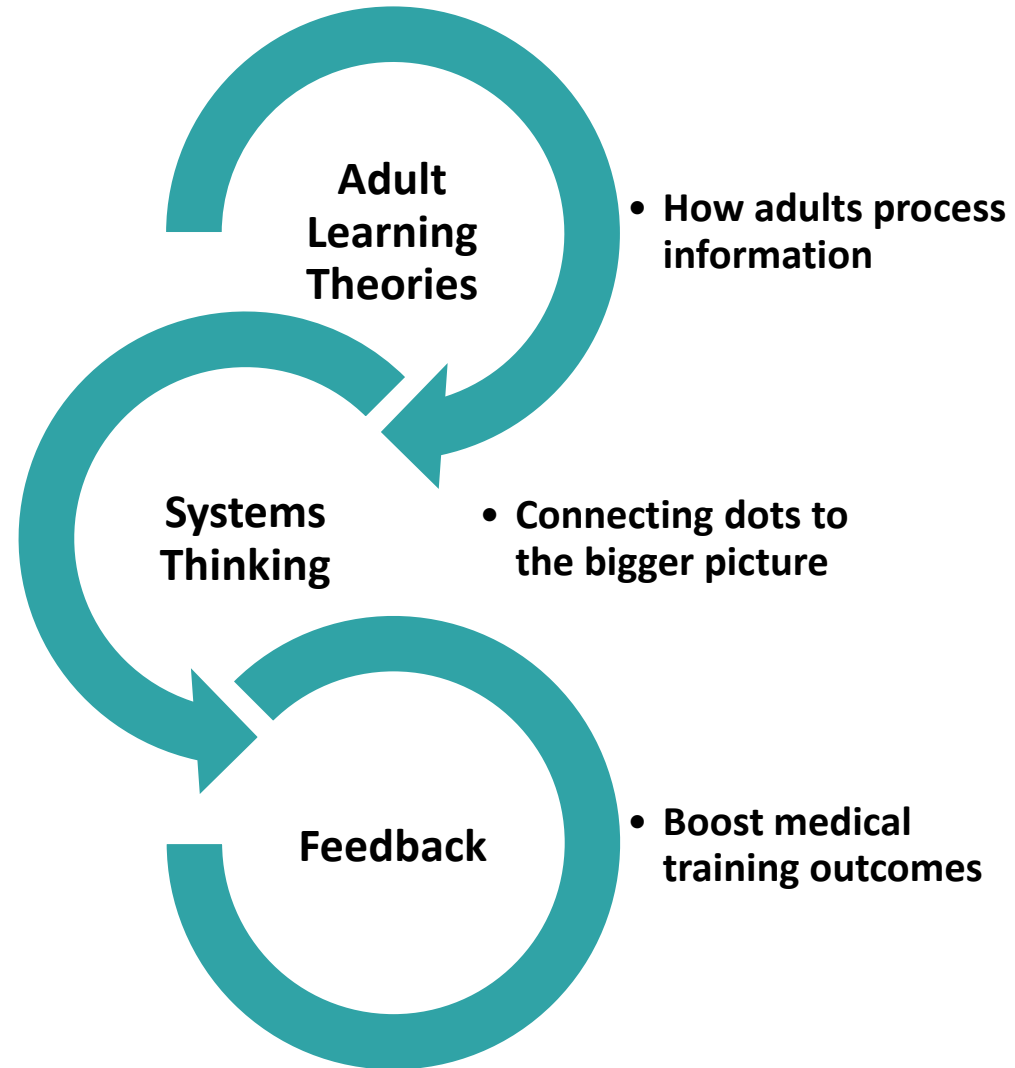
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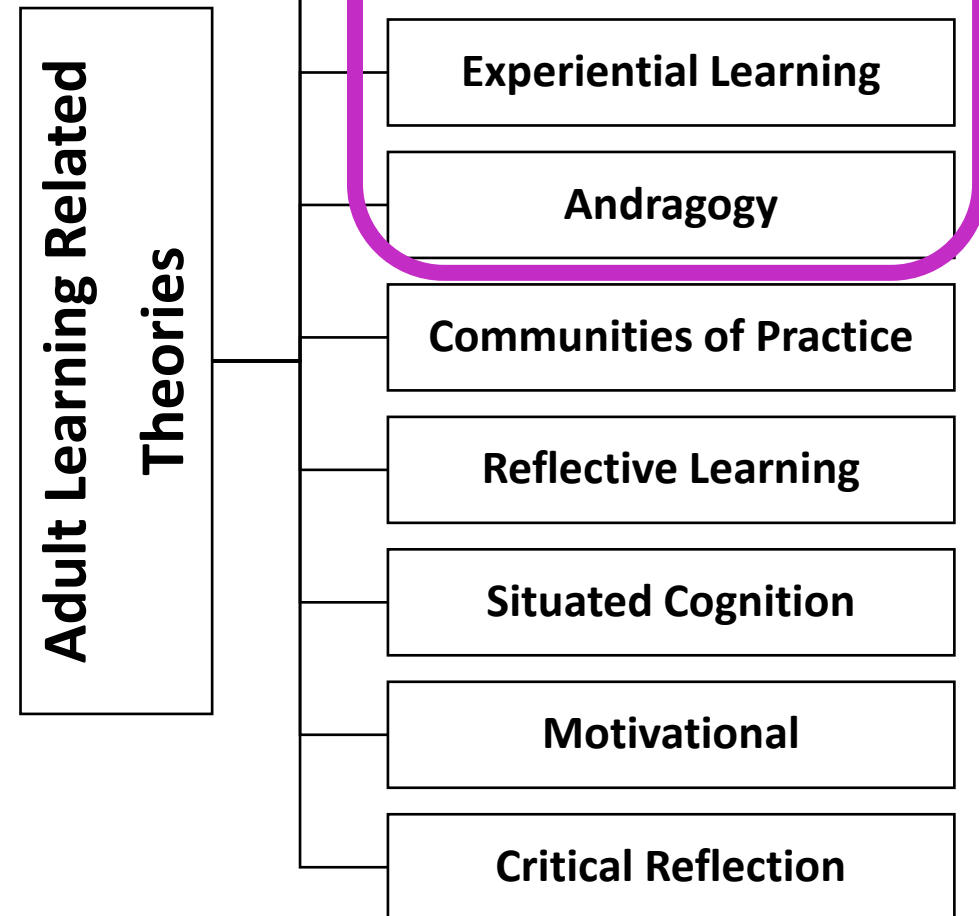
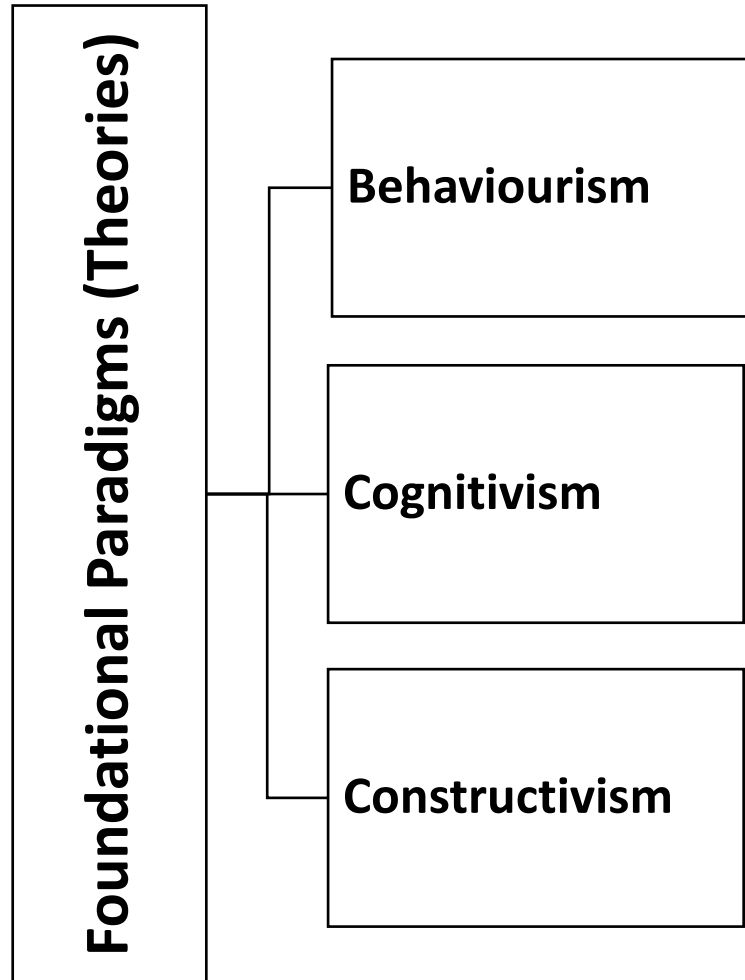
Dr Pamela J. Ferrada

- BBiochem (Hons), PGCert (Harvard), MTeach, PhD Biomedical Engineering.
- Earlier career as a biomedical scientist (human fetal stem cells and HIV diagnosis) and science editor.
- Postdoctoral training at Harvard Medical School – Medical Education
- Member Education, Knowledge and Research Manager at MIPS
- Vice-President, Global Leadership Team, Harvard Alumni for Education SIG – Harvard Alumni Association (HAA)

Our aim for today's session.



Learning theories



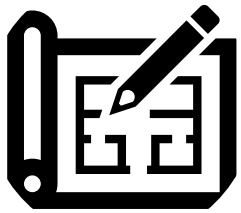
When Adult Learning Theories Unite



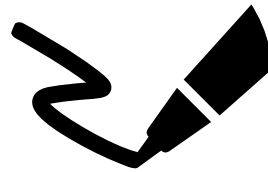


- Experience as a learning resource
- Preference for self-direction and autonomy

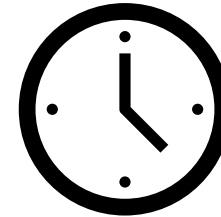
Andragogy - Principles of adult learning



Adult learning requires learner involvement in planning an evaluation.



Leverage experience, including missteps, for learning



Relevance and immediacy drive learning.



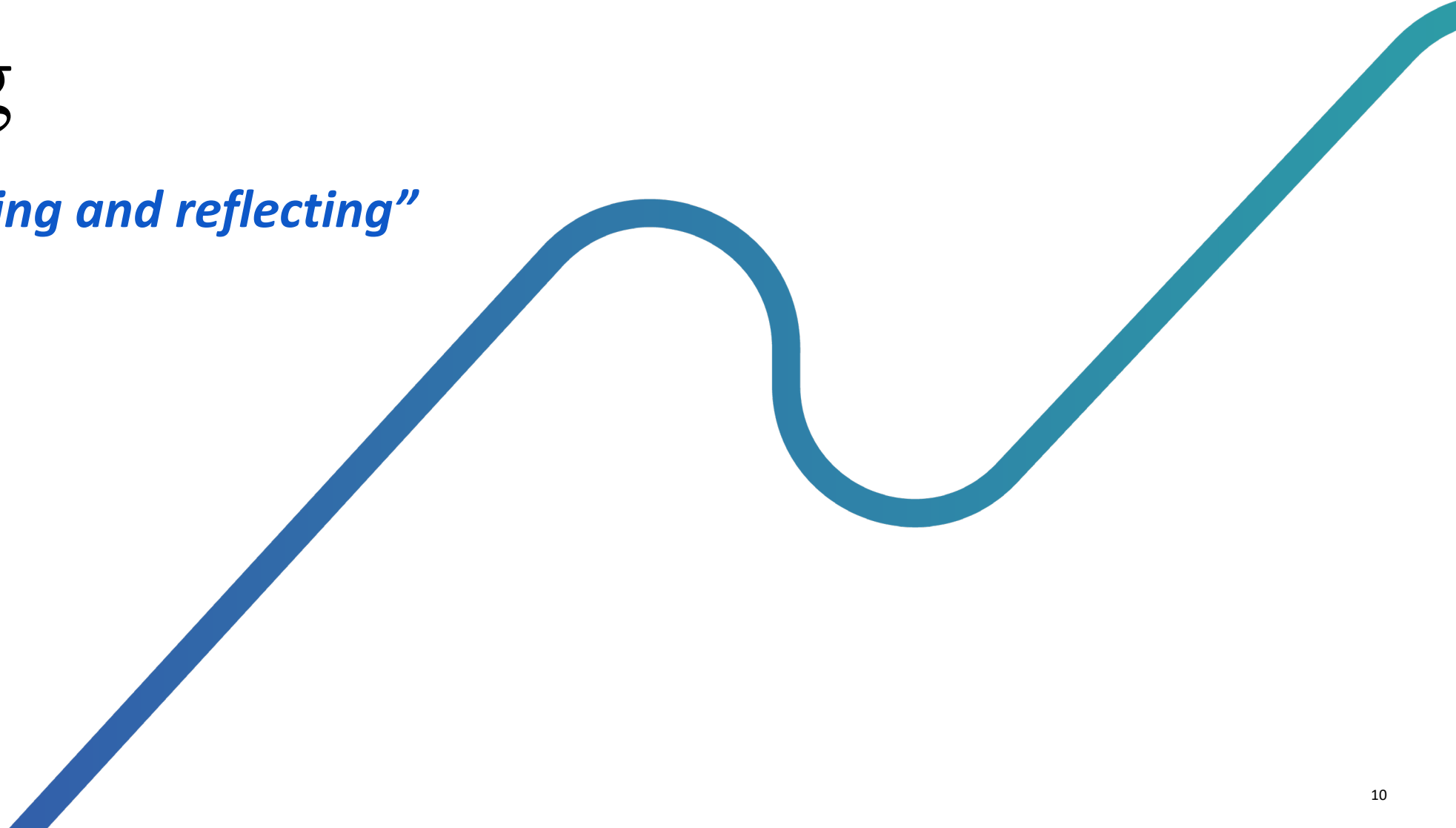
Adults learn to solve problems.

Assumptions of Adult Learners

Self-concept/Self-direction	Experience as a learning resource	Immediate relevance (readiness to learn)	Problem-centred orientation	Motivation
- Encourage learners to set own goals and identify areas of improvement - Promote ownership of learning journey through participatory feedback.	- Acknowledge and integrate learners' prior knowledge and experiences in feedback. - Facilitate reflective conversations that drawn on learners' backgrounds.	- Anchor feedback in real-life situations and practice. - Link feedback to professional behaviours, roles and goals	- Frame feedback as a tool for overcoming obstacles and improving outcomes. - Focus feedback on solving current challenges rather than abstract theory.	Highlight progress and achievements, reinforce sense of competence. - Connect feedback to meaningful outcomes, highlighting the relevance of improvement.

Experiential Learning

“Learning by doing and reflecting”

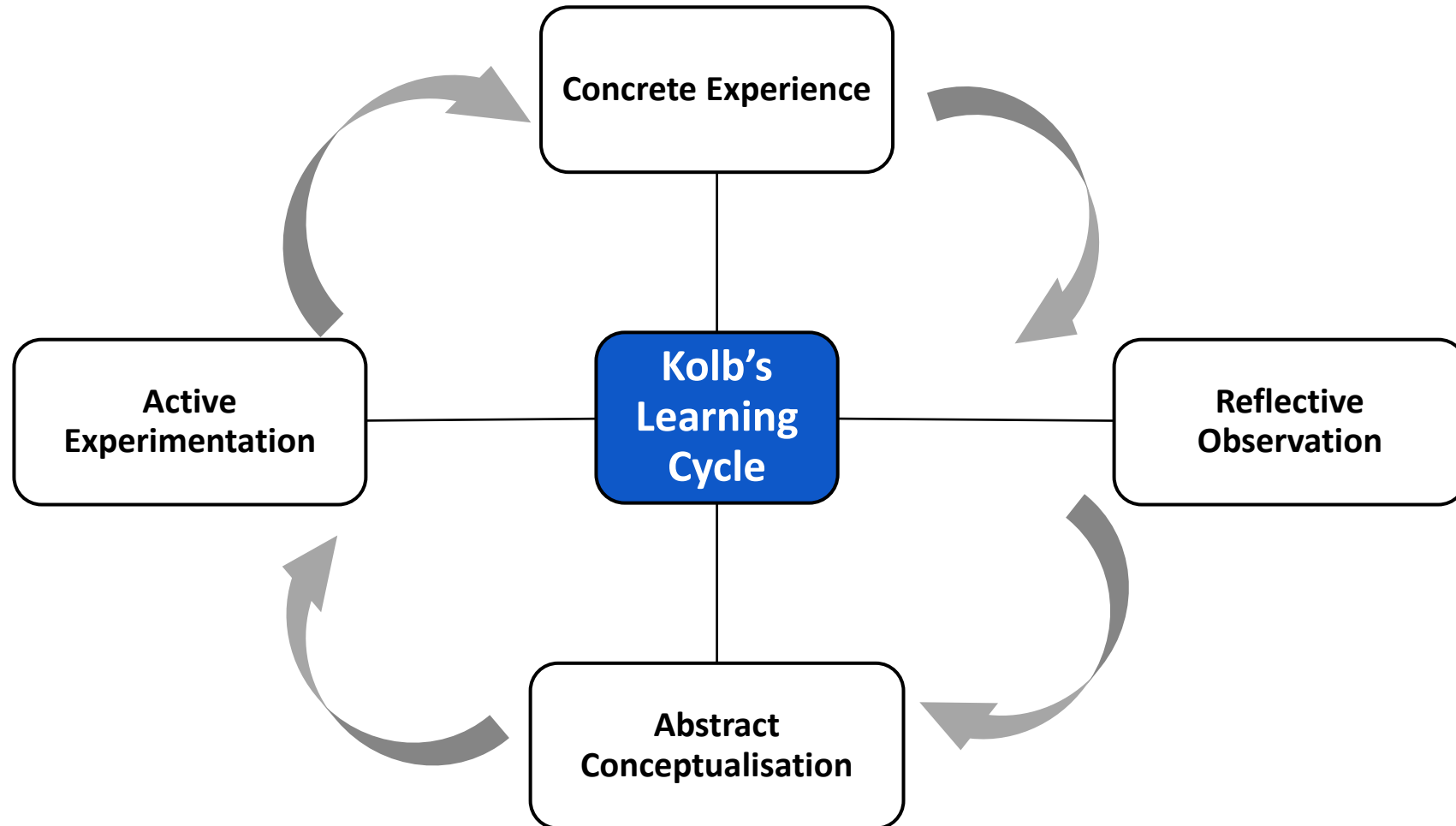


Kolb's Experiential Learning Model

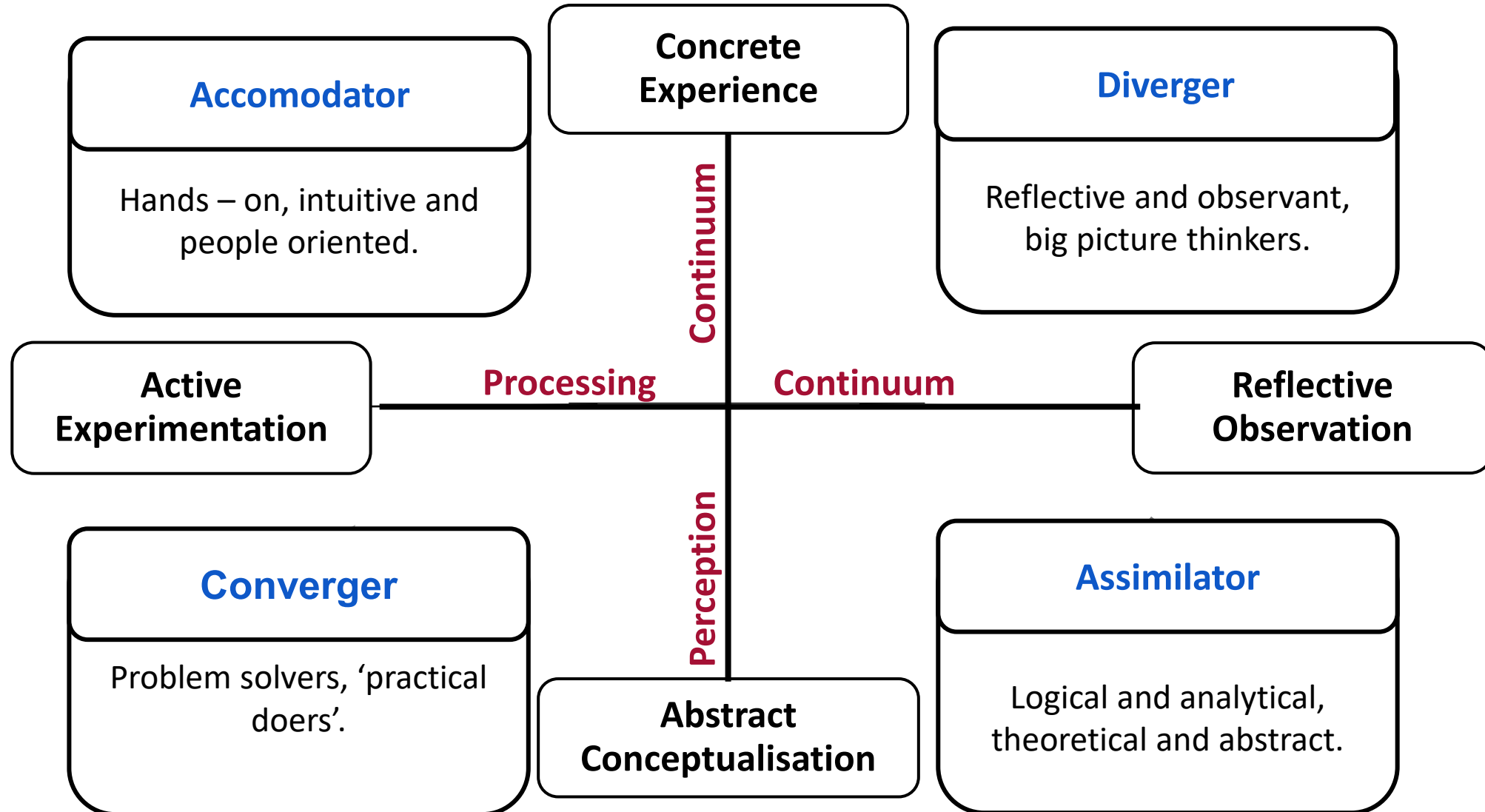
- Learning is a cyclical process
- ***Experience is the foundation of learning***
- Individuals have distinct learning styles
- Reflection is crucial for feedback
- Application of knowledge is essential



Kolb's Experiential Learning Model



Kolb's Experiential Learning Model



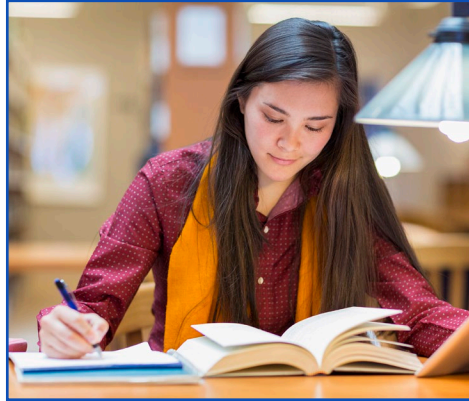
Learning Styles

Diverging



- **Feeling and Watching**
- Perspective taking

Assimilating



- **Watching and Thinking**
- Analytical approach, theories, understanding complex information

Converging



- **Doing and Thinking**
- Analytical approach, understanding complex information

Accommodating



- **Doing and Feeling**
- Hands-on, problem solving based on intuition

McLeod, S. (2017). Kolb's learning styles and experiential learning cycle. Simply psychology, 5.

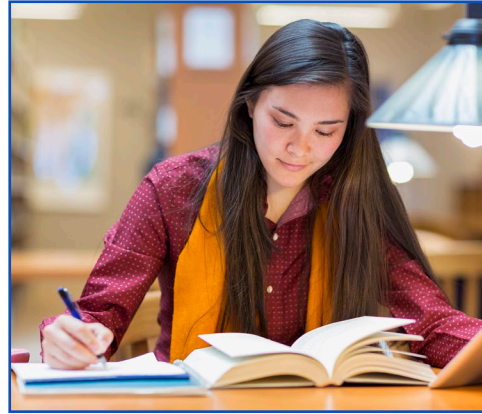
Learning Styles & Feedback

Diverging



- Offer feedback that encourages reflection and discussion
- Invite perspective sharing and brainstorming

Assimilating



- Offer clear, logical explanations and models in feedback
- Encourage time for analysis before application.

Converging



- Offer problem-solving oriented feedback with practical applications
- Use case studies and simulations to test understanding.

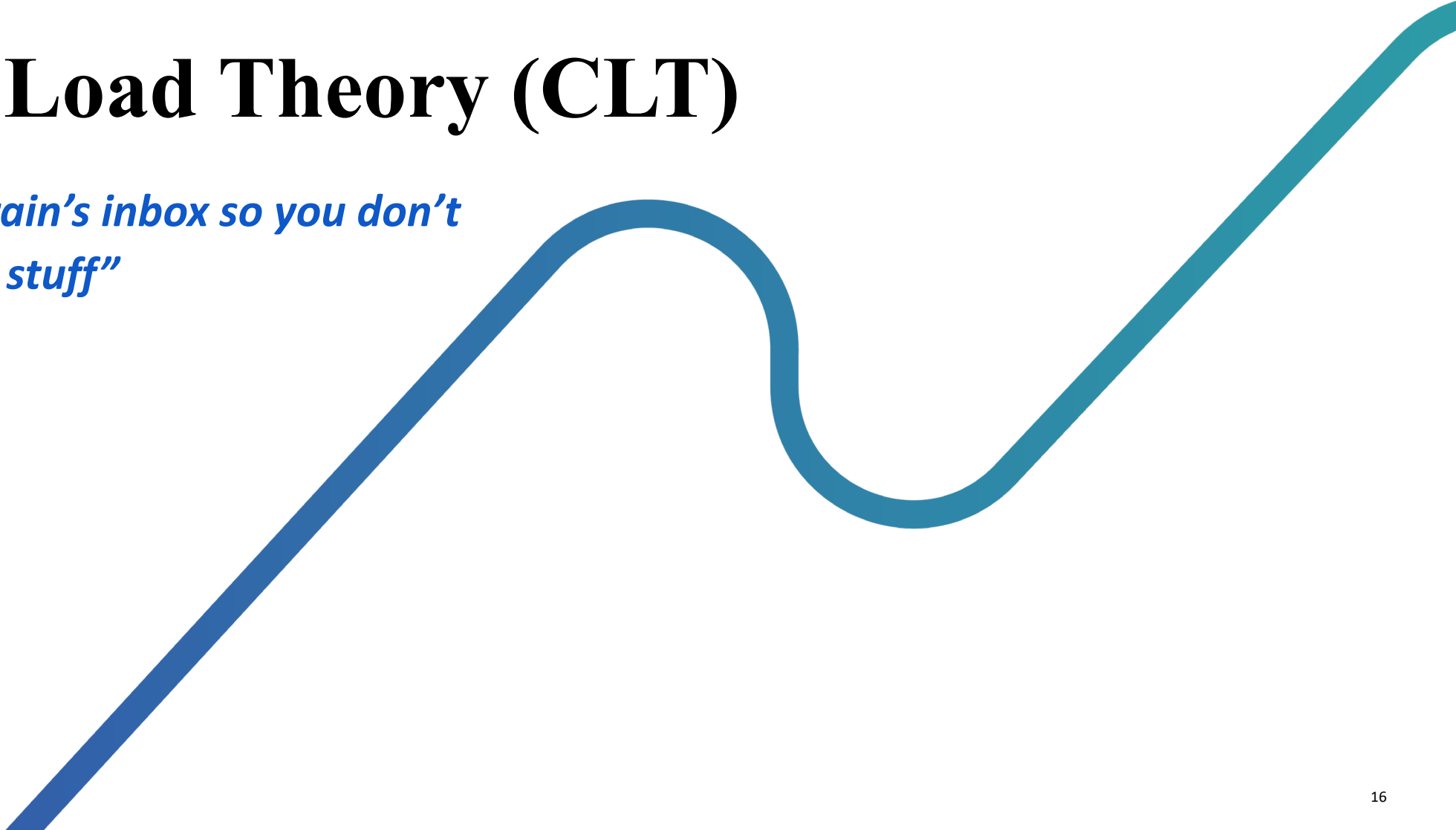
Accommodating



- Offer hands-on, action-oriented feedback during real tasks.
- Encourage trial and error with coaching.

Cognitive Load Theory (CLT)

“Managing your brain’s inbox so you don’t miss the important stuff”



Where can difficulties arise?

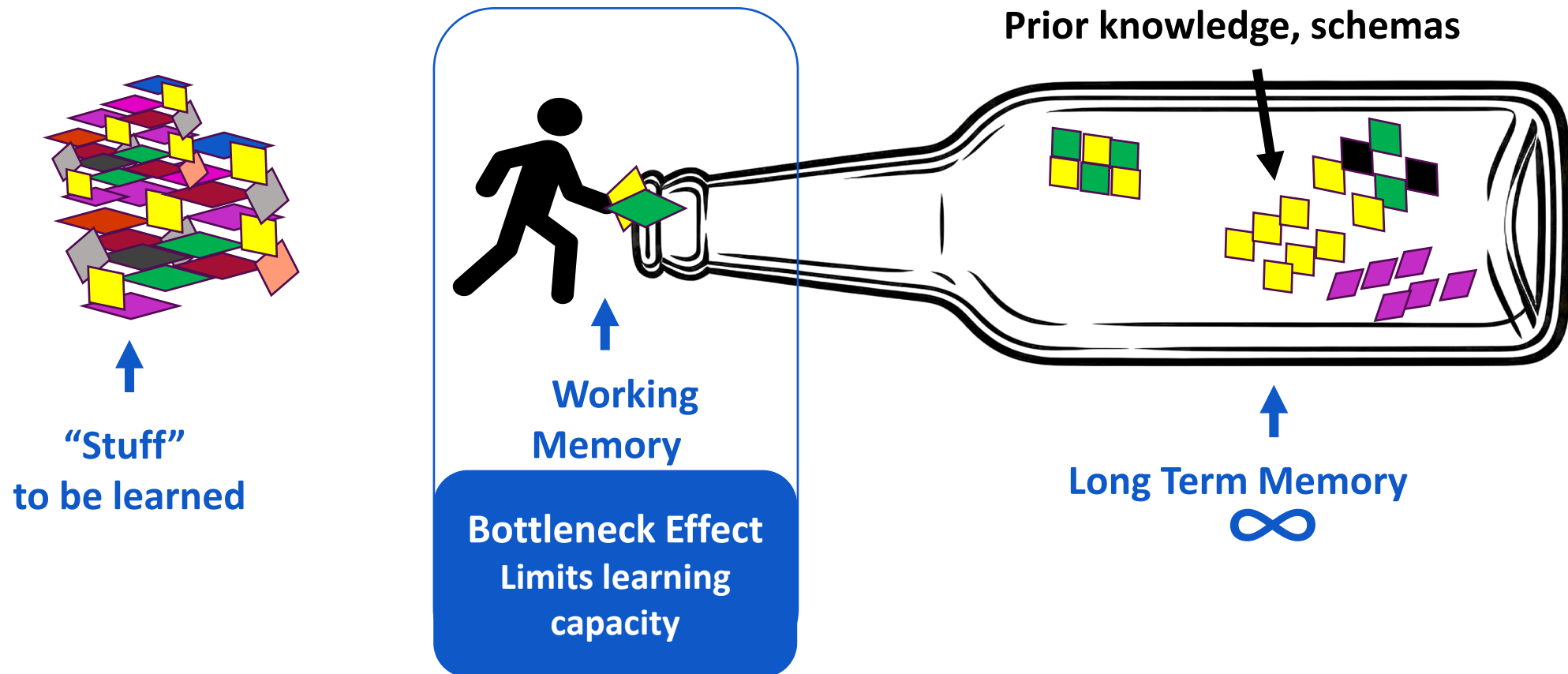
Working Memory's capacity is very limited

- Severely affected by “biologically secondary information”
- Only handles few bits of information simultaneously
- Less than 20 sec span
- New (biologically secondary) information must be processed in WM before being stored in LTM

2. information is
not processed in
working memory

applied,
stored

Why Learning can be hard: The bottleneck of working memory



Cognitive Load Theory & Feedback

Break down feedback
into manageable
chunks of information

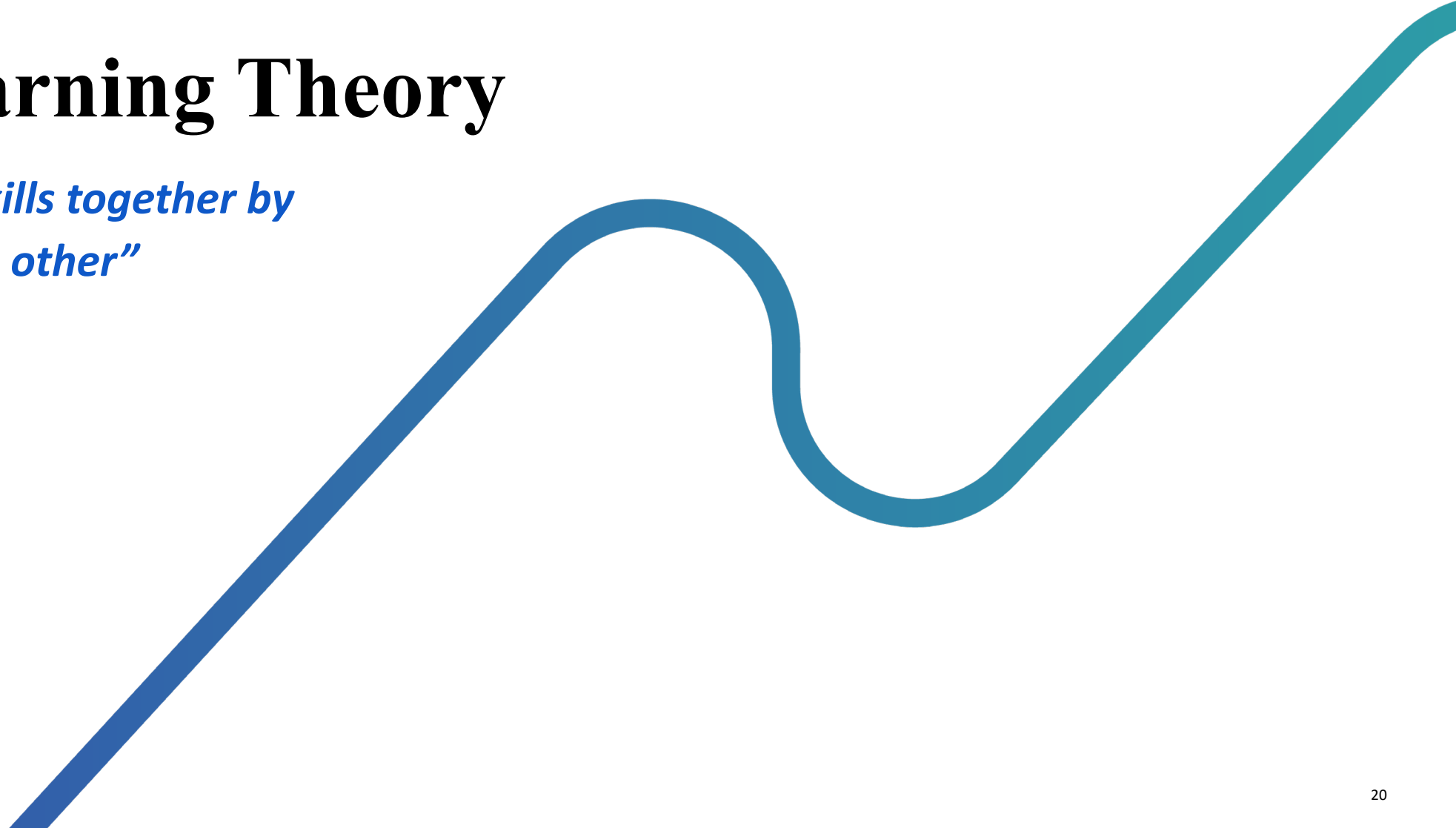
Use visual and verbal
cues effectively

Align feedback with
learners' expertise level

Provide structured,
timely feedback

Social Learning Theory

*“Sharpening our skills together by
learning from each other”*



Bandura's Social Learning Theory



Bandura (1961)

Bandura's Social Learning Theory

- **Learning by observing:** we acquire new behaviors by watching others.
- **Modeling influences action:** We are influenced by the actions and behaviors of those we observe.
- **Social context shapes learning:** Our environment and interactions *impact what and how we learn.*



Social Learning Theory & Feedback



Foster safe environments that discuss **observed behaviours** and feedback with peers and mentors.



Role model open, positive and constructive feedback dialogue



Encourage peer-feedback and group debriefing sessions

Boosting medical training with effective feedback



Andragogy

Foster adult
autonomy &
leverage of
experience

Cognitive Load Theory

Optimise
feedback clarity

Experiential Learning Theory

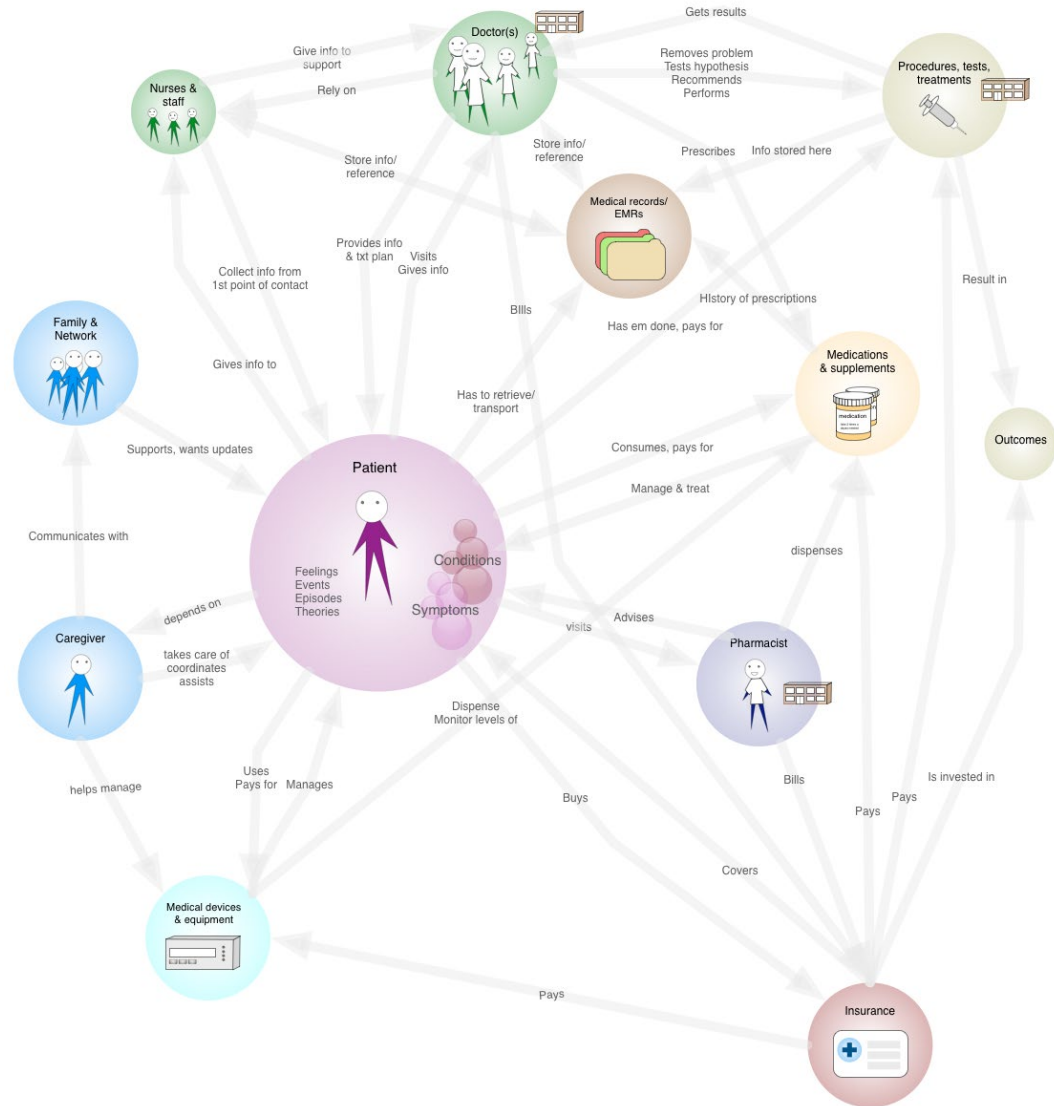
Turn feedback
into actionable
reflection on
real-world
practice

Social Learning Theory

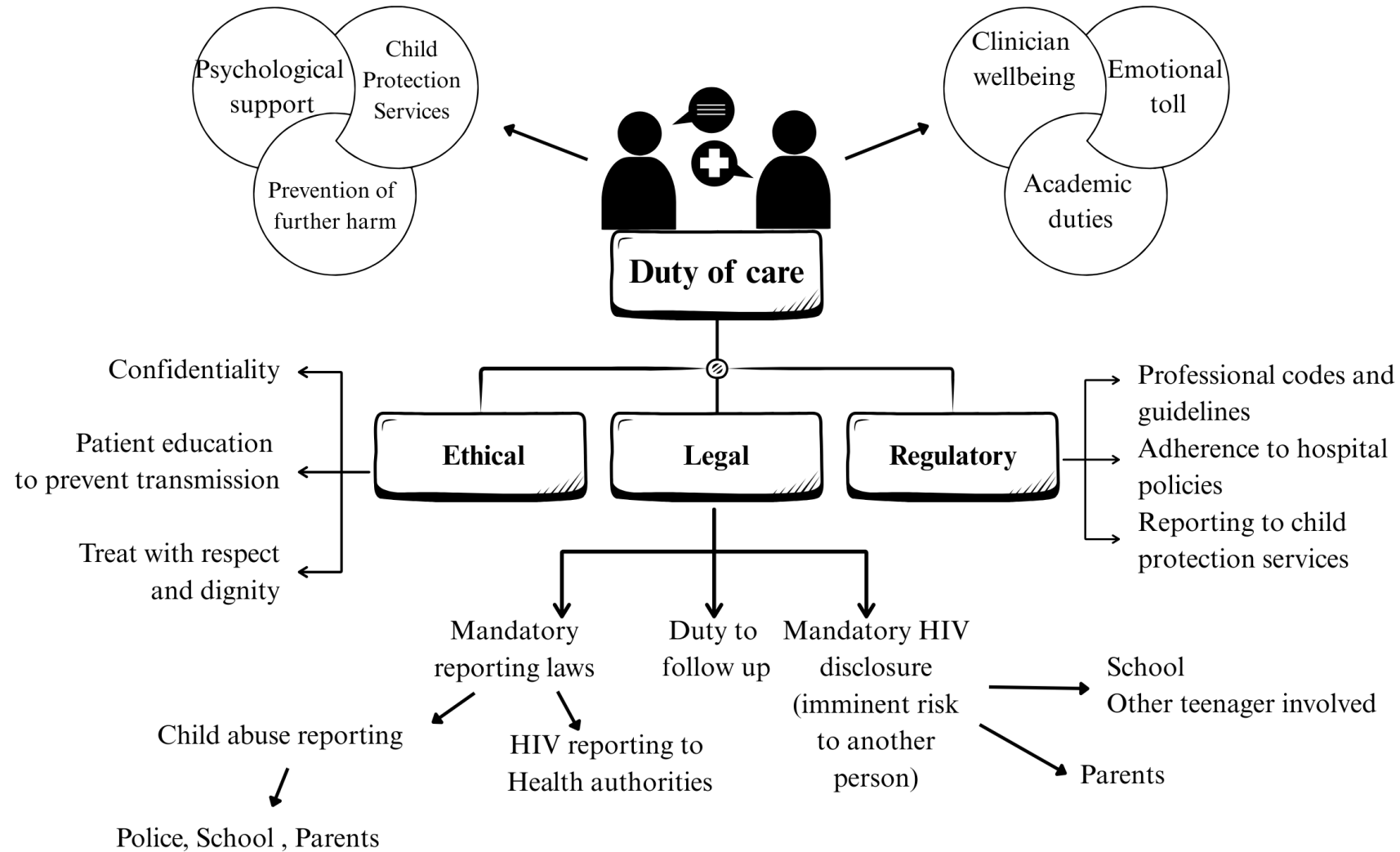
Learn to deliver
and accept
feedback by
watching others

Systems Thinking in healthcare education

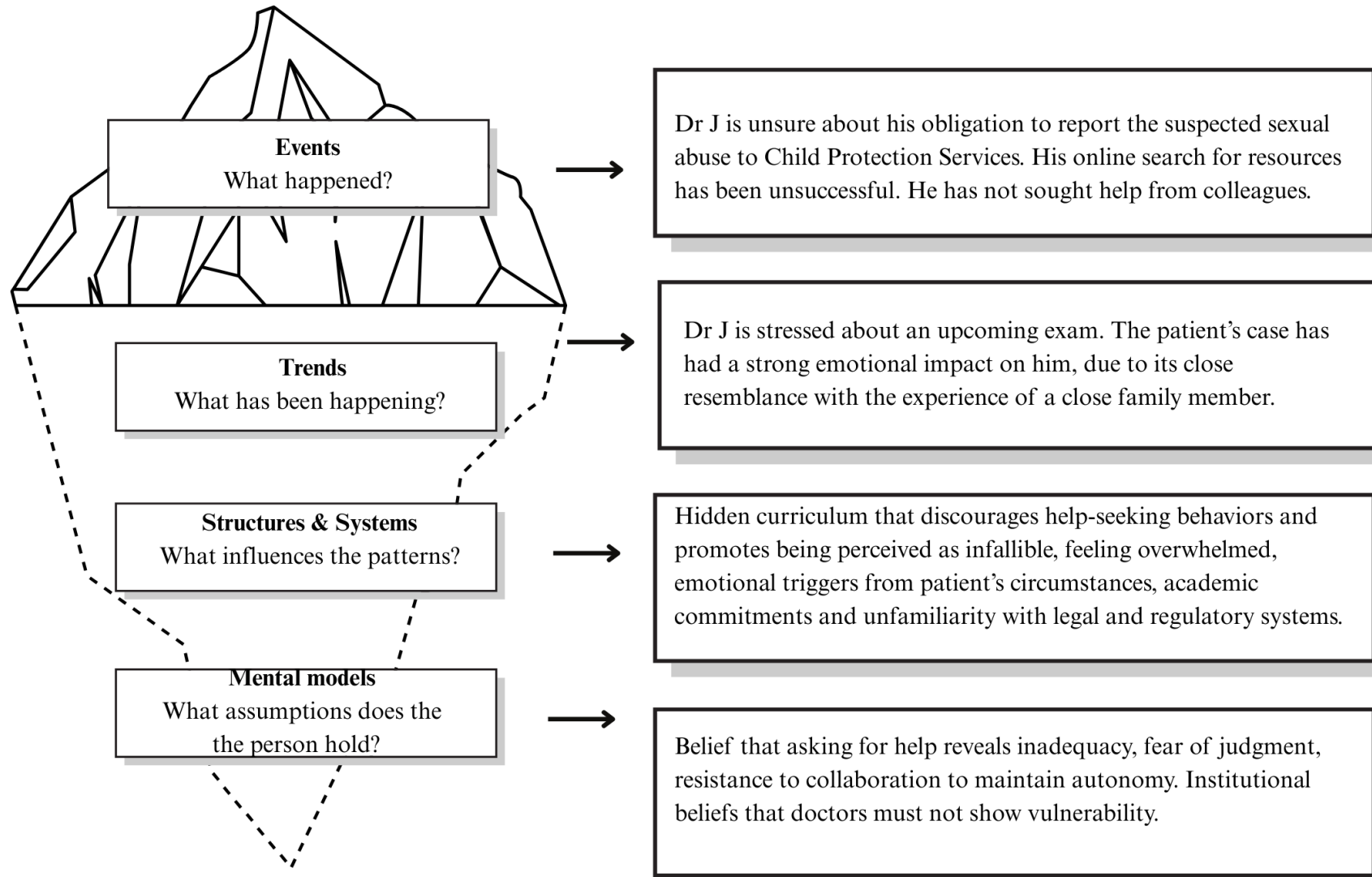
- Healthcare does not occur in isolation
- Different interconnected parts influence outcomes
- Design feedback mechanisms that **connect** individual performance to **complex, interconnected health outcomes**.



Systems Thinking in healthcare education



Systems Thinking in healthcare education



Ferrada & Bradfield (2025). Reimagining Medicolegal Education: An Adult Learning Perspective Informed by Systems and Design Thinking Frameworks. Manuscript in preparation

Feedback thrives when grounded in adult learning principles and seen not as an isolated endeavour, but as a vital tool woven into larger, complex learning systems.



Thank you

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