Optimizing Trainee Feedback on Diagnostic Reasoning

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Disclosures

Affiliated Academic Institutions:

- Center for Research, Innovation, and Scholarship, Texas Children's Hospital
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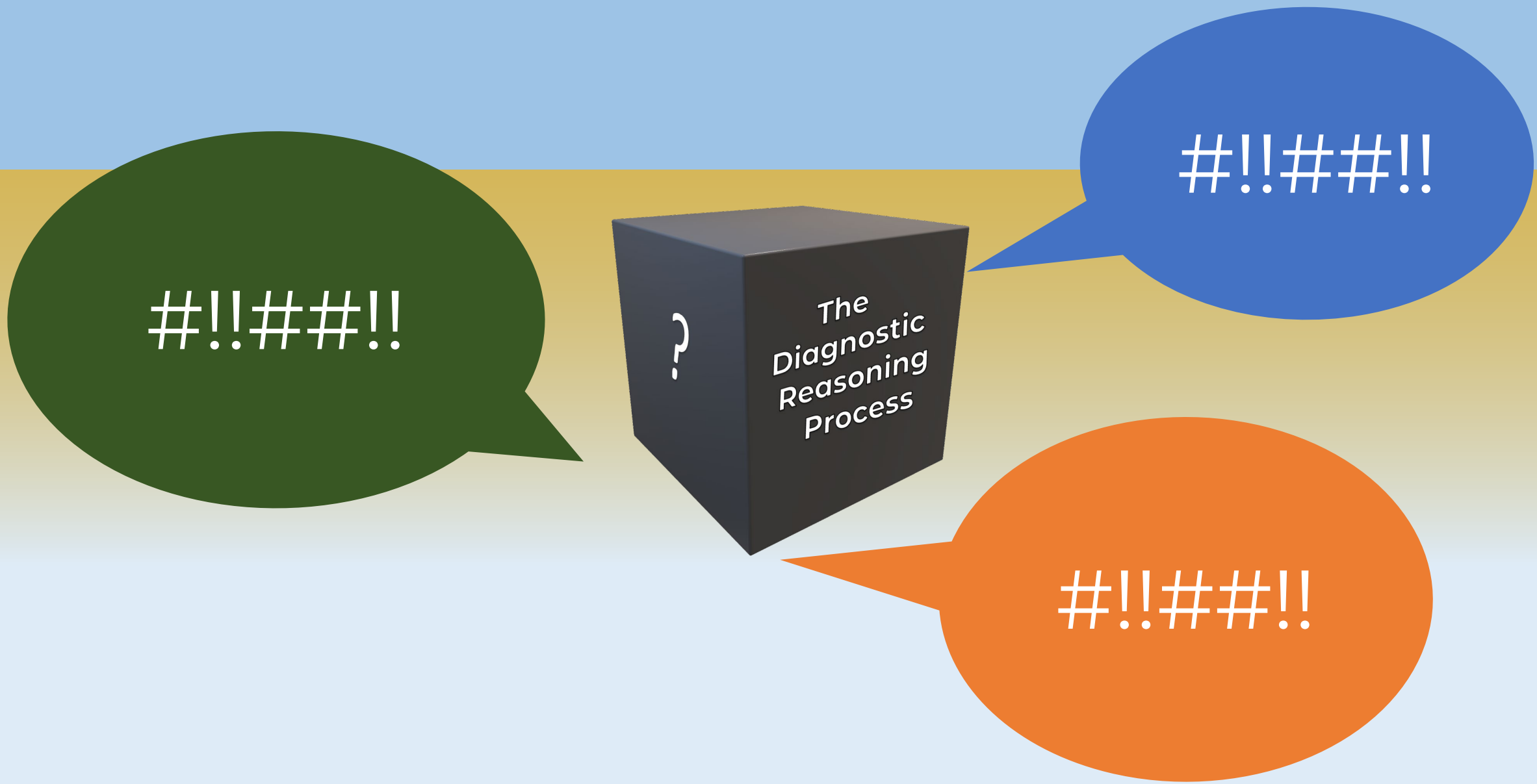
The Diagnostic Reasoning Process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The Diagnostic Reasoning Process
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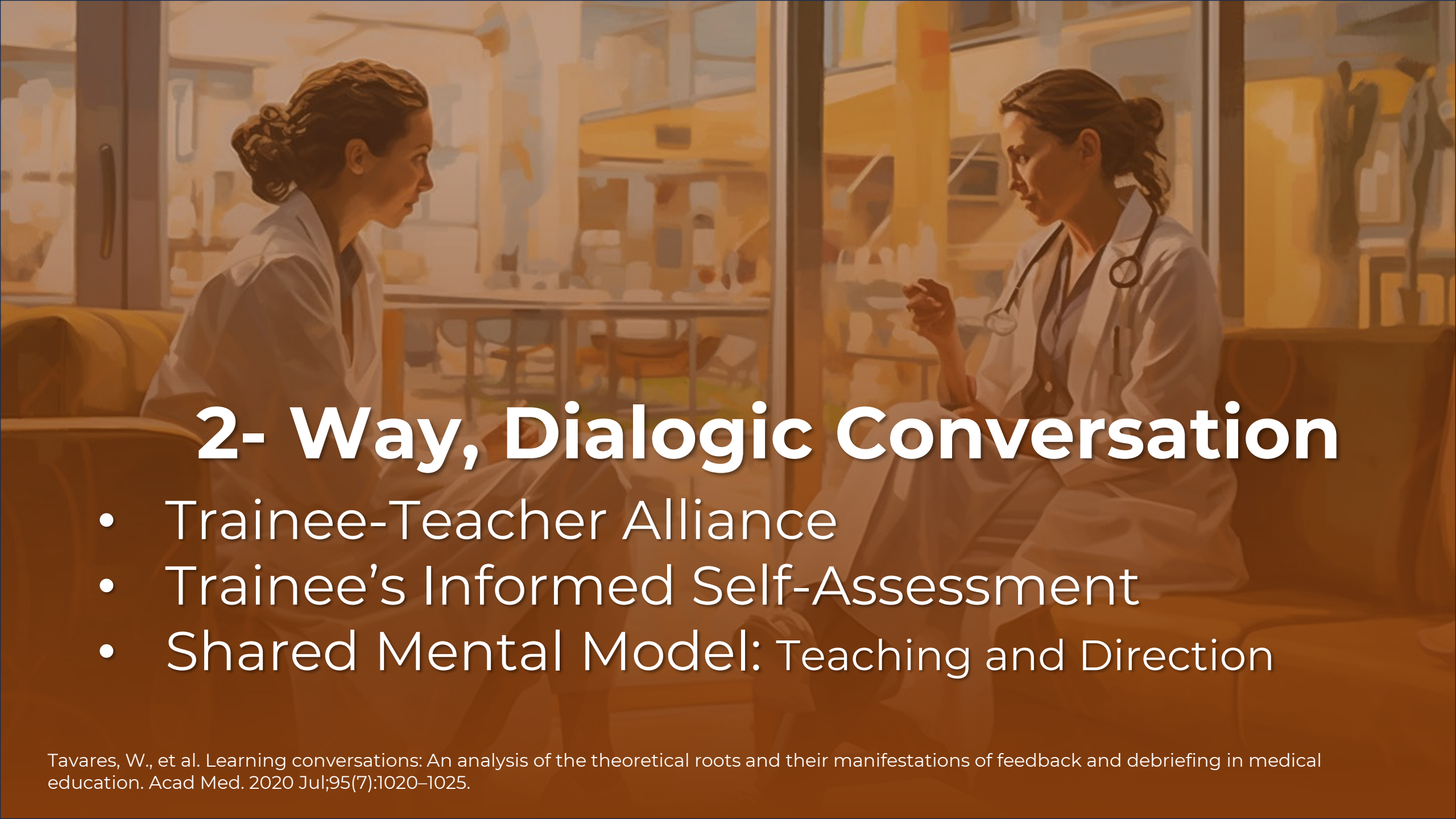
Invisible Divide


“Learning conversations”
bridge the divide.

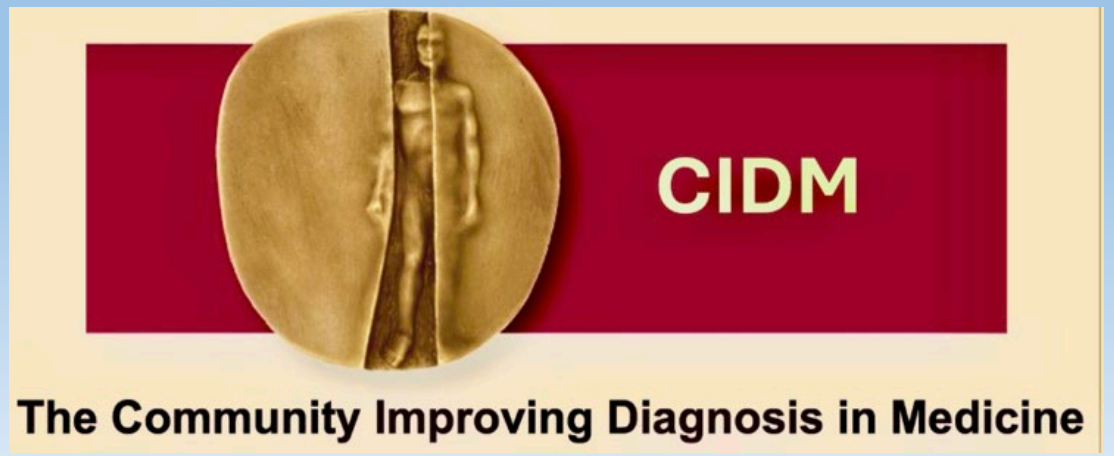


2- Way, Dialogic Conversation

- Trainee-Teacher Alliance
- Trainee's Informed Self-Assessment
- Shared Mental Model: Teaching and Direction

Tavares, W., et al. Learning conversations: An analysis of the theoretical roots and their manifestations of feedback and debriefing in medical education. Acad Med. 2020 Jul;95(7):1020–1025.

Assessment of Reasoning Tool (ART)

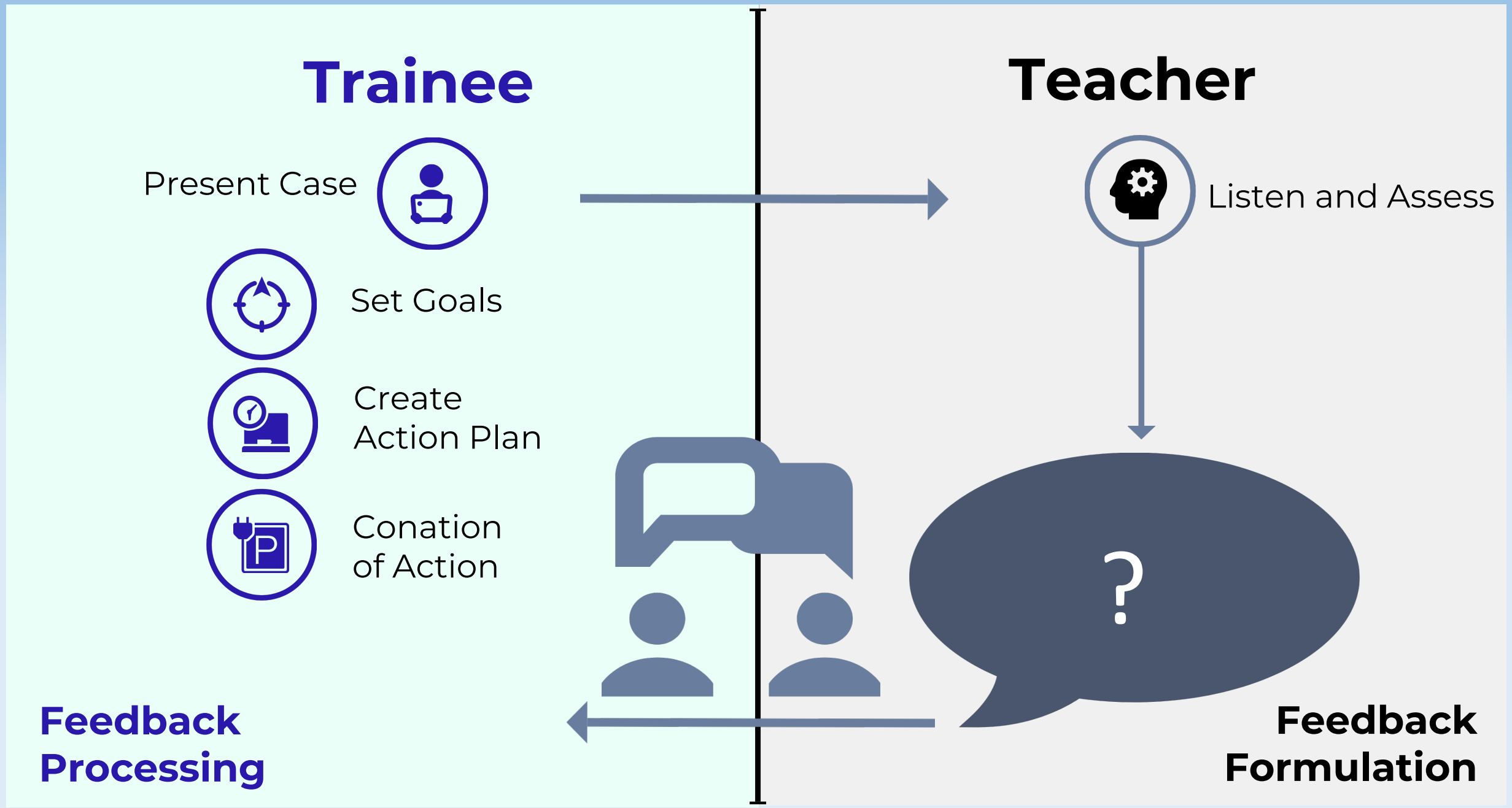


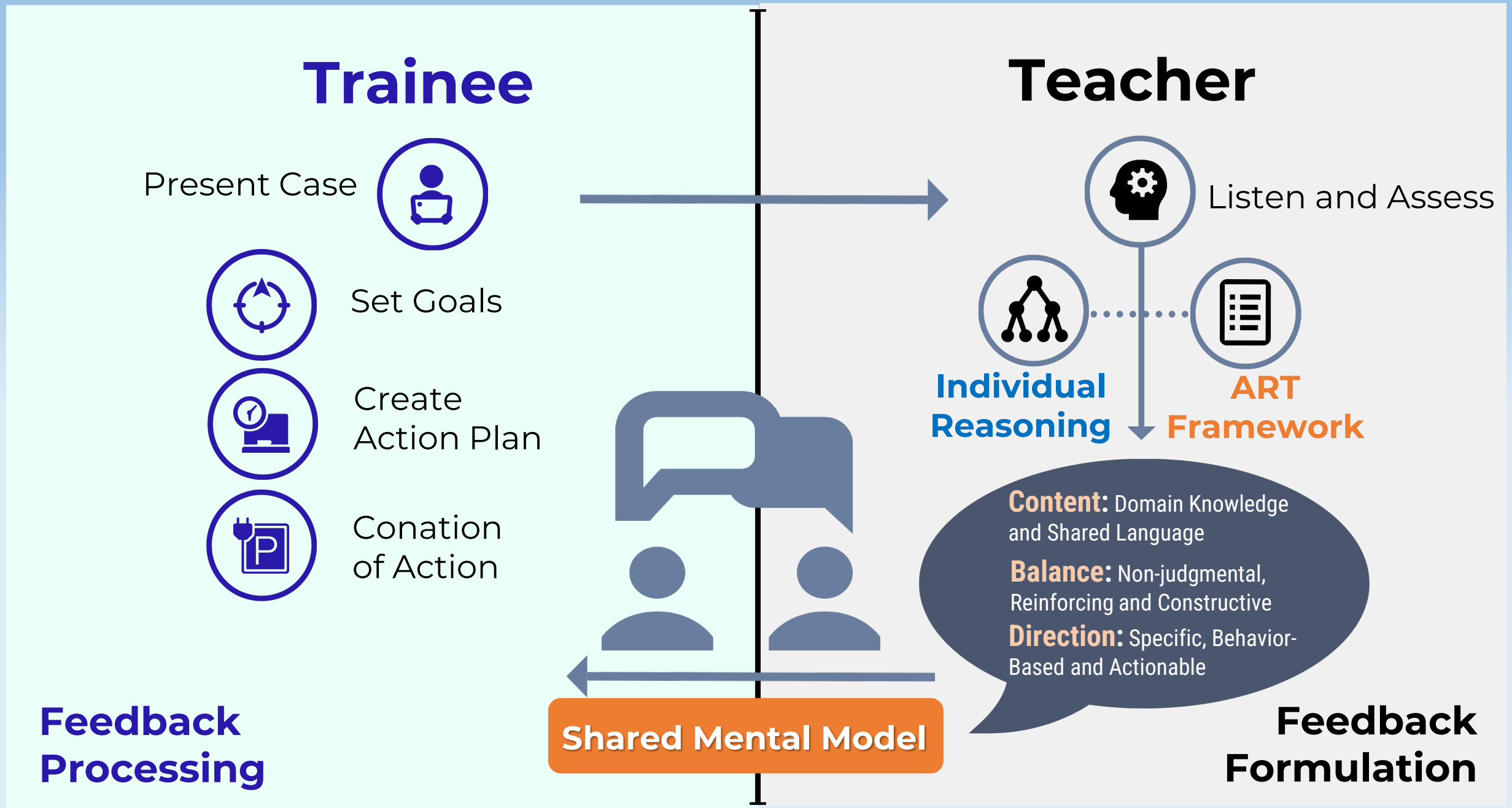
- Is a theory-informed, behaviorally grounded framework:
  - Structure
  - Shared language
  - Theoretical clarity
- Scaffolds diagnostic reasoning conversations

Thammasitboon, S., Rencic, J. J., Trowbridge, R. L., Olson, A. P. J., Sur, M., & Dhaliwal, G. (2018). The Assessment of Reasoning Tool (ART): structuring the conversation between teachers and learners. *Diagnosis (Berlin, Germany)*, *5*(4), 197–203.

The ART: 5 domains and behavioral descriptors

Did the Learner…	Assessment		
	Minimal	**Partial**	**Complete**
Collect/report history and examination data in a **hypothesis-directed manner**?	• Non-directed in questioning and exam • Asked questions without clear focus on potential diagnoses	• Questioning and exam generally reflective of potential diagnoses, but some less relevant or tangential questions ☑	• Followed clear line of inquiry, directing questioning and exam to specific findings likely to increase or decrease likelihood of specific diagnoses
Articulate a complete **problem representation** using descriptive medical terminology?	• Included extraneous information • Missed key findings • Did not translate findings into medical terminology	• Generally included key clinical findings (both positive and negative) but either missed some key findings or missed important descriptive medical terminology ☑	• Gave clear synopsis of clinical problem • Emphasized important positive and negative findings using descriptive medical terminology
Articulate a **prioritized differential diagnosis** of most likely, less likely, unlikely, and "can't miss" diagnoses based on the problem representation?	• Missed key elements of differential diagnosis, including likely diagnoses or "can't miss" diagnoses	• Gave differential diagnosis that included likely and "can't miss" diagnoses but either missed key diagnoses or ranked them inappropriately	• Gave accurately ranked differential diagnosis including likely and "can't miss" diagnoses ☑
Direct evaluation/treatment towards **high priority diagnoses**?	• Directed testing and treatments toward unlikely/unimportant diagnoses • Did not order tests or treatments for most likely/ "can't miss" diagnoses	• Major focus of evaluation and treatment was likely and "can't miss" diagnoses but included non-essential testing ☑	• Efficiently directed evaluation and treatment towards most likely and "can't miss" diagnoses • Deferred tests directed towards less likely or less important diagnoses
Demonstrate the ability to **think about one's own thinking** (metacognition)? Consider asking: *Is there anything about the way you are thinking or feeling about this case that may lead to error?*	• Not able to describe the influence of cognitive tendencies or emotional/ situational factors that may have influenced decision-making ☑	• Can name one cognitive tendency or emotional/situational factor that may have influenced decision-making	
OVERALL ASSESSMENT	**NEEDS IMPROVEMENT** ☐	**MEETS COMPETENCY** ☐	**EXCELLENCE** ☐


Trainee
Present Case
Set Goals
Create
Action Plan
Conation
of Action
Feedback
Processing
Teacher
Listen and Assess
?
Feedback
Formulation


Trainee
Present Case
Set Goals
Create
Action Plan
Conation
of Action
Feedback
Processing
Teacher
Listen and Assess
Individual
Reasoning
ART
Framework
Content: Domain Knowledge
and Shared Language
Balance: Non-judgmental,
Reinforcing and Constructive
Direction: Specific, Behavior-
Based and Actionable
Shared Mental Model
Feedback
Formulation

Mixed Methods Research: Learner Survey & Faculty Interviews

Structures

- Language
  - Terms & Behavioral Descriptors
- Organization
  - Primer & Guidepost

New Opportunities

- Enhanced Interaction
- Assessment
- Feedback

Adaptability

- Learner Type
- Competence Level
- Domains

Challenges

- Complex Skills
- Skills Discrimination

Cohen, A Sur, M, Falco, C, Dhaliwal, G, Singhal, G and Thammasitboon, S. "Using the Assessment of Reasoning Tool to facilitate feedback about diagnostic reasoning" Diagnosis, vol. 9, no. 4, 2022, pp. 476-484.

ART → ART-R

5 Domain Rubrics
15 'Complete' Descriptors

5-Domain
15-item, 5-point Likert Scale

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Item 1
Item 2
Item 3
Item 4
Item 5
Item 6
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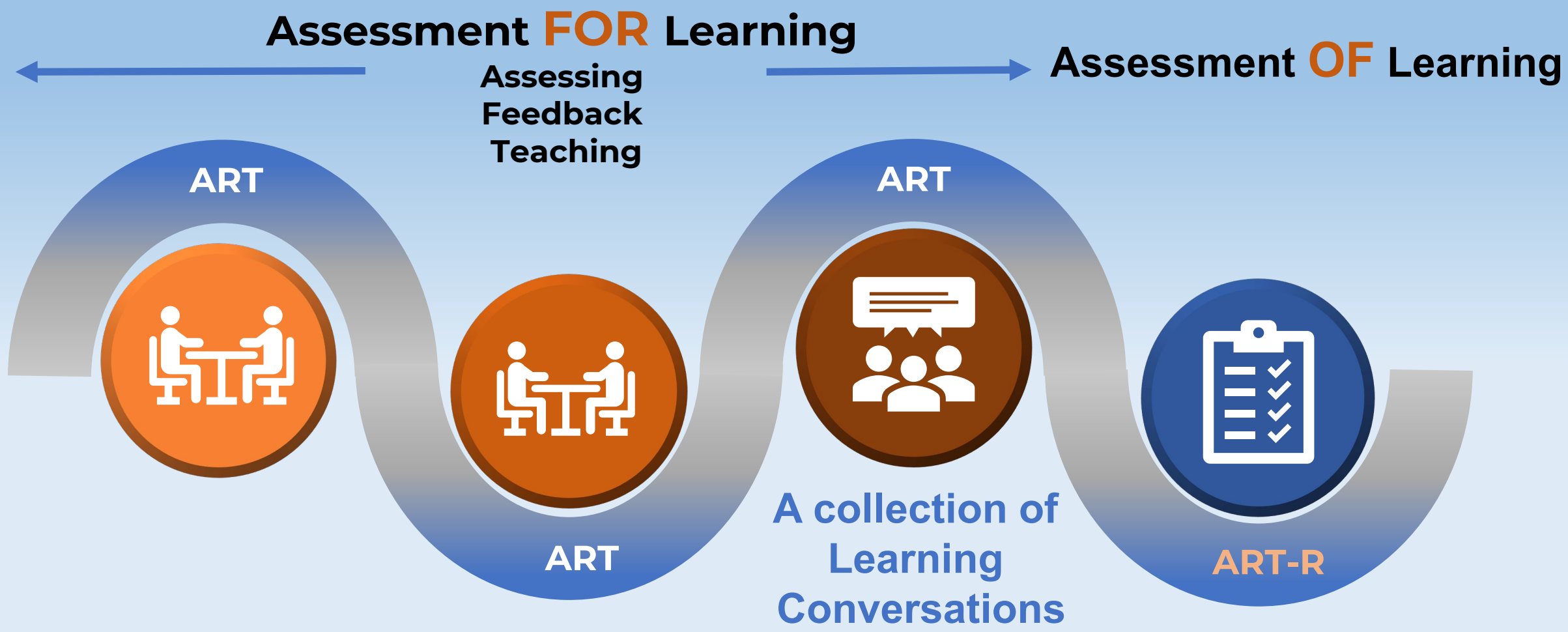
Item 13
Item 14
Item 15

Thammasitboon, S., Sur, M., Rencic, J. J., Dhaliwal, G., Kumar, S., Sundaram, S., & Krishnamurthy, P. (2021). Psychometric validation of the reconstructed version of the assessment of reasoning tool. *Medical Teacher*, *43*(2), 168–173.



'Quantify what you've been sensing—structured scoring supports shared understanding and direction for growth.'

01

Teachers need robust **conversational strategies** to support diagnostic reasoning across **diverse** contexts and learning environments.

02

Learning conversations cultivate a **teacher-trainee alliance**, facilitating **reflection** that refines the trainee's **mental model** and leads to **actionable next steps.**

03

The **Assessment of Reasoning Tool** provides a **structured yet flexible** framework to guide diagnostic reasoning conversations with **clarity, precision and purpose**.

Acknowledgements

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  - Gurpreet Dhaliwal, MD
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  - Brian Rissmiller, MD
  - Geeta Singhal, MD, MEd
  - Moushumi Sur, MD

"Structure supports clarity. Conversations drive growth."