Using Technology to Scaffold Experiential Learning Programs Based on Student Skill Level
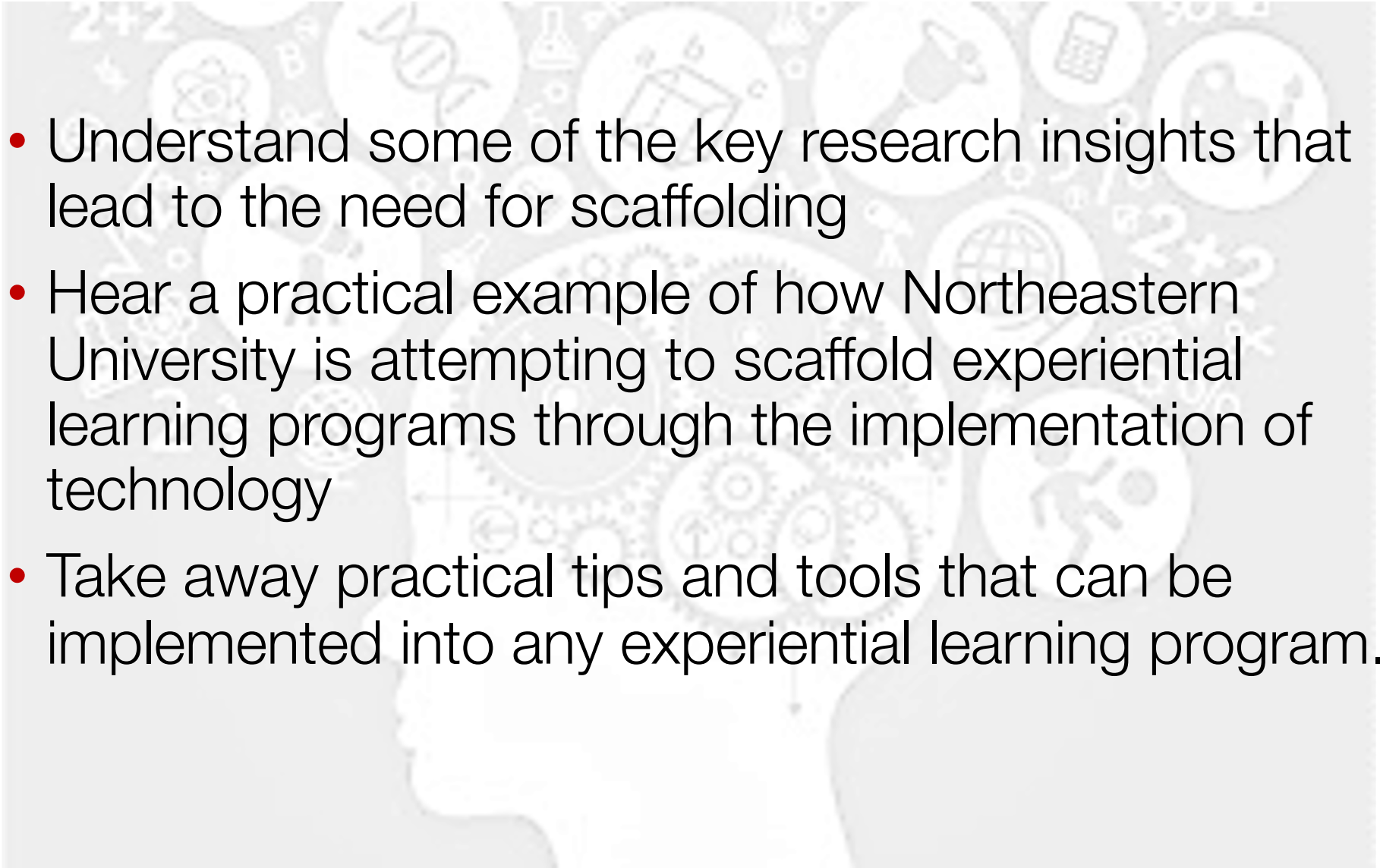
Dr. Andrea Humez, Northeastern University

Nikki James, Practera

Overview

| Topic	Time	Presenter
Introductions & Learning Outcomes	5min	Andrea & Nikki
Virtual Internships	5min	Nikki
Research Insights that identified a need for scaffolding	10min	Andrea
Intro to Practera	5min	Nikki
Dreyfus Model of Skill Acquisition for Scaffolding	5min	Nikki
Scaffolding Activity	20min	Nikki & Andrea
Feedback, Questions & Next Steps	10min	Andrea & Nikki

Learning Outcomes

- Understand some of the key research insights that lead to the need for scaffolding

- Hear a practical example of how Northeastern University is attempting to scaffold experiential learning programs through the implementation of technology

- Take away practical tips and tools that can be implemented into any experiential learning program.

Virtual Internships: A Model of Industry-Engaged Experiential Education

Virtual Internships

The students are part of a consulting team working on the sponsor's brief.
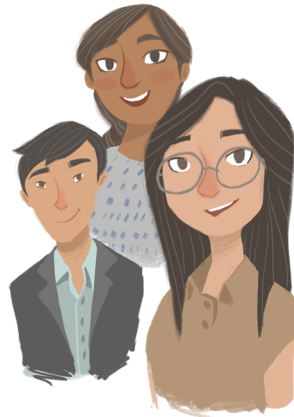
Student Team

The Sponsor is an industry professional who provides a Project Brief and provides feedback to the student team as they deliver on the project brief.

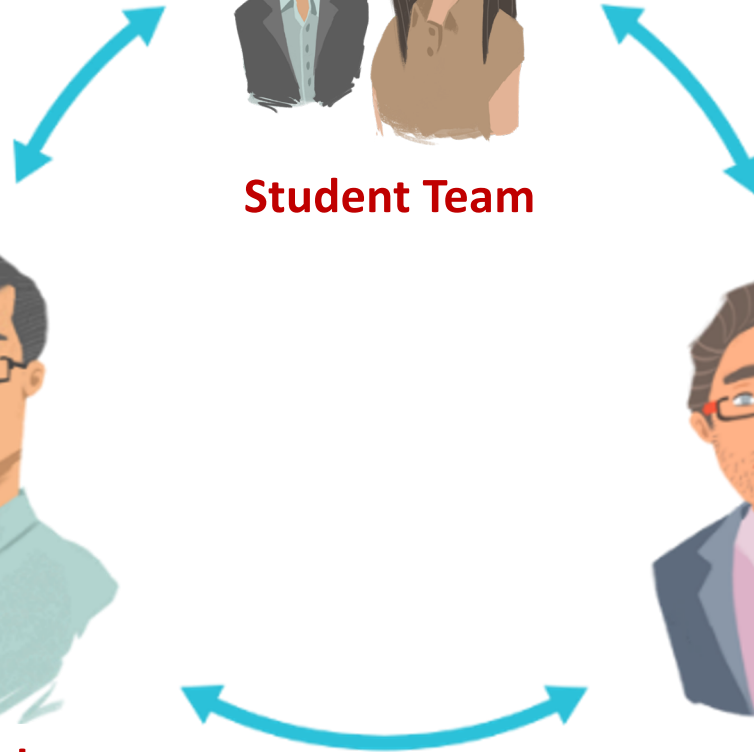Support student teams and sponsors to make sure everyone has a great experience!

Faculty

Sponsor

Professional Skills Developed Through Virtual Internships

- Sponsor Management
- Teamwork
- Project Management
- Project Delivery Methodology

Research Insights:

From Northeastern University's "Broadening Participation in Experiential Learning to Enhance Learner Engagement and Develop In-Demand Professional Skills" Project

The Project

- Working with STEM faculty at local community colleges to implement virtual internships with industry sponsors in their classes

- Pilot-test of Practera platform at Northeastern's College of Professional Studies

- Third year of study: add online platform to support project implementation at community colleges

- Case studies of implementation of virtual internships, the ways these vary, and the ways that technology can support the implementation

Target Population: Community College Students in 2-Year Programs

- Some first-time students, some returning to complete degree and/or switch careers

- Some ESL, some native English speakers

- Varying levels of previous experience with foundational content of a given course (e.g., programming)

- Varying amounts of previous experience managing projects, working in teams, and interacting with clients

- Students within a given class or team within a class are probably heterogeneous in all of these ways (and others)

Case A: Sponsor Management, Teamwork

Context:

- On-ground class
- Team of students includes some native English speakers with previous experience interacting with clients, some ESL students without previous experience

Problem

- Experienced English speaker dominates student/sponsor interactions; other students don't speak up much
- Experienced student feels that not everyone had the technical skills necessary to contribute equally, others feel that everyone was able to contribute and learn from each other
- Instructor may not have been aware of the second issue

Case A: Sponsor Management, Teamwork

Scaffolding needs:

- Individualized learning support for different levels of experience interacting with clients

- Help students become aware of each other's needs as team members and negotiate roles that allow the team to effectively communicate with the sponsor, and also give everyone a chance to improve their skills

Case B: Sponsor Management, Project Management, Project Delivery Methodology

Context:

- On-ground class, students communicated with sponsor via webconference as a group during class time and by email

- Team of students have varying levels of experience with the field and with interacting with clients
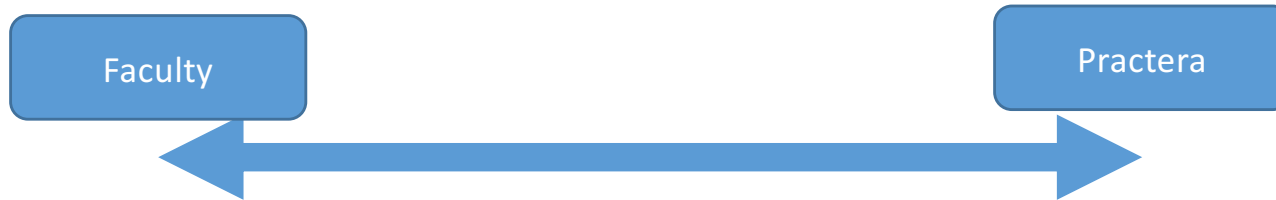
Problem

- Expectation mismatch between sponsor and instructor/students about how and when to define project spec leads to student confusion about what work they need to do to meet sponsor's needs

Case B: Sponsor Management, Project Management, Specific Management Strategies
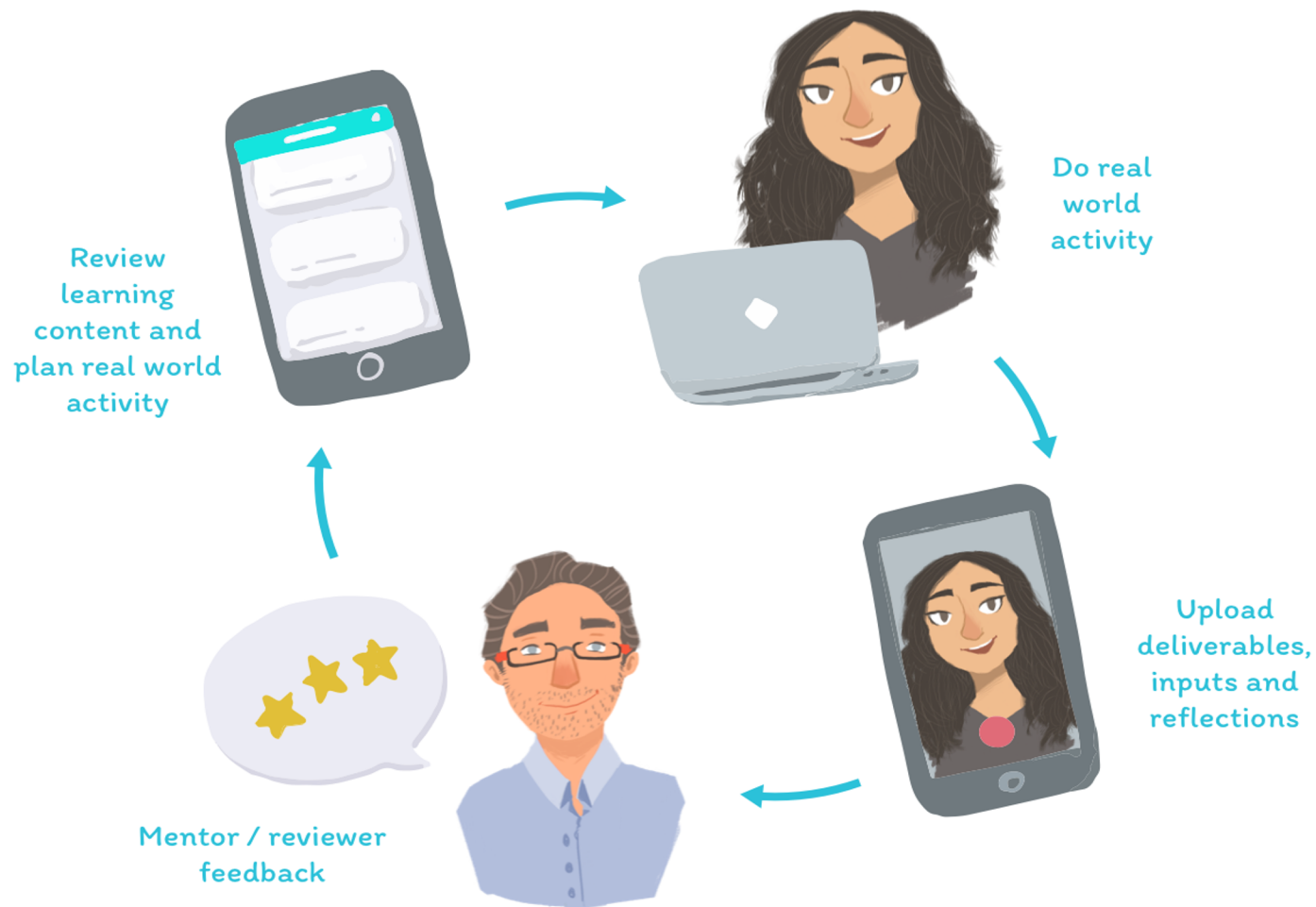
Scaffolding needs:

- Individualized learning support for students at different levels of expertise about interacting with clients

- Explicit project spec, timeline and project milestones agreed upon by students and sponsors, tailored to course schedule

- Individualized learning support for students at different levels of expertise about project delivery methodology

- Instructor awareness of team/sponsor communication issues in order to make an informed decision about whether/how to intervene

How is Scaffolding Delivered?

Faculty ⟷ Practera

Intro to Practera

Technology Enabled Virtual Internships

Review learning content and plan real world activity

Do real world activity

Upload deliverables, inputs and reflections

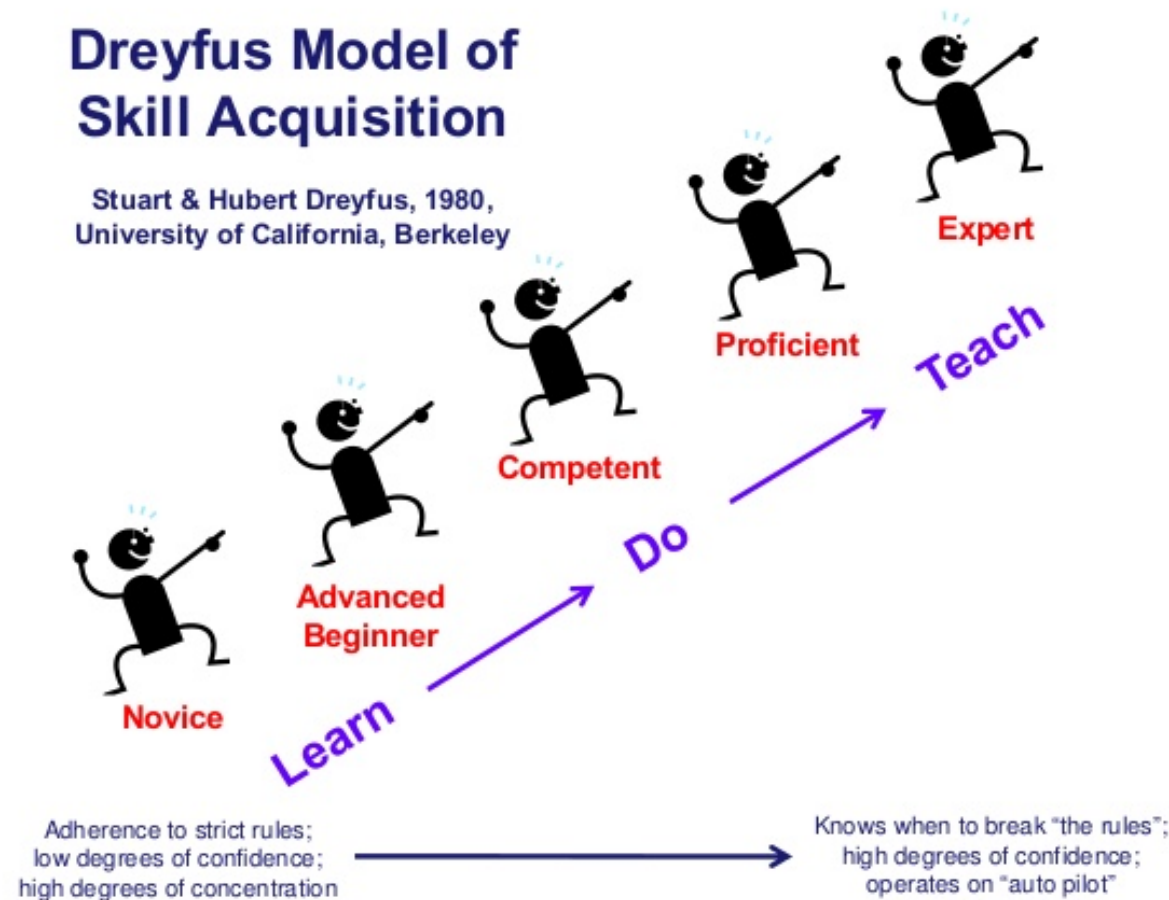Mentor / reviewer feedback

What is the technology actually doing?
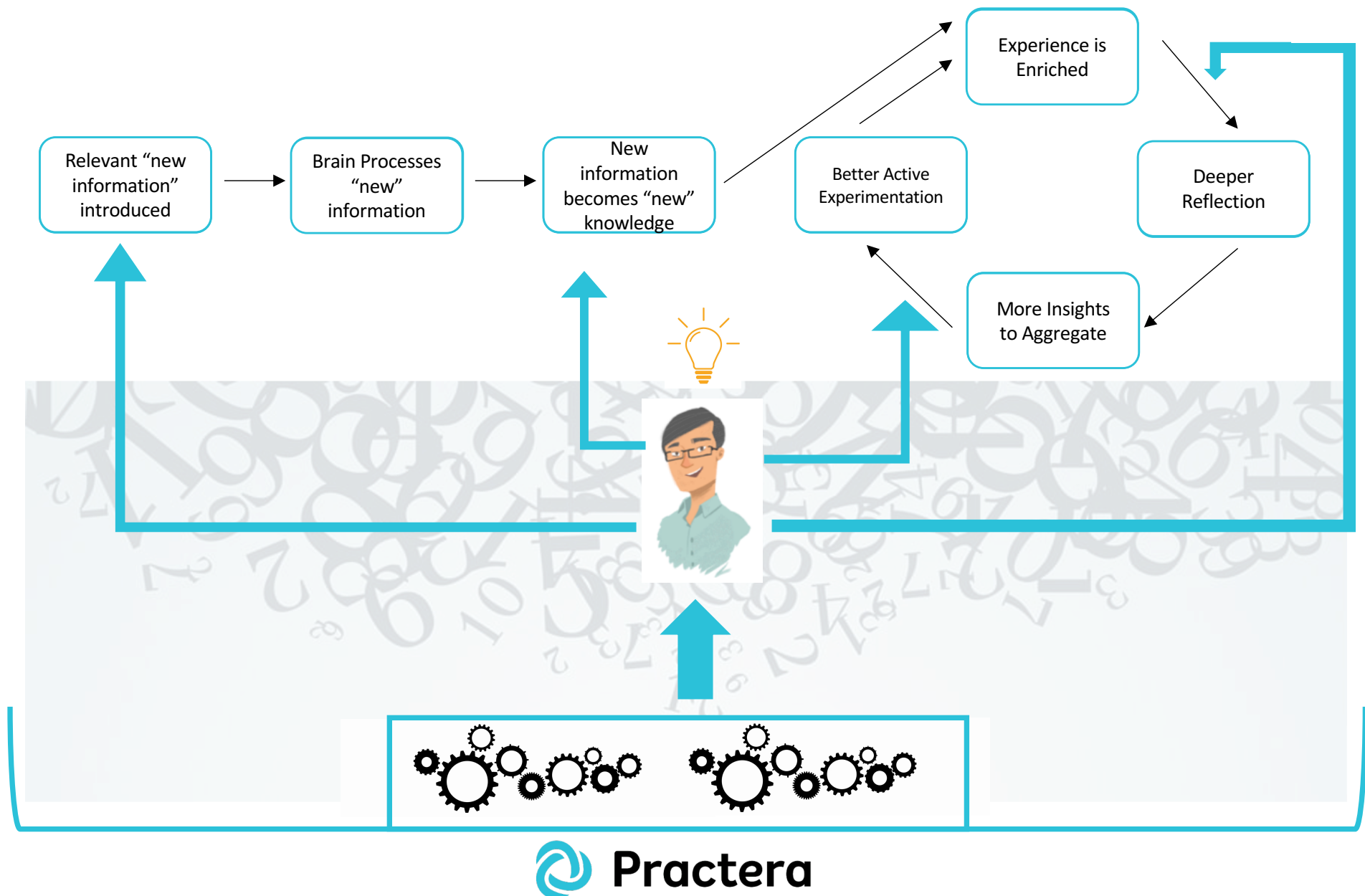
Dreyfus Model of Skill Acquisition for Scaffolding

A model for scaffolding

Dreyfus Model of Skill Acquisition

Stuart & Hubert Dreyfus, 1980, University of California, Berkeley

Novice — Advanced Beginner — Competent — Proficient — Expert

Learn — Do — Teach

Adherence to strict rules; low degrees of confidence; high degrees of concentration

Knows when to break "the rules"; high degrees of confidence; operates on "auto pilot"

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Dreyfus Model of Skill Acquisition

Stage	Characteristics	Needs	Knowledge Structure	Relevancy Recognition	Context Assessment	Decision-making
Novice	Rigid adherence to taught rules, steps, or plans. Little situational perception. No discretionary judgment.	Step by step instructions. Supervision. First Successes.	No Context	None	Analytical	Rational
Advanced Beginner	Guidelines for actions based on limited aspects. Situational perception still limited. All aspects treated separately and with equal importance.	Simple projects. A safe environment for failure. Lots of repetition.	Contextual		Analytical	Rational
Competent	Sees actions partially in terms of long-term goals. Conscious deliberate planning and execution. Creates routines and procedures.	Complex but controlled projects. Real world exposure.	Contextual	Present	Analytical	Rational
Proficient	Sees situations holistically rather than in separate aspects. Prioritizes importance of elements. Deviates from normal patterns purposefully. Uses maxims for guidance.	Unhindered practice and exposure. Explore the possibilities.	Contextual	Present	Holistic	Rational
Expert	No longer relies on rules, routines or maxims. Intuitive grasp of situation based on deep tacit understanding. Analytic approaches used only in novel situations. Full vision of what is possible with medium.	Expand knowledge and experience. Push boundaries of field or medium.	Contextual	Present	Holistic	Intuitive

Scaffolding Activity

Instructions

- Step 1: Review the template your group has been given

- Step 2: Discuss which 'level' you think the template has been designed for

- Step 3: What would you do differently to make it appropriate for a level above and a level below.

- Step 4: Prepare to present your insights to the group

- Step 5: Present

Go!

Group Presentations

Q&A

Thank you!

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