LEC FACULTY SESSION:

AN INTRODUCTION TO POGIL

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OBJECTIVES:

By the end of this session you will be able to…

1. Explain the basics of Inquiry Based Learning (IBL)

2. Explain and Apply the basics of the POGIL method of IBL

INQUIRY- BASED LEARNING

What is the goal of science education?

Pedagogical Strategies

<u>Chalk and Talk:</u>

- Traditional science education
- Focus on ‘what we know’ (facts)
- Direct transfer of knowledge from teacher to student (Sage)
- Teacher’s role = dispense knowledge
- Student’s role = receive knowledge

But…

Research Findings:

- Understanding science is more than knowing facts.
- Students build knowledge on what they already know (preconceptions).
- Students generate/formulated new knowledge by modifying and refining their current concepts (misconceptions).

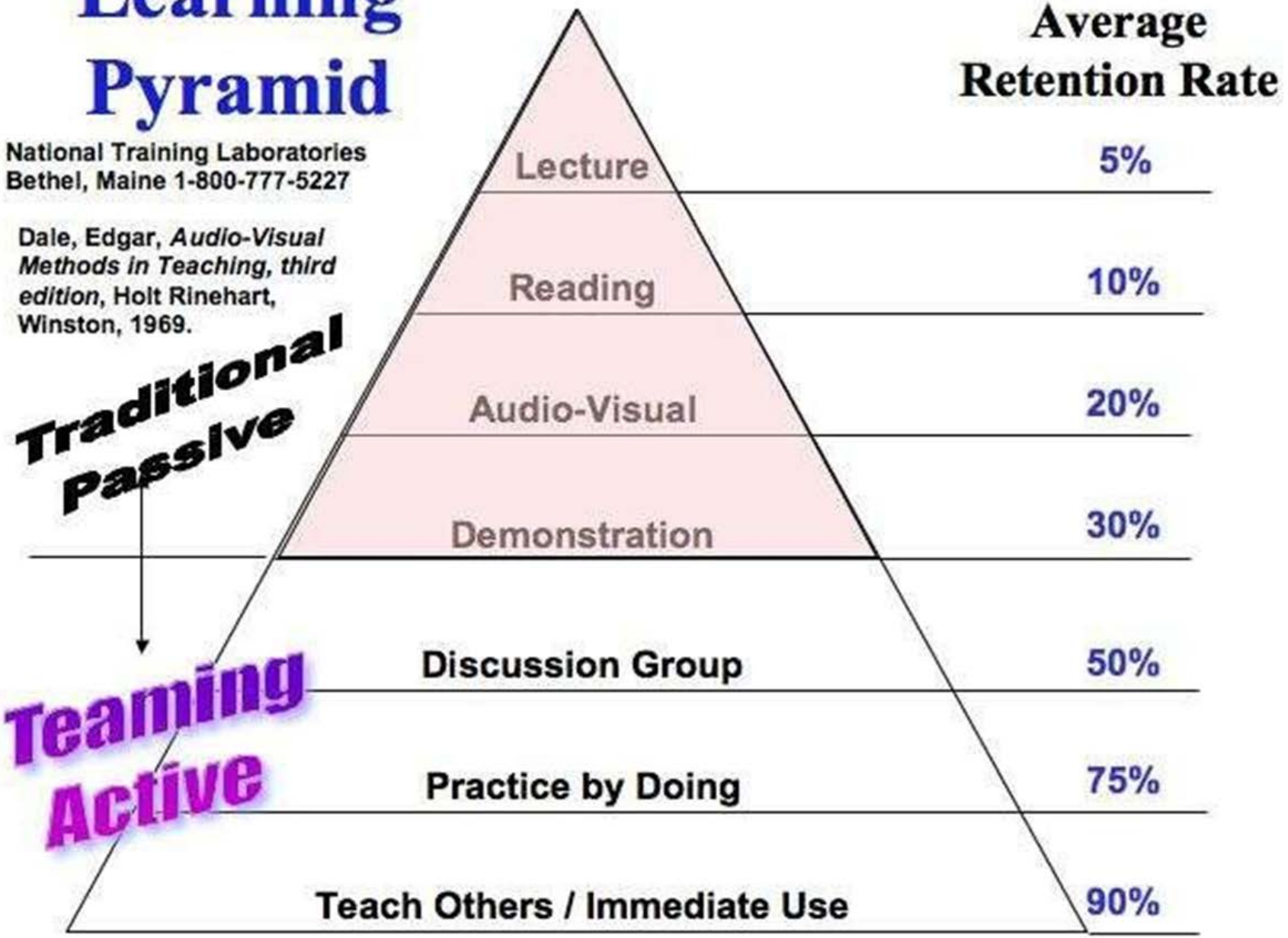
Research Findings cont'd:

- Learning is mediated by a social environment in which learners interact with others.
- Effective learning requires that students take control of their own learning.
- The ability to apply knowledge to new situations (transfer of learning) is affected by the degree to which students learn with understanding.

Learning Pyramid

National Training Laboratories
Bethel, Maine 1-800-777-5227

Dale, Edgar, *Audio-Visual Methods in Teaching, third edition*, Holt Rinehart, Winston, 1969.



Inquiry-Based Learning:

- Focus on Scientific Process.
- Explore “how we know what we know” (evidence & reasoning)
- Indirect transfer of knowledge:

  Teacher’s role = facilitator of learning

  Student’s role = active, independent learner (investigator)

Inquiry is something that students do, NOT something that is done to them.

If you tell me …..I might forget,

If you show me ……I will remember,

If you involve me …I will understand.

WHAT IS INQUIRY?

observing

Investigating

Analyzing

interpreting data

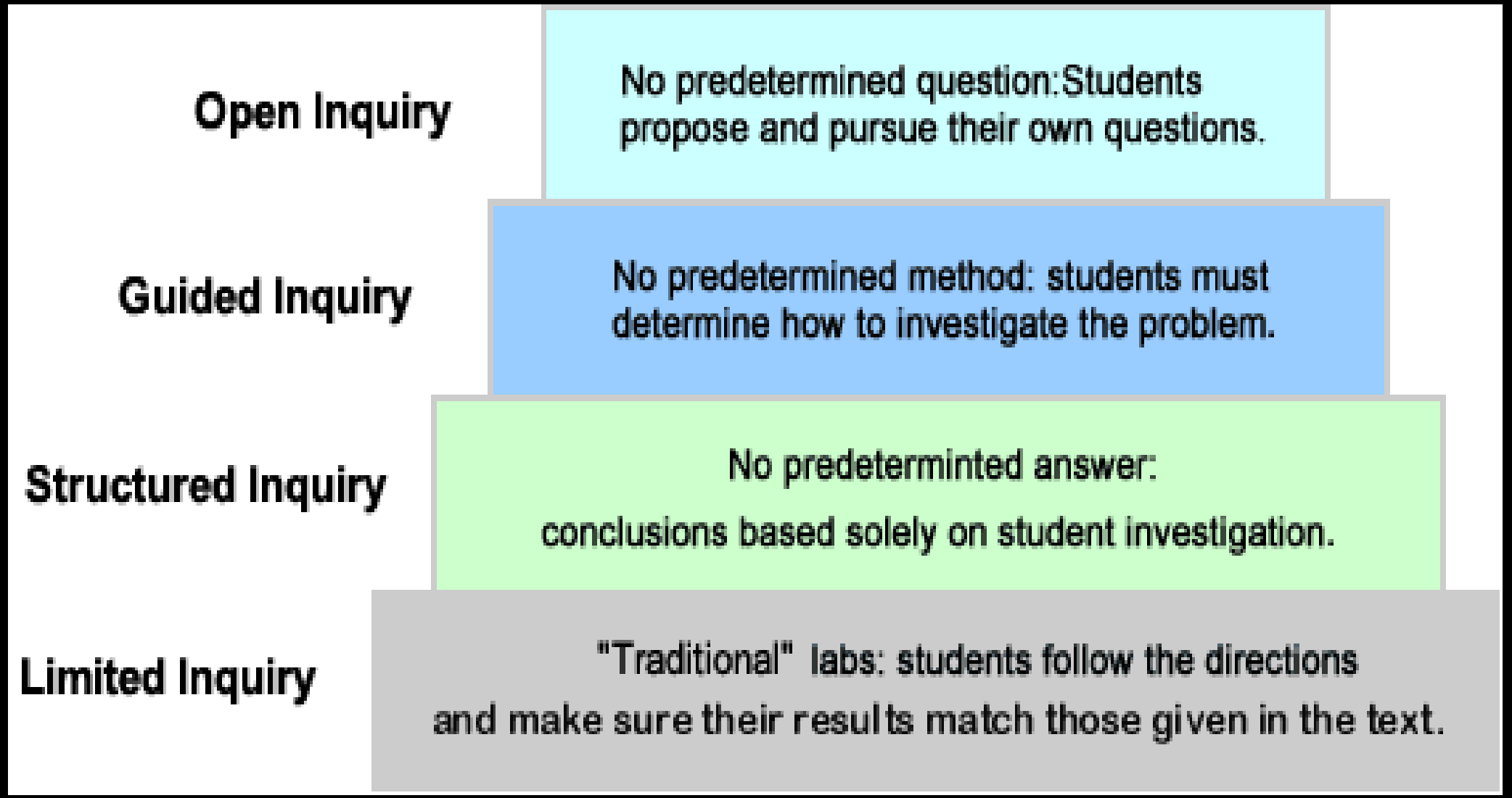
proposing explanations

Predicting

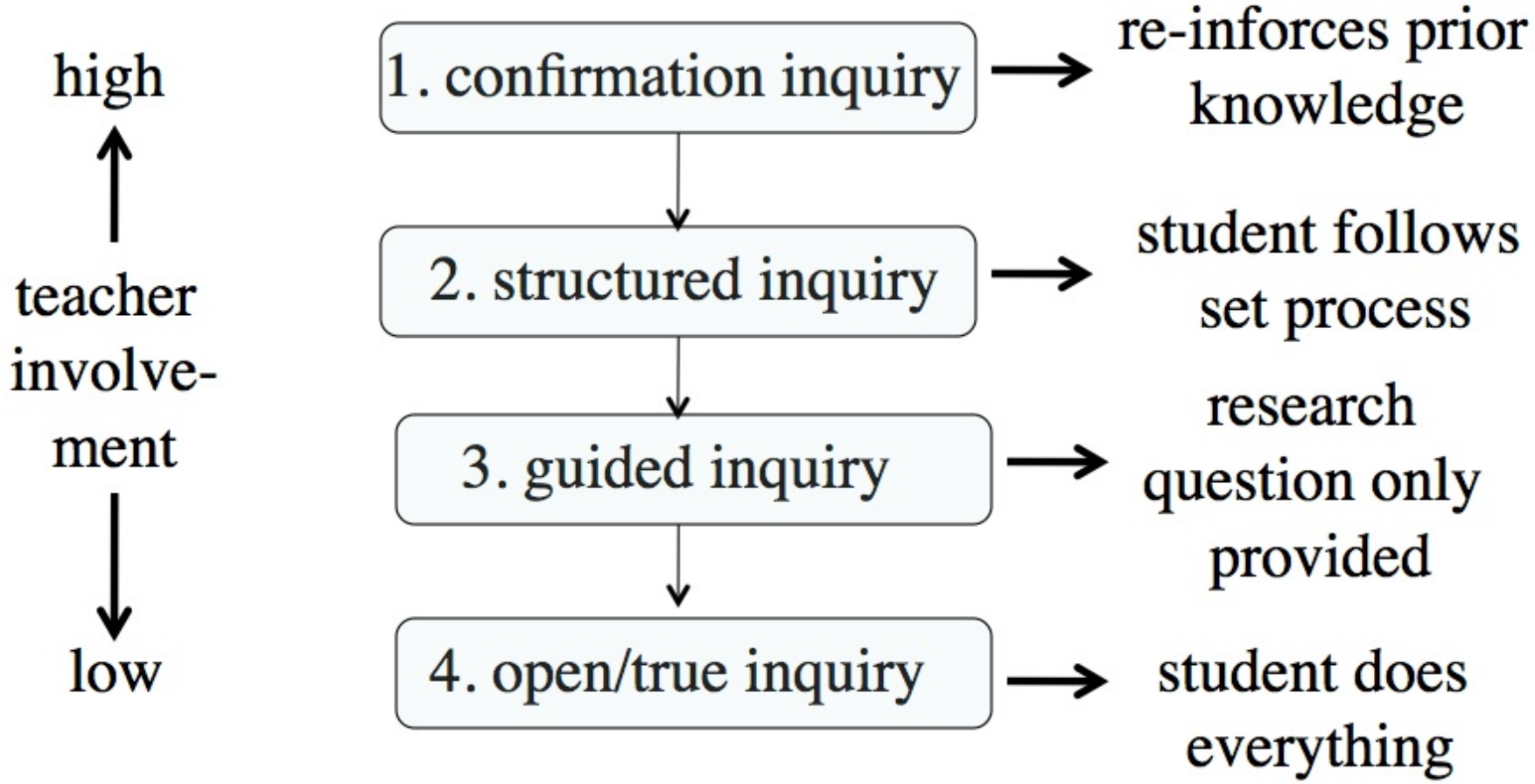
concluding

communicating

Types of Inquiry

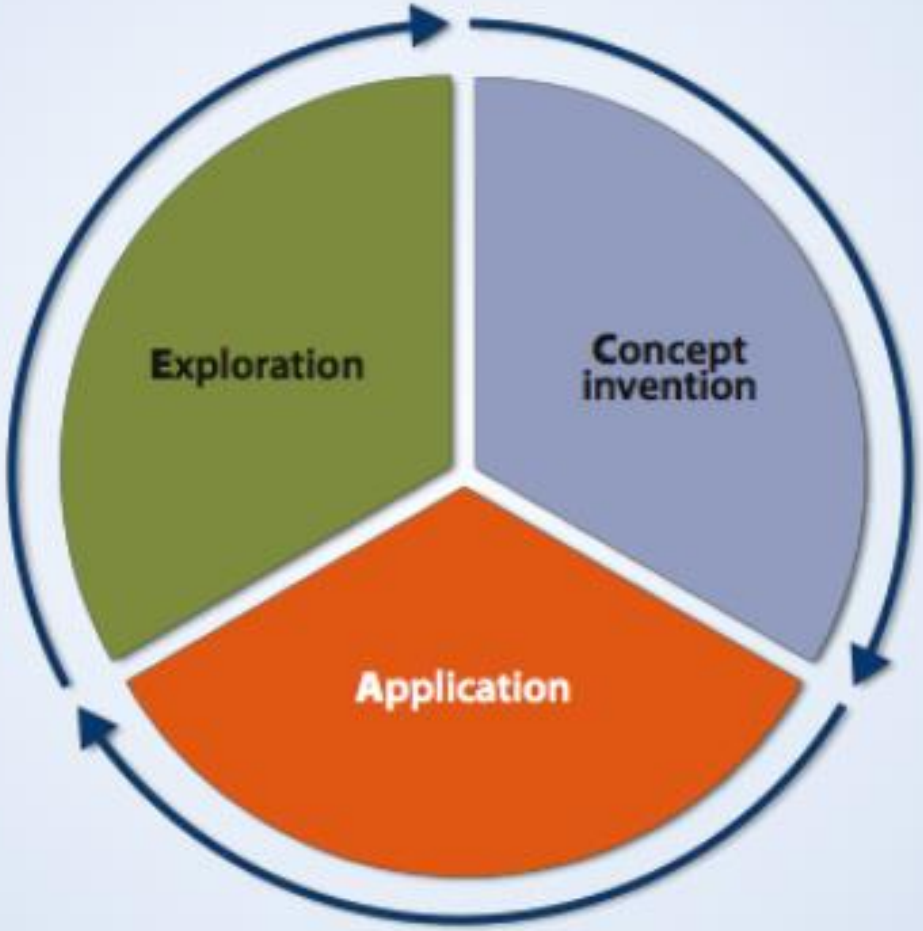


Levels of inquiry-based learning



	Traditional Classroom	POGIL Classroom
Prof's Job	Lecture	Help students learn
Source of Material	Professor	Specially designed "Learning Cycle" Activities
Student role	Passive listener	Active group discussion
Learning	Memorize notes after class	Discover concepts during class, reinforce after class
Emphasis	Competition	Community, Co-operation

Learning Cycle Activities



POGIL

Outcomes of the POGIL Method

- Students are actively engaged and thinking in class
- Students discover concepts (rather than memorize facts)
- Students learn course content & key process skills

Key Process Skills

- Information Processing
- Critical Thinking
- Problem Solving
- Communication
- Teamwork
- Management
- Self-assessment

CORE APPROACH:

Questions

Roles

GUIDED INQUIRY QUESTIONS
(CRITICAL THINKING)

- Directed Questions:

  Exploratory in nature. Easily answered w/specifics from the activity.

- Convergent Questions:

  Focused on Concept Invention. Help generate new ideas from information and synthesis.

- Divergent Questions:

  Application focused. Help transfer knowledge to new situations.

ROLES

- Manager
- Recorder
- Presenter
- Reflector

CLASSROOM DISCOURSE ENVIRONMENT

- The classroom environment will be safe for students to express their ideas.
- Goals of classroom discussions will be anticipated by the instructor and made clear to students.
- The instructor and students will model interactions that foster critiques of unsupported ideas while encouraging the sharing of ideas and respect for those who are sharing.

CLASSROOM DISCOURSE ENVIRONMENT

- Focal questions and tasks will be predominantly for making sense of science ideas and phenomena.
- Allow sufficient time for thinking.
- Manage the initiation and development of ideas while at the same time honoring the thinking of all members of the team.

CLASSROOM DISCOURSE ENVIRONMENT

- Students' puzzlements and ideas will be treated as resources for the learning of the whole class.
- Students' language and forms of communication will be scaffolded from what they bring to class toward more academic ways of speaking.
- Meta-cognitive questions will be part of all lessons so that students learn to assess their own thinking and monitor progress toward longer term goals.

LET’S TRY IT OUT!

ACTIVITIES

POGIL

Process Oriented Guided Inquiry Learning

"To support educators with the implementation of student-centered learning environments."