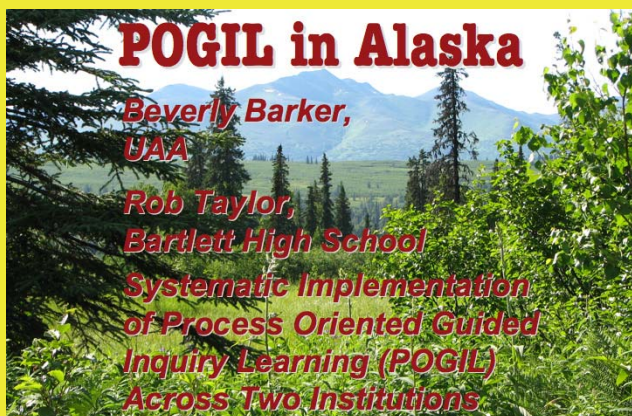
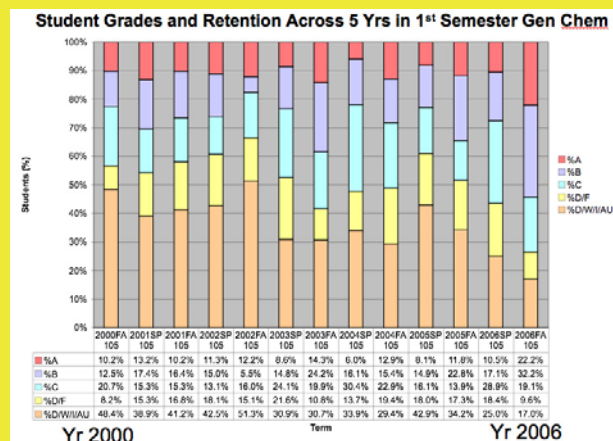


# Apprenticeship and Inquiry: Towards a Universal Design Instructional Model



The Fundamental Problem: How can we increase understanding and performance in college freshman (AP) chemistry.

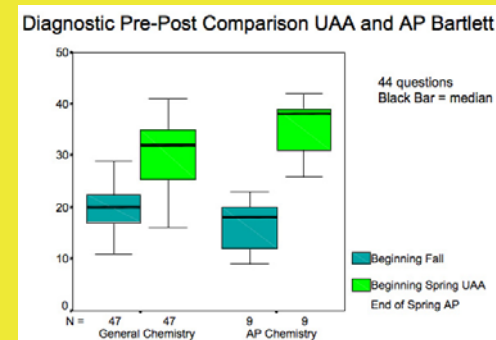


The left ten bars show a D,F,W rate that fluctuates between 41 and 66%. This data is before the use of POGIL.

Students taught with POGIL:

- Learn in 3 to 4 person groups
- Examine a model of a chemical concept
- Develop an explanation of the model including metacognitive thoughts about the model
- Test their model through additional exercises
- Each group presents a synthesized report of the concept to the class.
- Pretest with the California Diagnostic Test
- Instruction in Chemistry Using POGIL and Laboratories
- Beginning this year, Posttest both classes with the American Chemical Society (ACS) College Chemistry Standardized Exam

We know POGIL works. In the graph to the left, the right three bars not only show a steady decrease in the number of students with a D, F, or W but it shows the current rate of D, F, or W is 26.6%. This result is also replicated in ACS standardized exams where student scores matched nationally normed distributions.



Engaging in a network helped us to affirm the efficacy of the method across settings. The network enabled us to corroborate our respective findings independently.

The corroboration of our data and publicizing the data to the network led to recognition for our collaboration and findings in several national meetings.

## Shared Principles: the 'Universal Design' classroom environment II

- **POGIL**, Process Oriented Guided Inquiry.
- Students are in groups
- Examine a model
- Develop an explanation
- Test their explanation through exercises
- Provide a synthesized report for the class
- Reading Apprenticeship (RA), WestEd. Adopted by AEIN
- Students are in groups
- Examine a reading passage
- Give meaning using **KWL**, Know, What they must find out, Learn by explanation and questions
- Test their understanding by group discussion
- Provide synthesized report for the class.

