

# Tracking student problem-solving strategies in online PBL case discussions

A method to target interventions to individuals and groups most in need of help

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## Demographics:

Hispanic: 44%

Anglo: 43%

Native American: 10%

Black: 2%

Asian: 1%

- In School of Medicine  
- But, Undergrad major



# Earlier work: Using Biochemistry-content PBL cases in small face-to-face groups



W. L. Anderson, S. M. Mitchell, and M. P. Osgood, *Comparison of Student Performance in Cooperative-Learning and Traditional Lecture-Based Biochemistry Classes*. *BAMBED* 33:387-393 (2005)

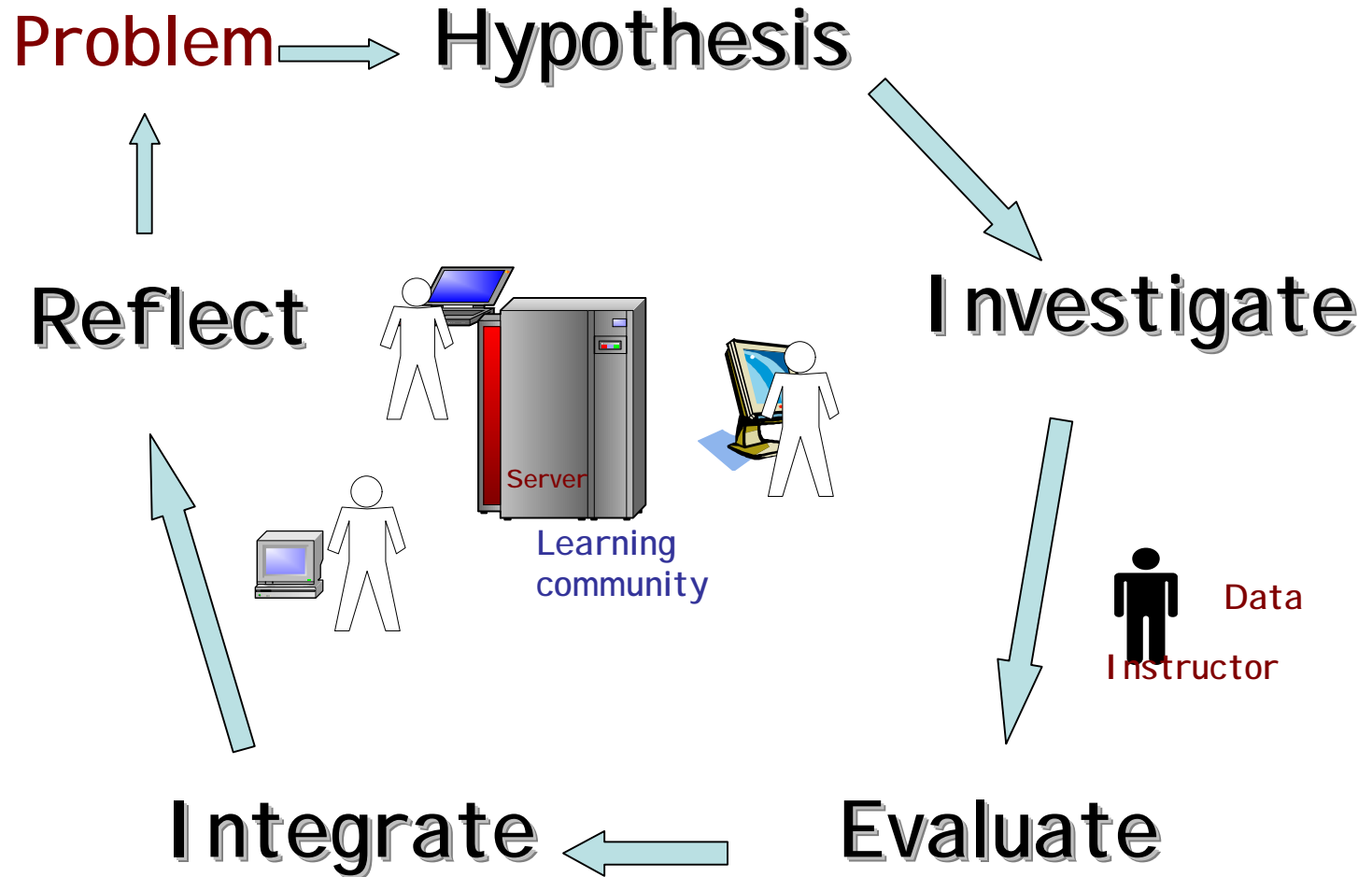
M. P. Osgood, S. M. Mitchell, and W. L. Anderson, *Teachers as learners in cooperative-learning and traditional lecture-based biochemistry classes*. *BAMBED* 33:394-398 (2005)

How to implement in classes of 100 or more?

Do it on-line...



# Progressive-Reveal Group PBL-Case



- Problem presentation is vague
- "Resources" are limited and data requests must be justified

# CSI : Albuquerque

## Active Case File:

The mysterious death of a beloved professor

A true case, only the names and situation  
have been changed to protect the guilty



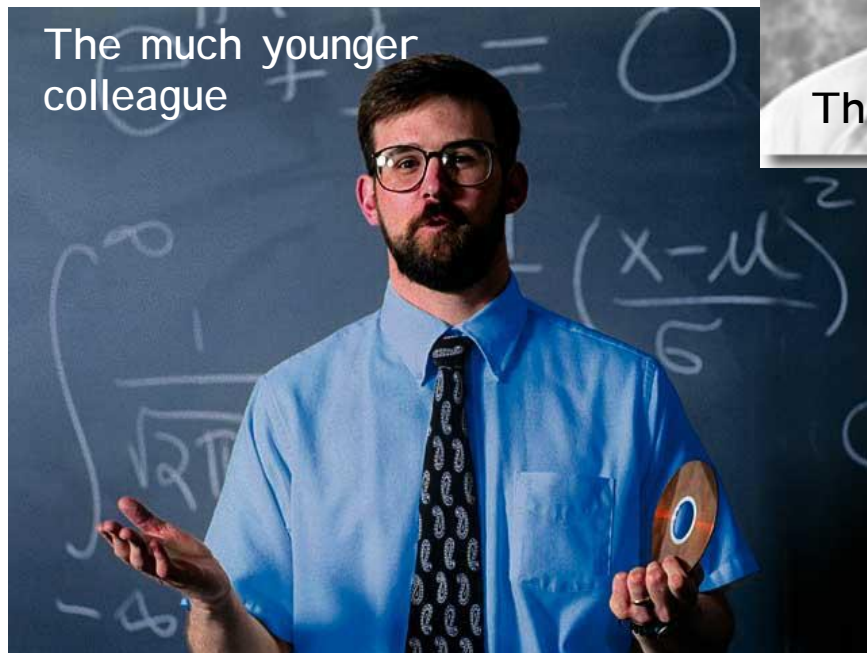
The graduate student



The chairman



The professor's mourning widow



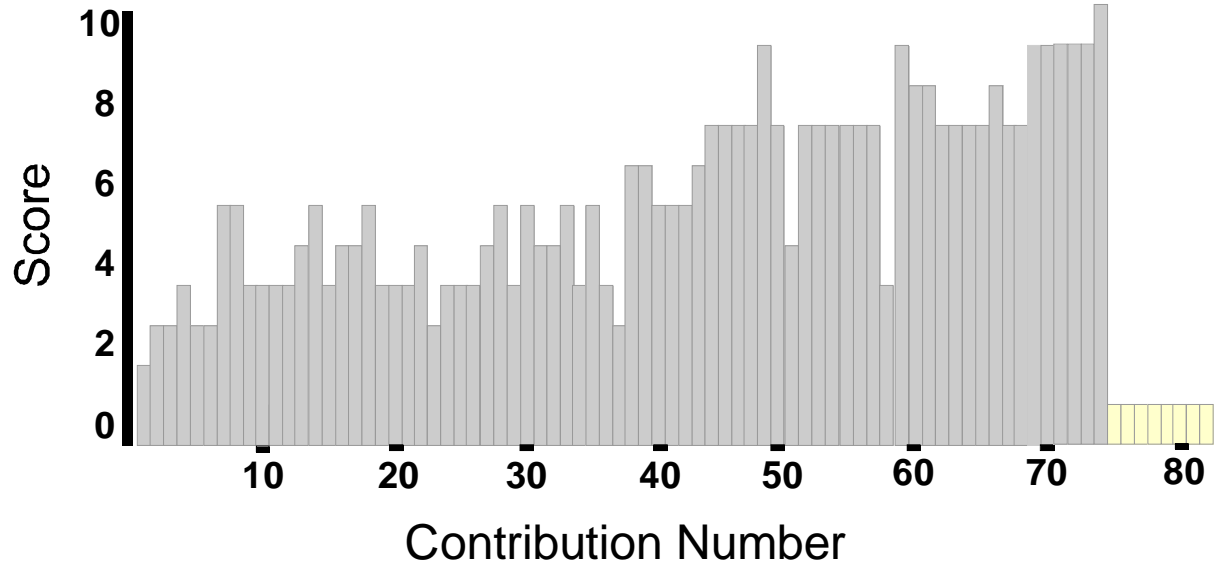
# The Suspects



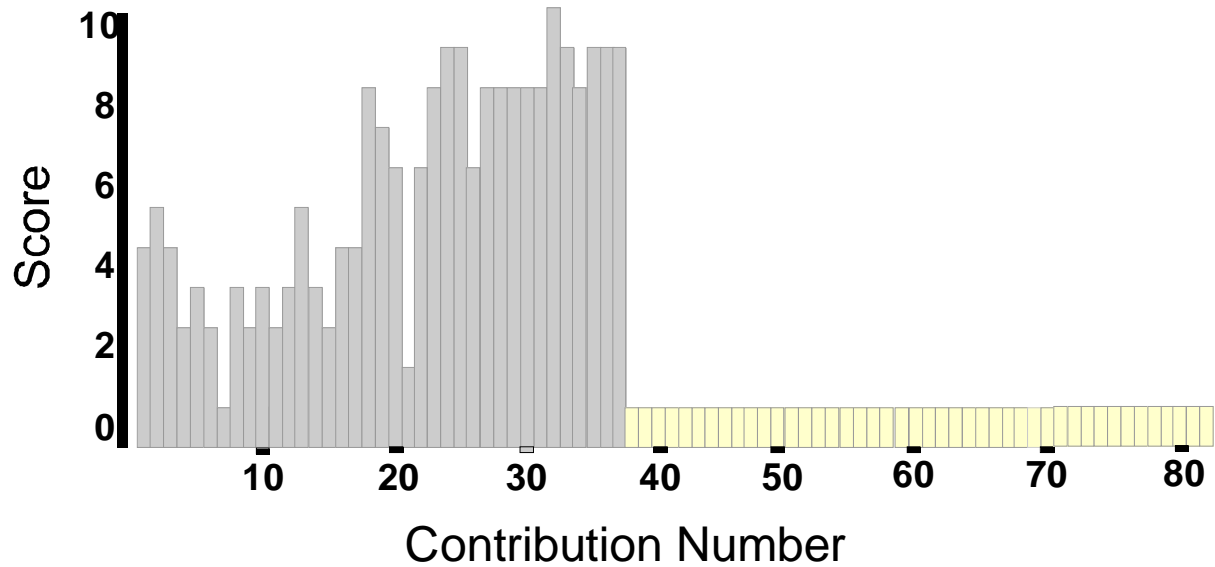


# Group Progress/Dynamics: 4 Different Groups

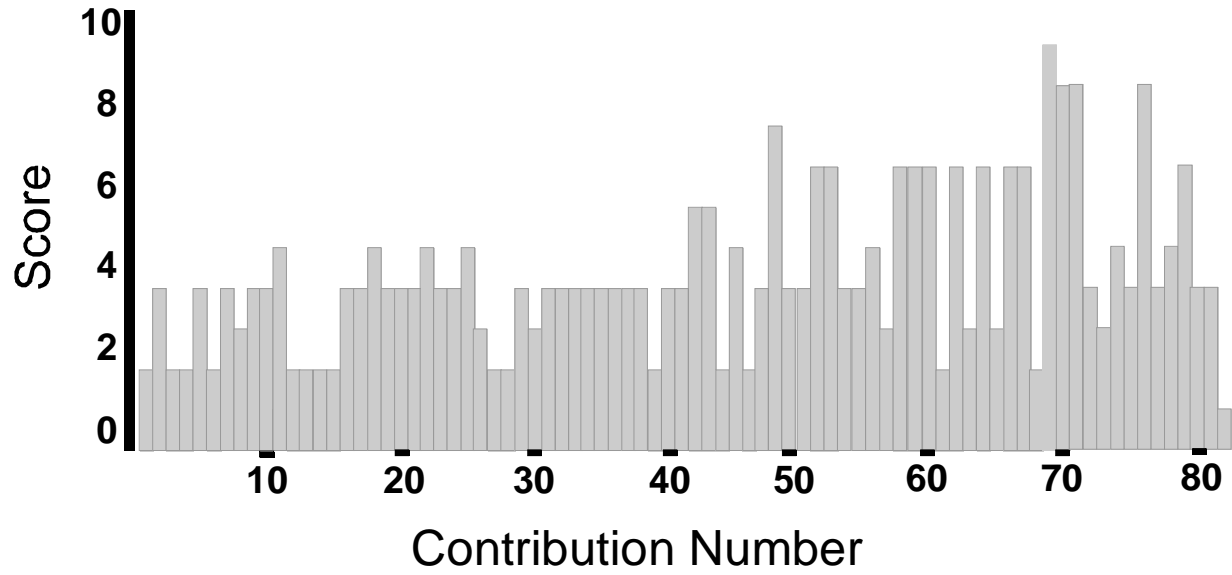
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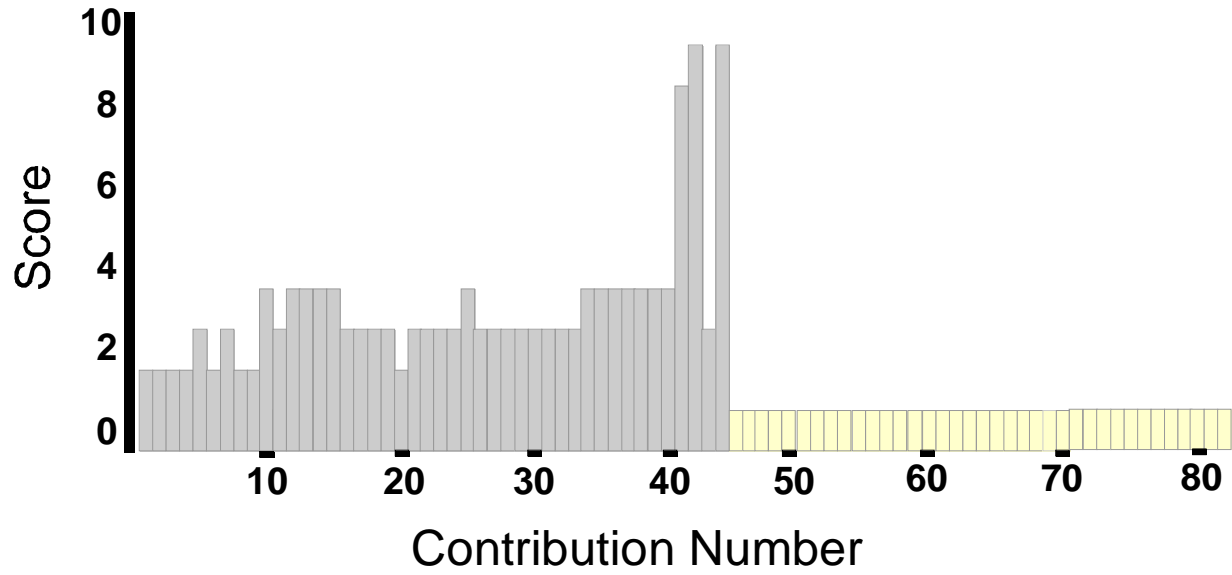
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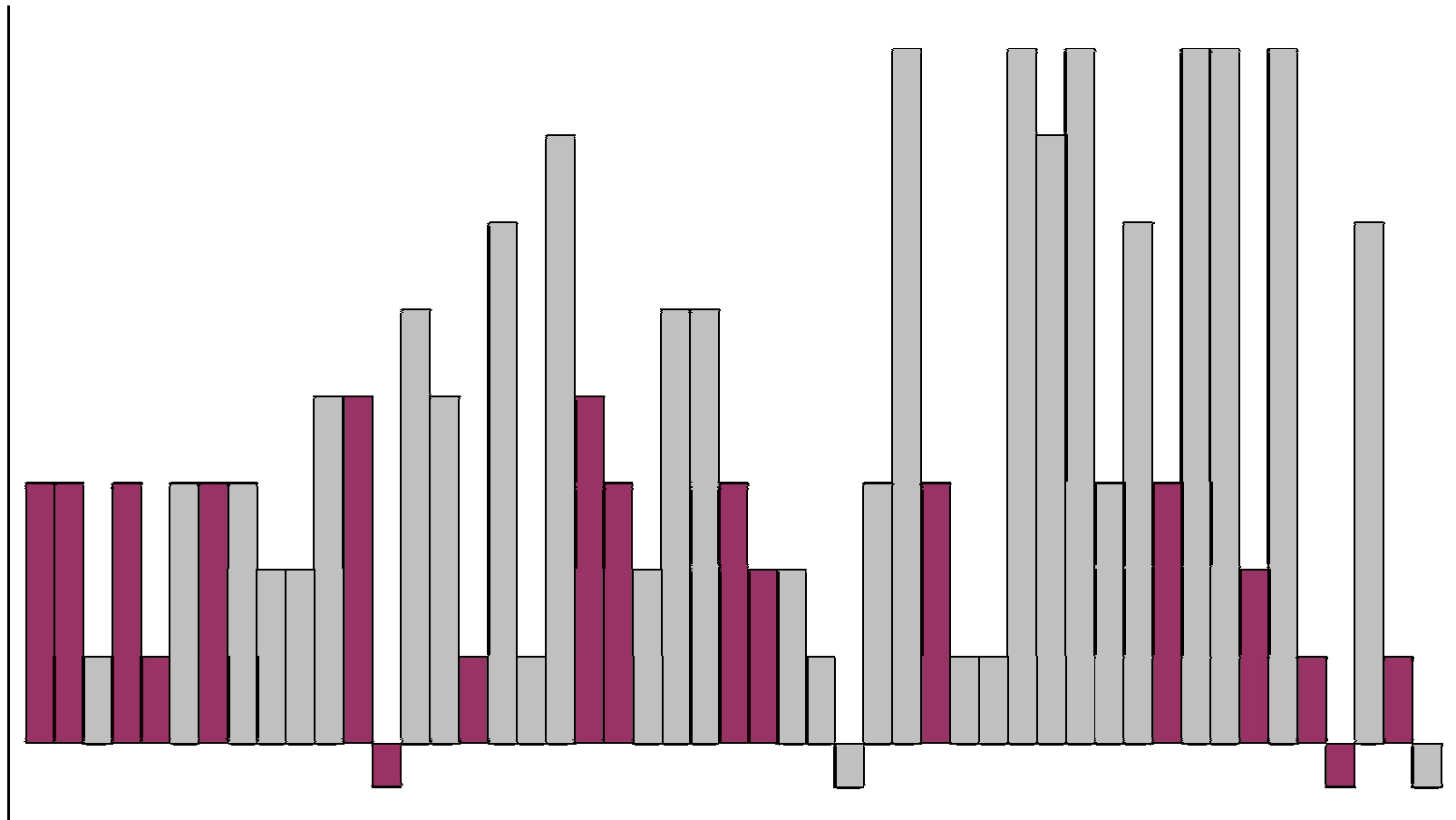
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4



# Individual Student Progress Within a Group



What is this student's problem solving strategy?

# Problem-Solving Domains

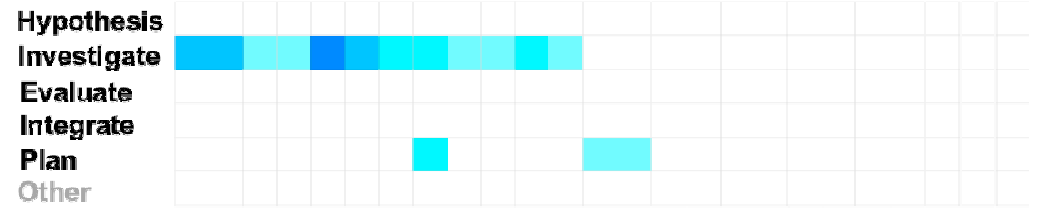
- Is the student generating reasonable **hypotheses**?
- Is the student proposing an appropriate **investigative** strategy?
- Is the student correctly **evaluating** supplied data?
- Is the student **integrating** conclusions from the data with known mechanisms or facts?
- Is the student **reflecting** on their own contributions, or planning to address potential new problems as a result of their proposed intervention?





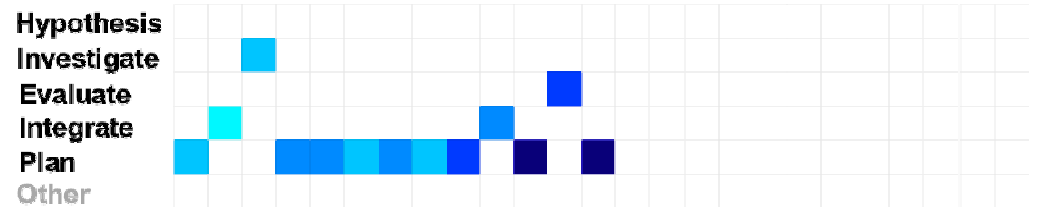
# Individual Student "Roles" Within the Group: Common patterns

A



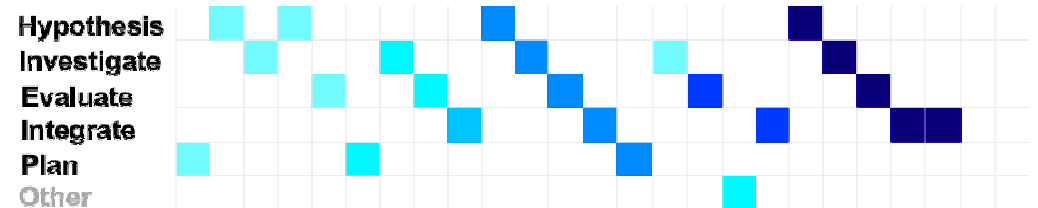
Contribution Number

B



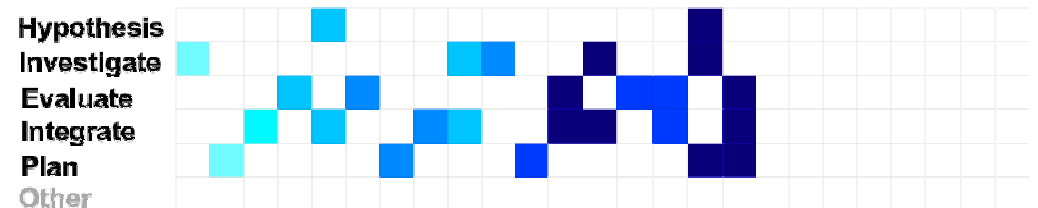
Contribution Number

C



Contribution Number

D



Contribution Number





# Problem-Solving Domains: Individual PBL Exams

