UNM | Department of Chemistry & Chemical Biology

STEM GATEWAY

General Chemistry I: A Course Redesign Experience

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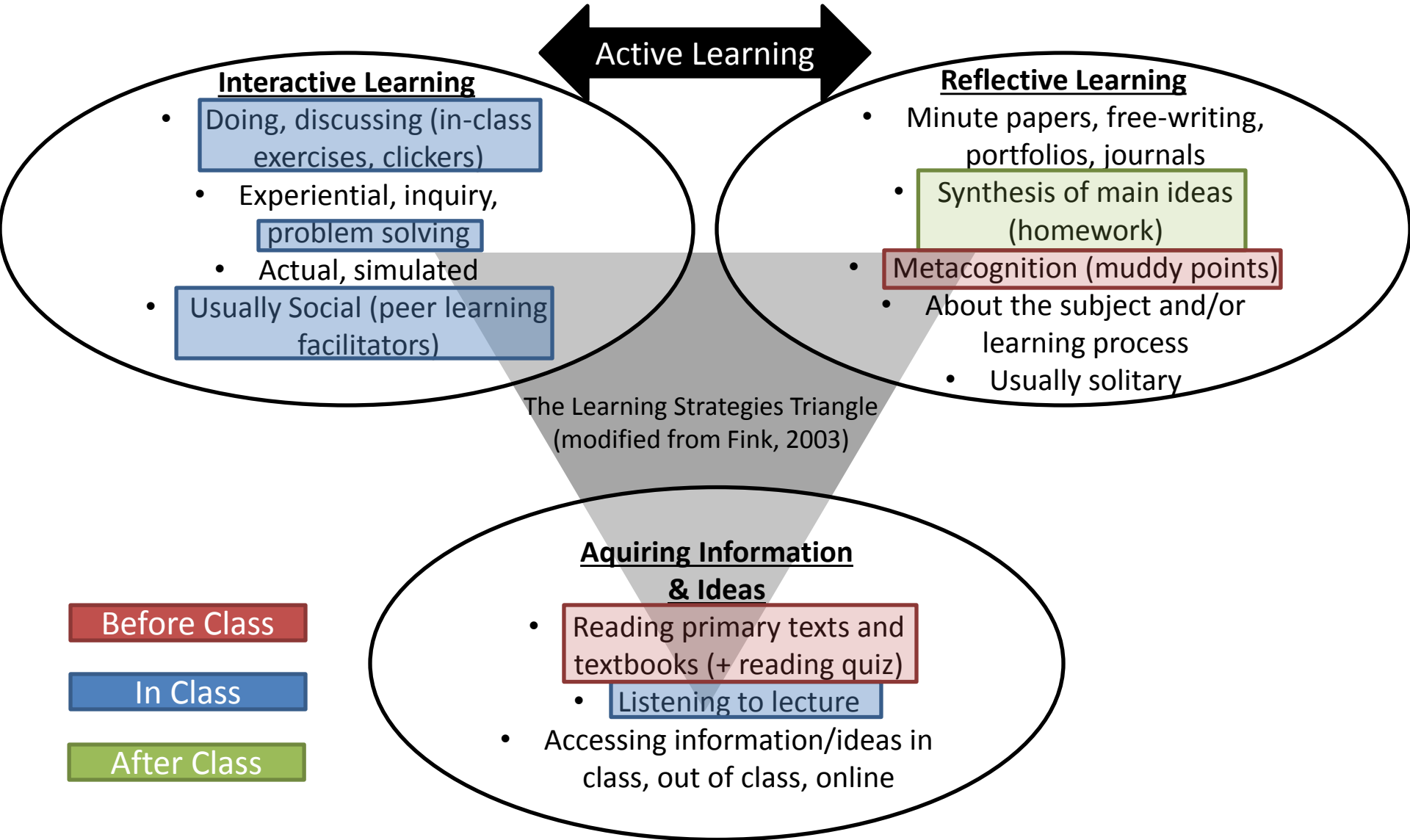
Why Redesign General Chemistry?

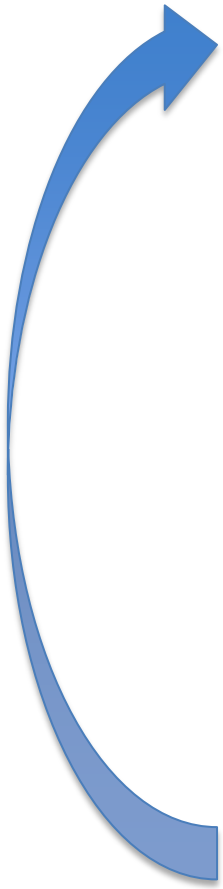
- CHEM 121 required for >20 degree programs at UNM
- Historical DFW for CHEM 121 and CHEM 122 between 20 and 50%
- Students persisting in STEM have As and Bs in CHEM 121*
- UNM has a high % of under-represented minorities and first generation students

* STEM GATEWAY PROGRAM DATA

Major Themes of the Redesign

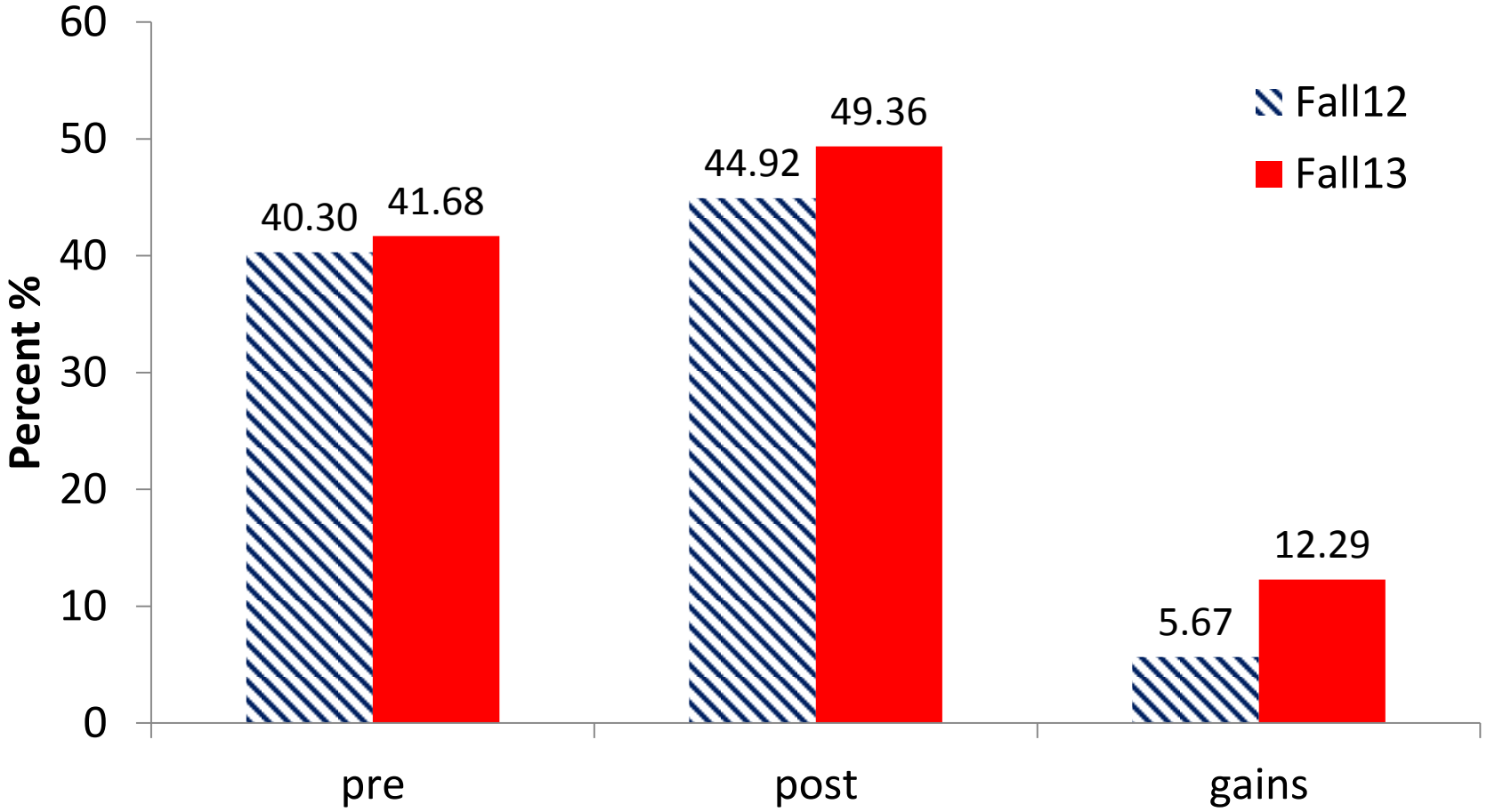


Getting started:



- Identify key areas of difficulty (concept inventory data)
- Develop course materials to target these areas
- Promote use of active-learning techniques with new instructors.
- Implement in Fall 2013 and assess
  - 4 sections taught using full redesign
  - 2 sections taught with elements of redesign
  - *Instructors from all 6 sections participated in regular meetings and discussion.*

Assessment: How Our Students Perform Now:

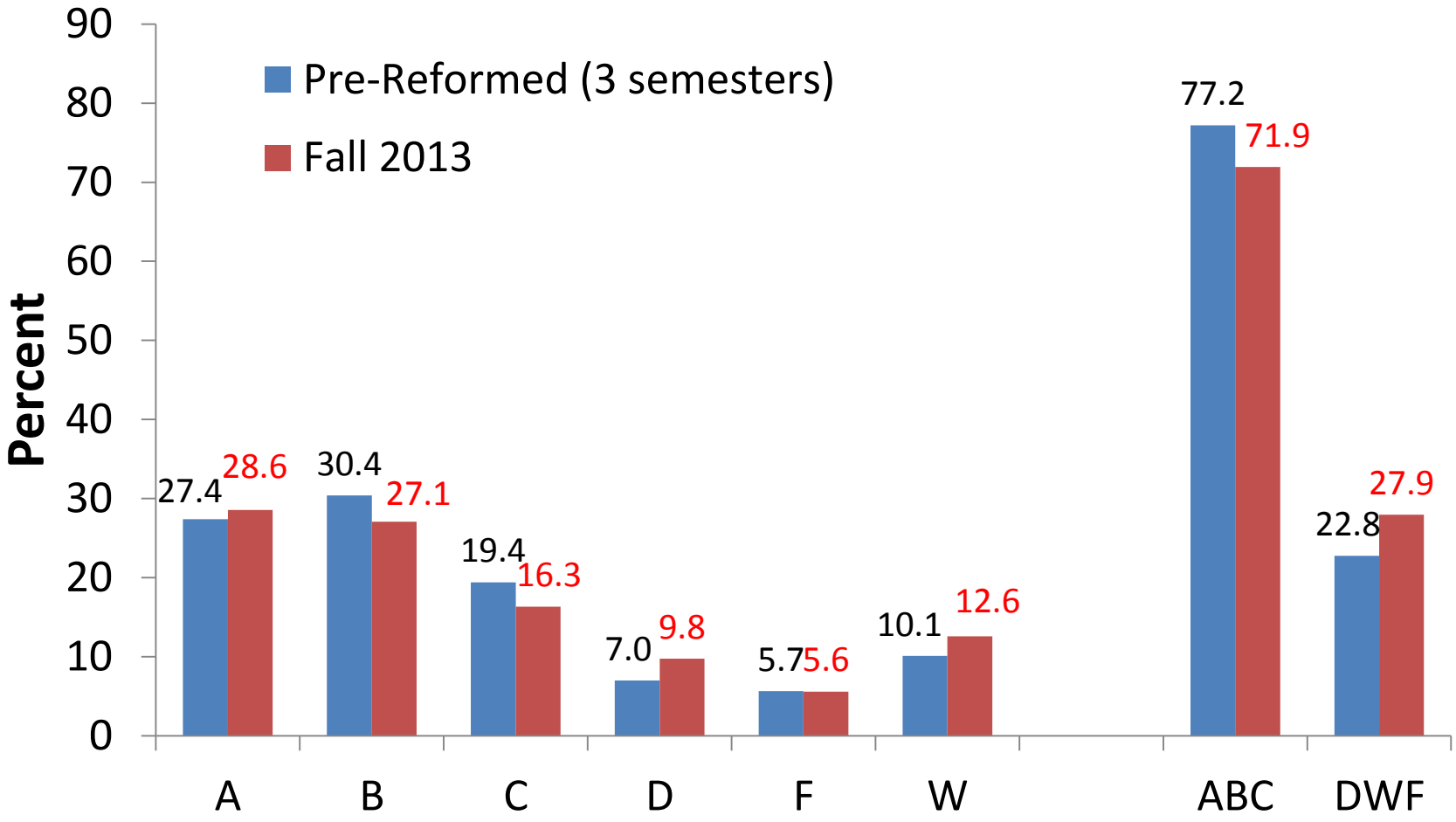


How Our Students Perform Now:

Spring13	Chem121 Final Exam		
	1	**2**	**Mean**
Final	64.03	64.28	64.16

Fall13	CHEM 121 Final Exam						
	1	**2**	**3**	**4**	**5**	**6**	**Mean**
Final	57.95	60.93	69.56	65.03	65.68	66.08	64.21

How Our Students Perform Now:



Evaluating the redesign: instructors' perspective

- Learning curve
- Attendance
- Engagement
- Achievement
- Classroom environment

Next Steps or Future Work

- Do active learning strategies of this reformed approach adequately prepare students to be successful in the next science courses?
- Does the reformed approach benefit a special group of students?
- How to extend the scope:
  - helping faculty new to active-learning to implement it
  - Sharing our experience in other courses and or disciplines

Acknowledgements

- The STEM Gateway Program
- Dr. Gary Smith
- Dr. Stephen Cabaniss

Questions? (for NMHEAR)

- Our specific course redesign questions
  - how best to close the assessment loop?
  - how to extend the impact (including new instructors)?
  - what constitutes active learning?

- Also – if you are an instructor what are you currently doing in your classes along these lines, if administrator, what is being done at your institution
- What are your goals for your class/institution with respect to active learning?
- What are your questions for us about your specific class/institution?