Peer Led Team Learning (PLTL) in Computer Science

SIGCSE 2007

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Acknowledgments

- NSF-CNS 0420436, 0420343, 0638510, 0419340, 0638499, 0420433, 0420358, 0420312
- Prentice-Hall
- Pratibha Varma-Nelson (Northeastern Illinois): NSF-DUE 99722457, 0004159

Peer-Led Team Learning (PLTL) in Computer Science

- PLTL: used in Chemistry and other sciences for about 10 years
- Similar to Calculus “Emerging Scholars” program
- Us: 7-school, NSF-funded project to try PLTL in Comp Sci (Beloit, Duke, Loyola of Baltimore, Georgia Tech, Rutgers, UW-Madison, UW-Milwaukee)

Possible Goals and Approaches

- GOALS:
  - Increase # of women and minority students
  - Increase retention, enthusiasm

- APPROACHES:
  - Active recruiting of incoming freshmen
  - Optional / required of registered students

What is PLTL?

- Weekly, 2-hour group meetings *in addition to* regular class
- 5 – 8 students per group
- A well-trained undergrad group leader
- Interesting exercises to be done *as a group*

Groups != Discussion Sections

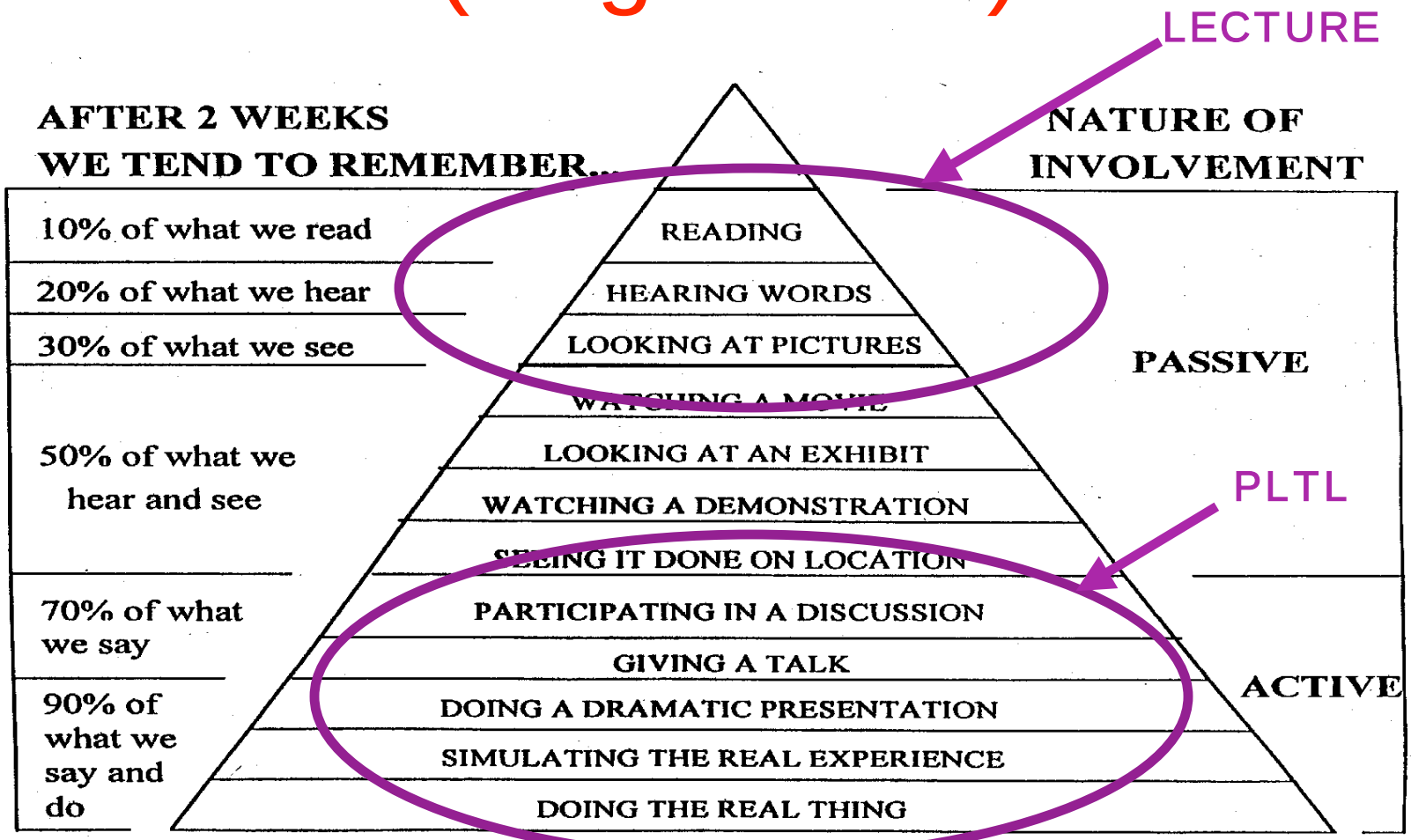
- Students helping, learning from, other students
- Less authoritative; liberate and empower students
- Promote active learning, encourage teamwork
- More fun!

Why PLTL?

- Factors affecting intellectual development in college:
  - Student faculty interaction outside the classroom
  - Involvement on campus through various forms of community-building activities
  - Involvement with student peer groups
  - **“peer group – the most potent source of influence on growth and development during the undergraduate years”**

Astin, A.W. (1993) What Matters in College? Jossey-Bass Publishers, San Francisco. pg. 394-398.

CONE OF LEARNING (Edgar Dale)

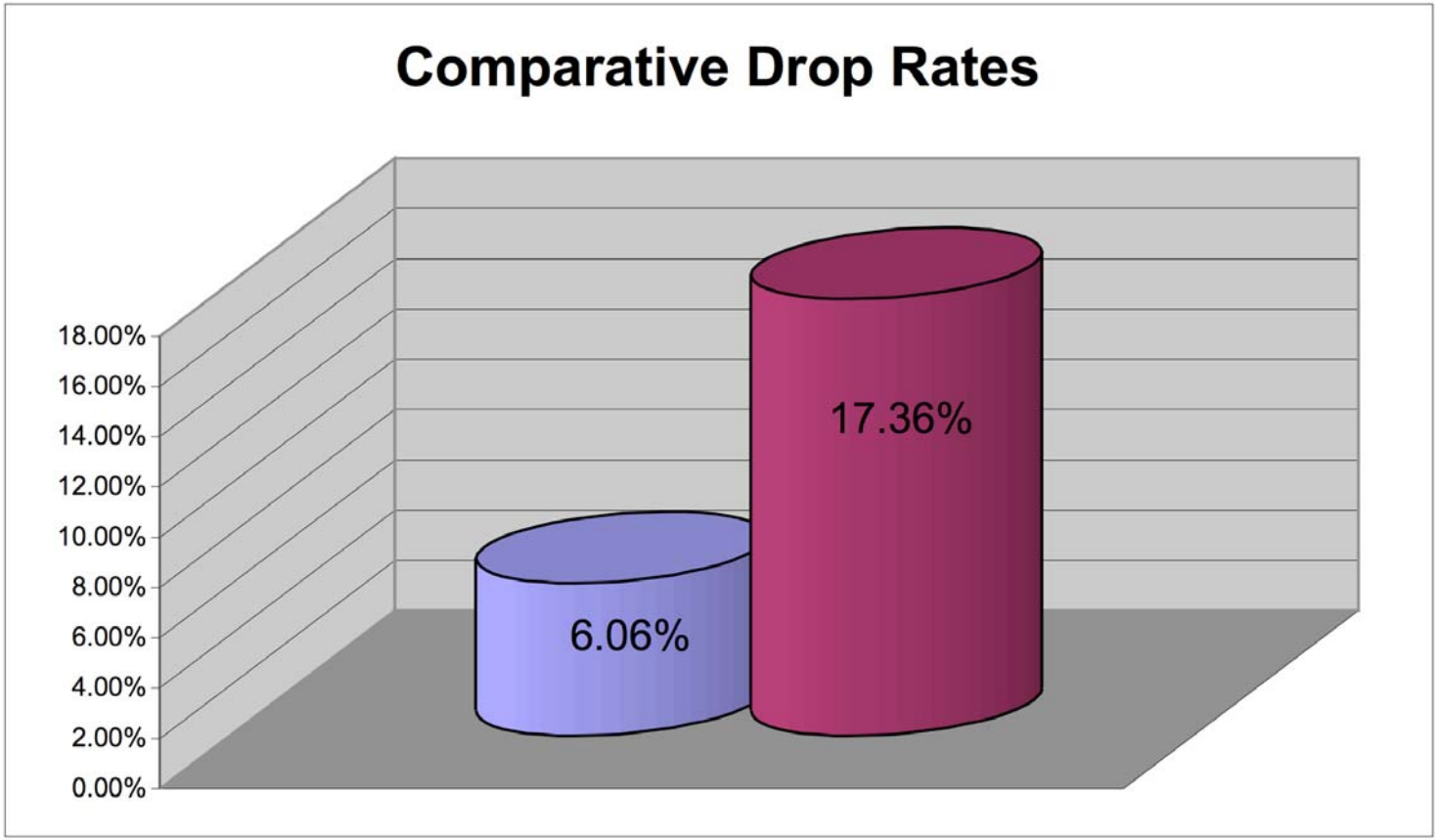


Edgar Dale, *Audio-Visual Methods in Teaching* (3rd Edition). Holt, Rinehart, and Winston (1969).

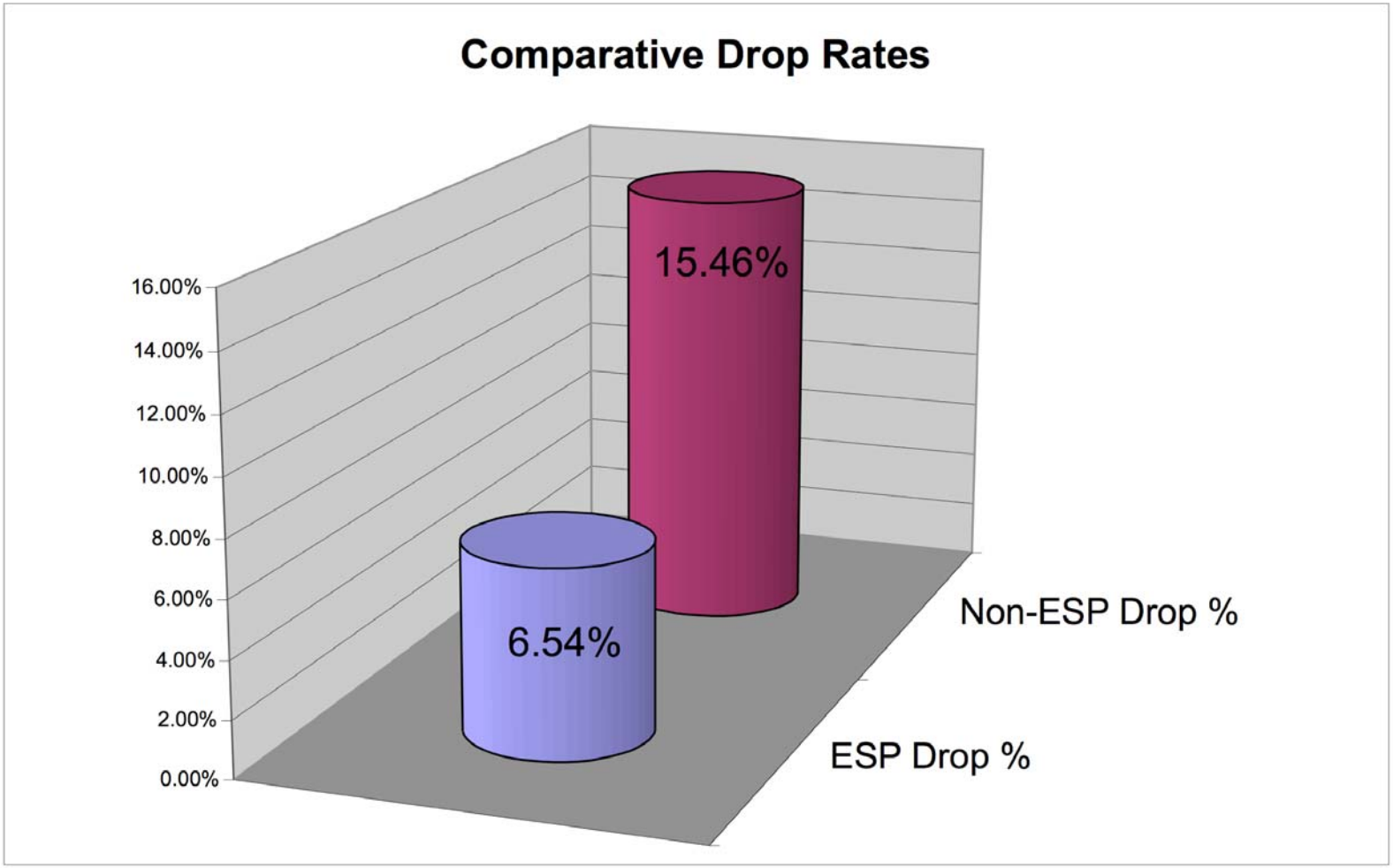
Effects on Students

- Better / deeper understanding of material
- Lower drop rates
- Better grades (usually)
- Formation of social groups
- Very high satisfaction!

2005 Drop-Rate Data (Beloit, Duke, Madison)

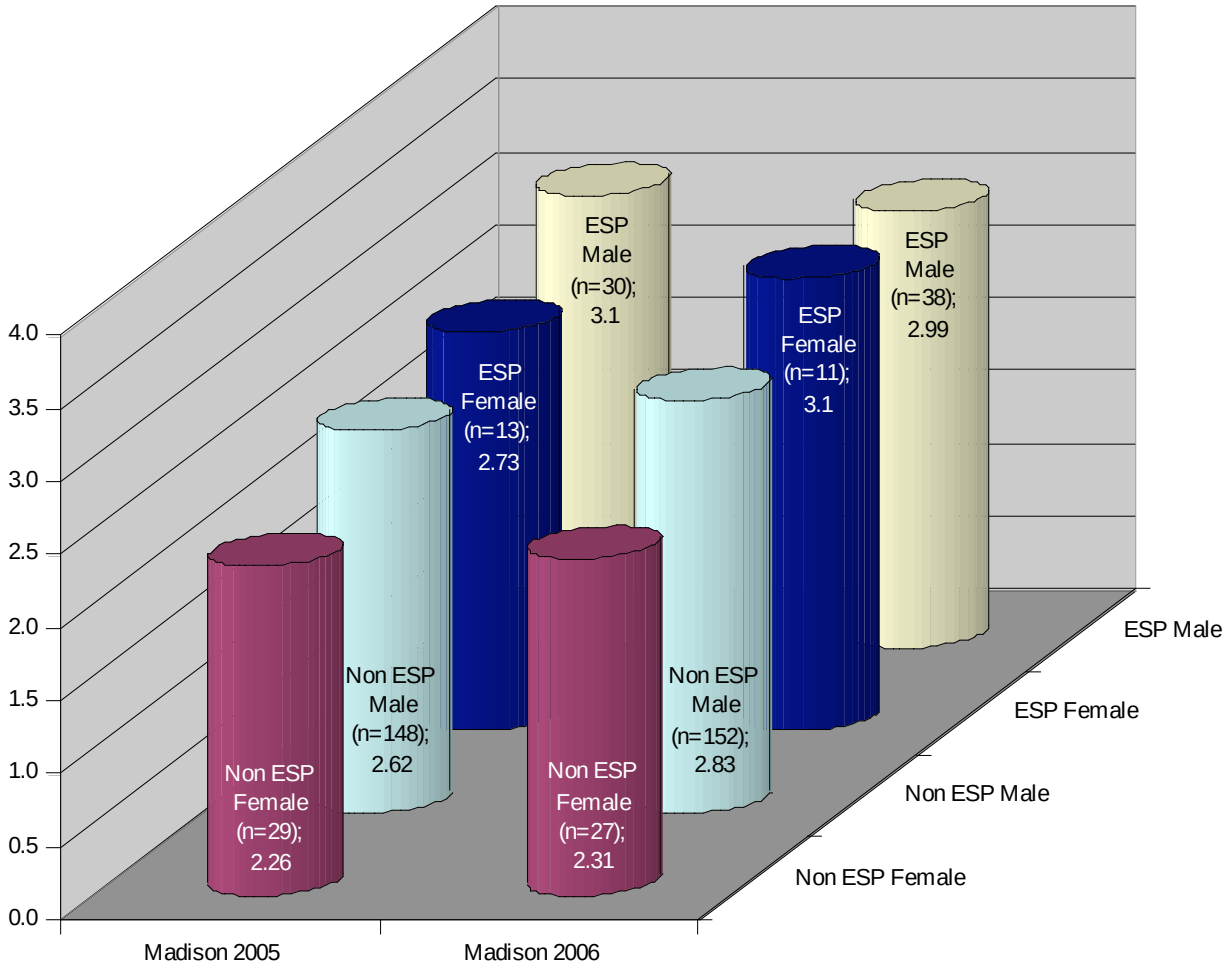


2006 Drop-Rate Data (Beloit, Loyola, Madison, Milwaukee, Rutgers)

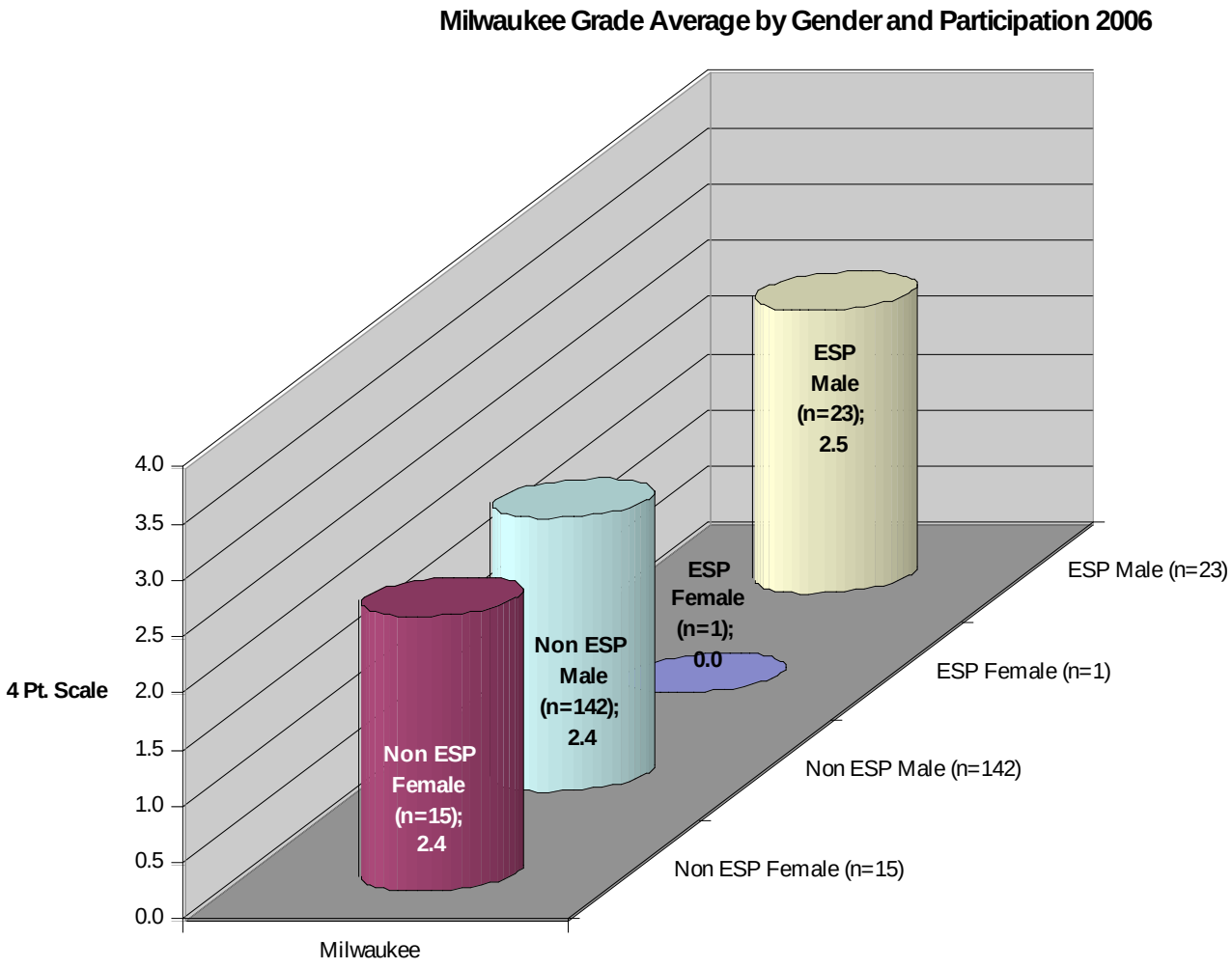


05, 06 Madison Grade Data

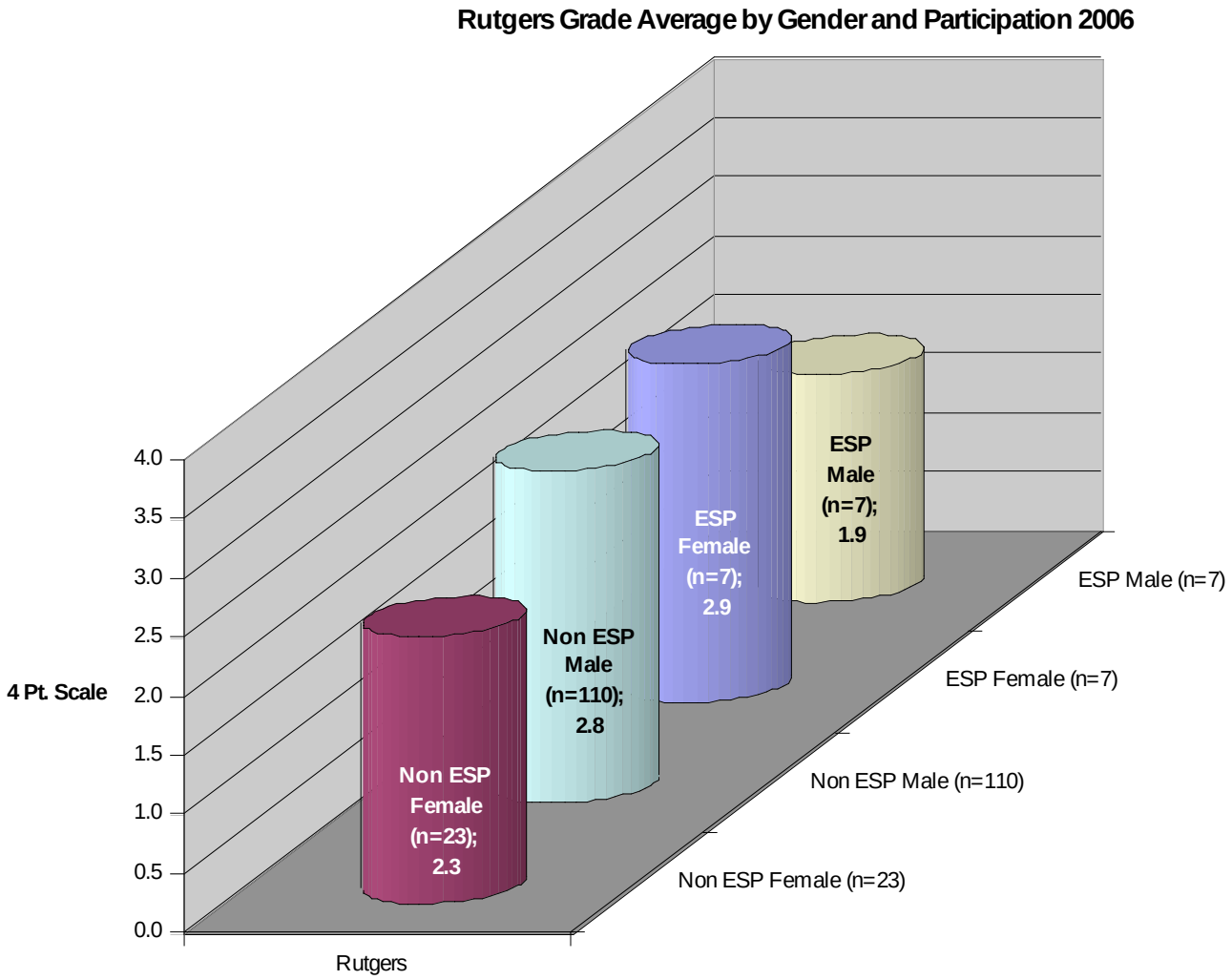
Average Grade by Gender & Participation 2005, 2006



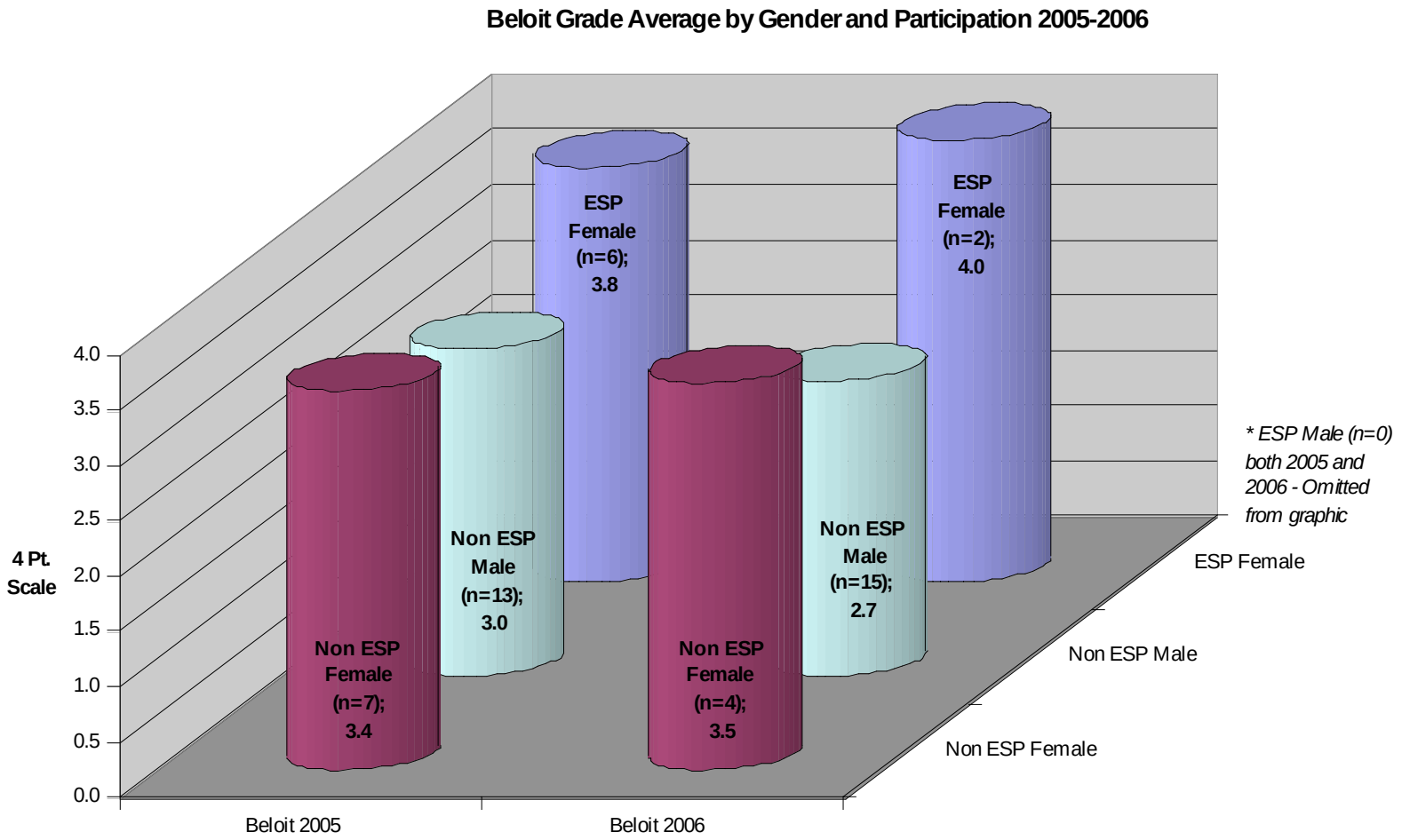
06 Milwaukee Grade Data



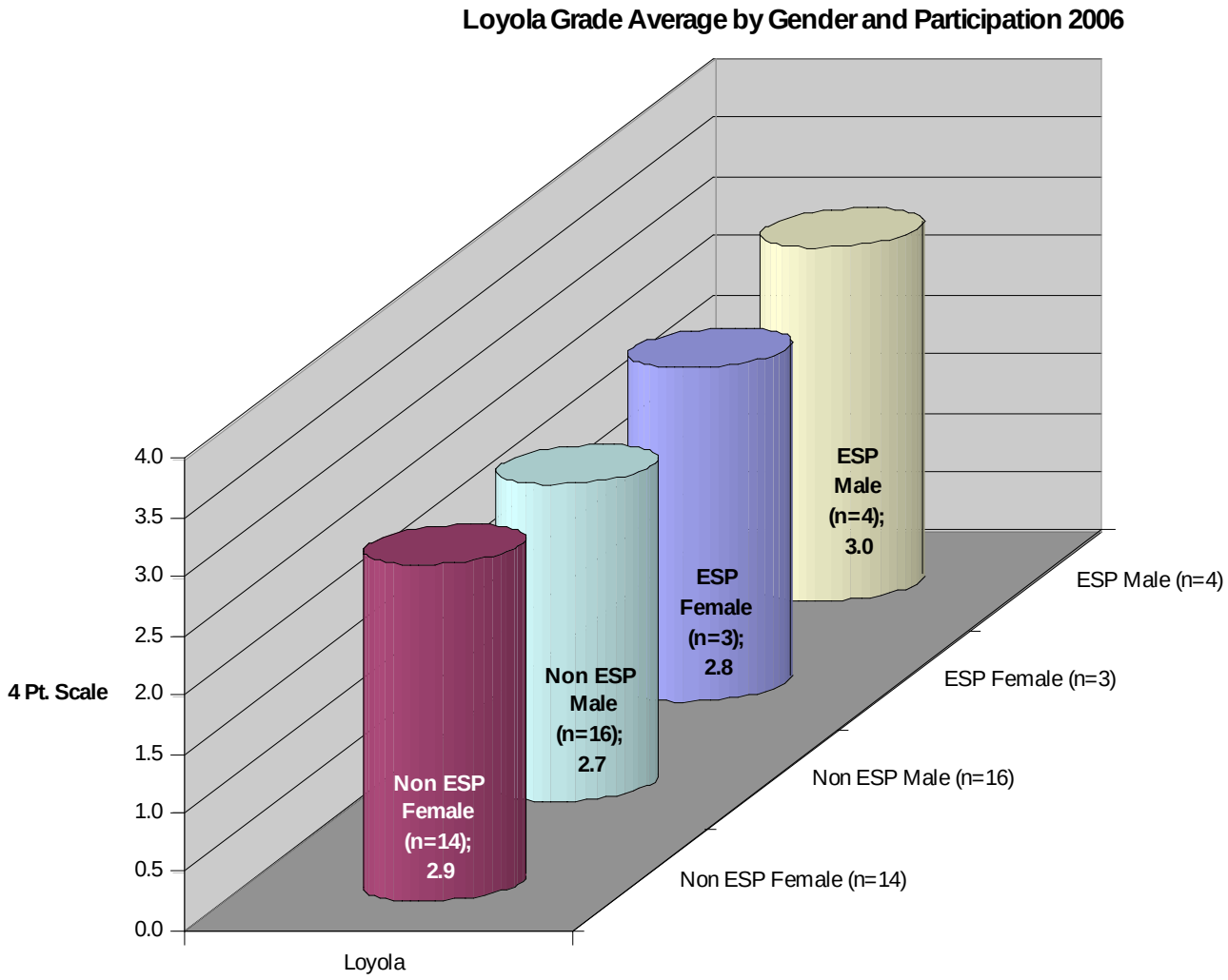
06 Rutgers Grade Data



05, 06 Beloit Grade Data



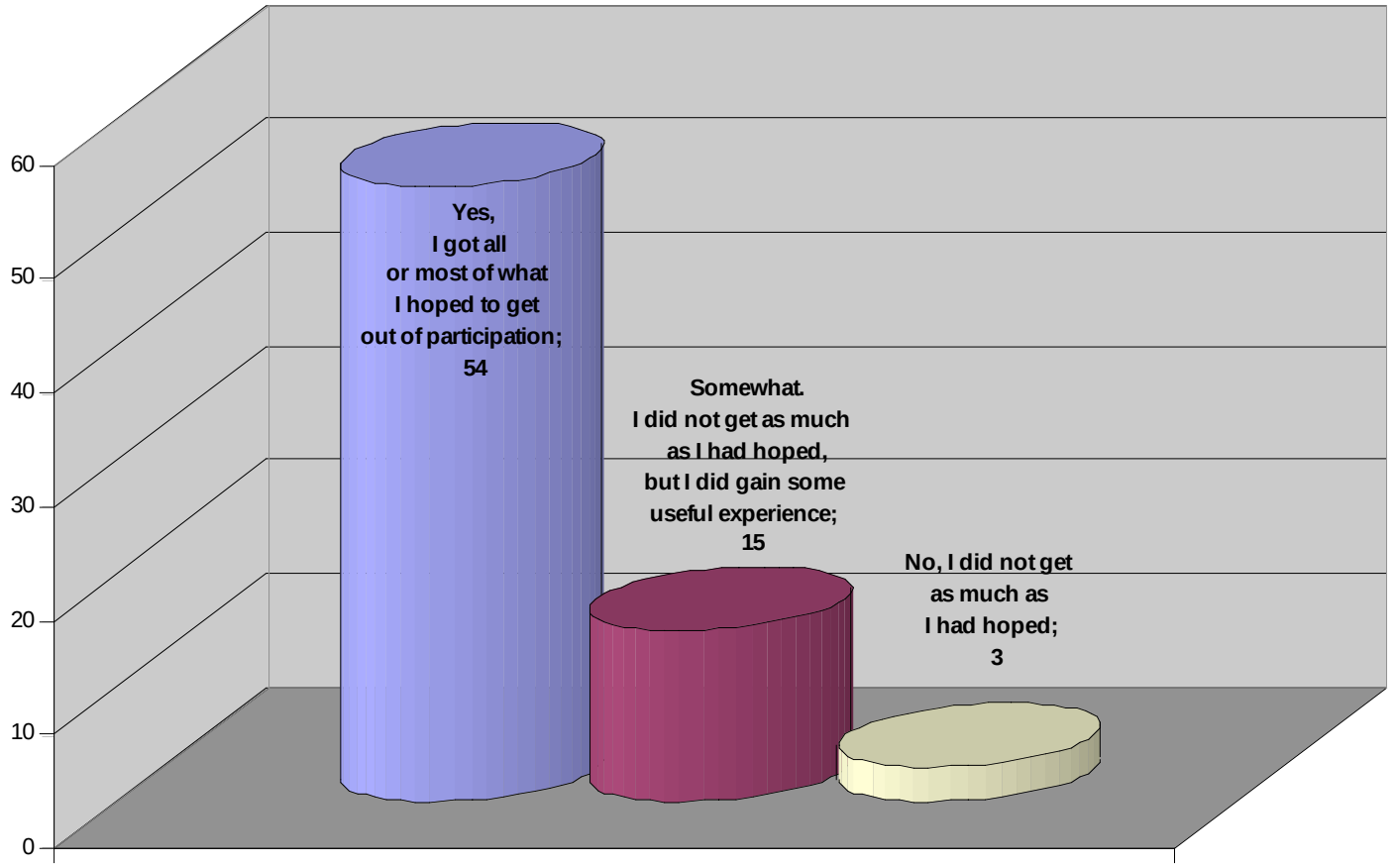
06 Loyola Grade Data



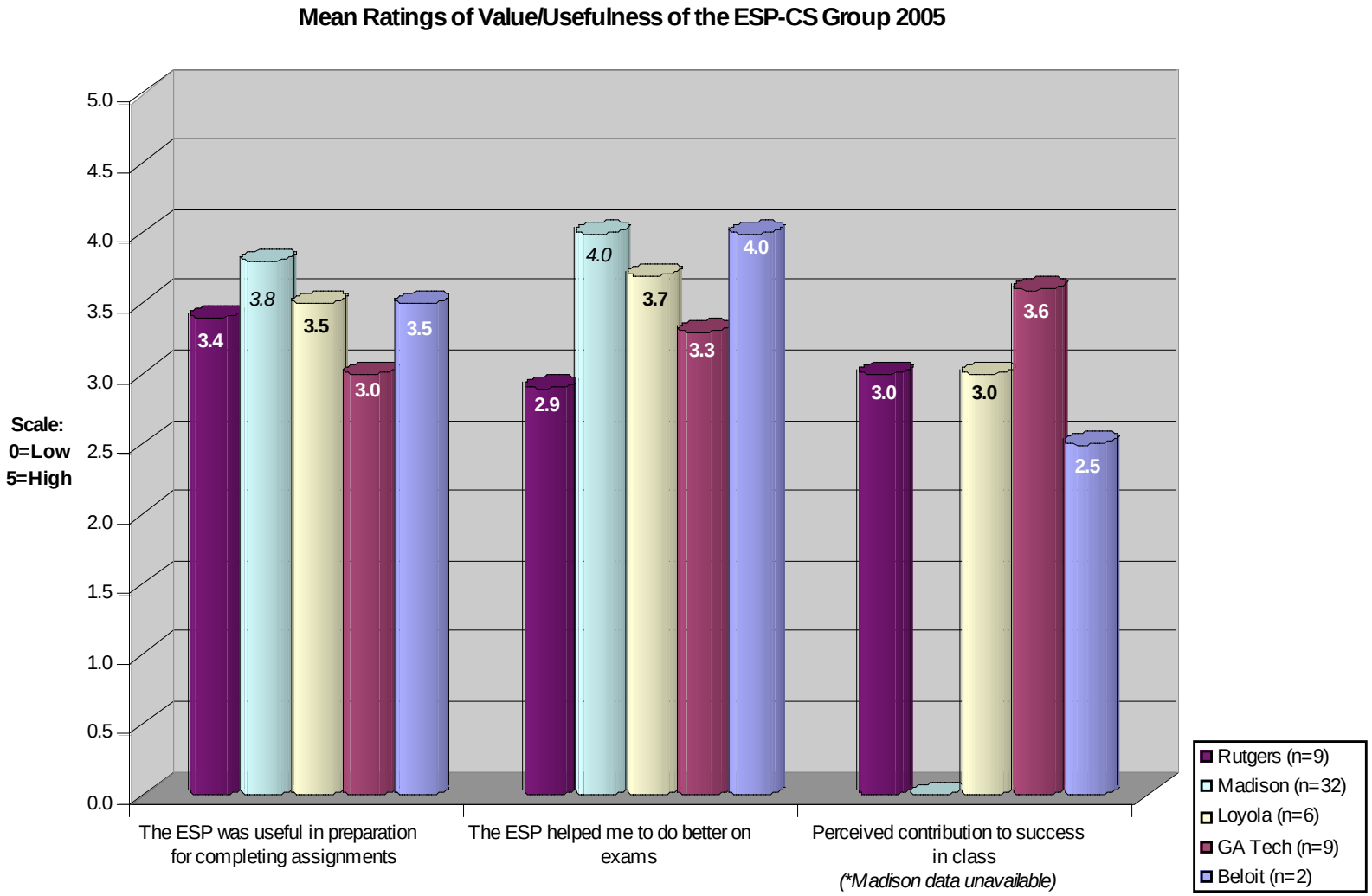
2006 Student Perceptions

Did you get what you hoped from your experience in ESP-CS?

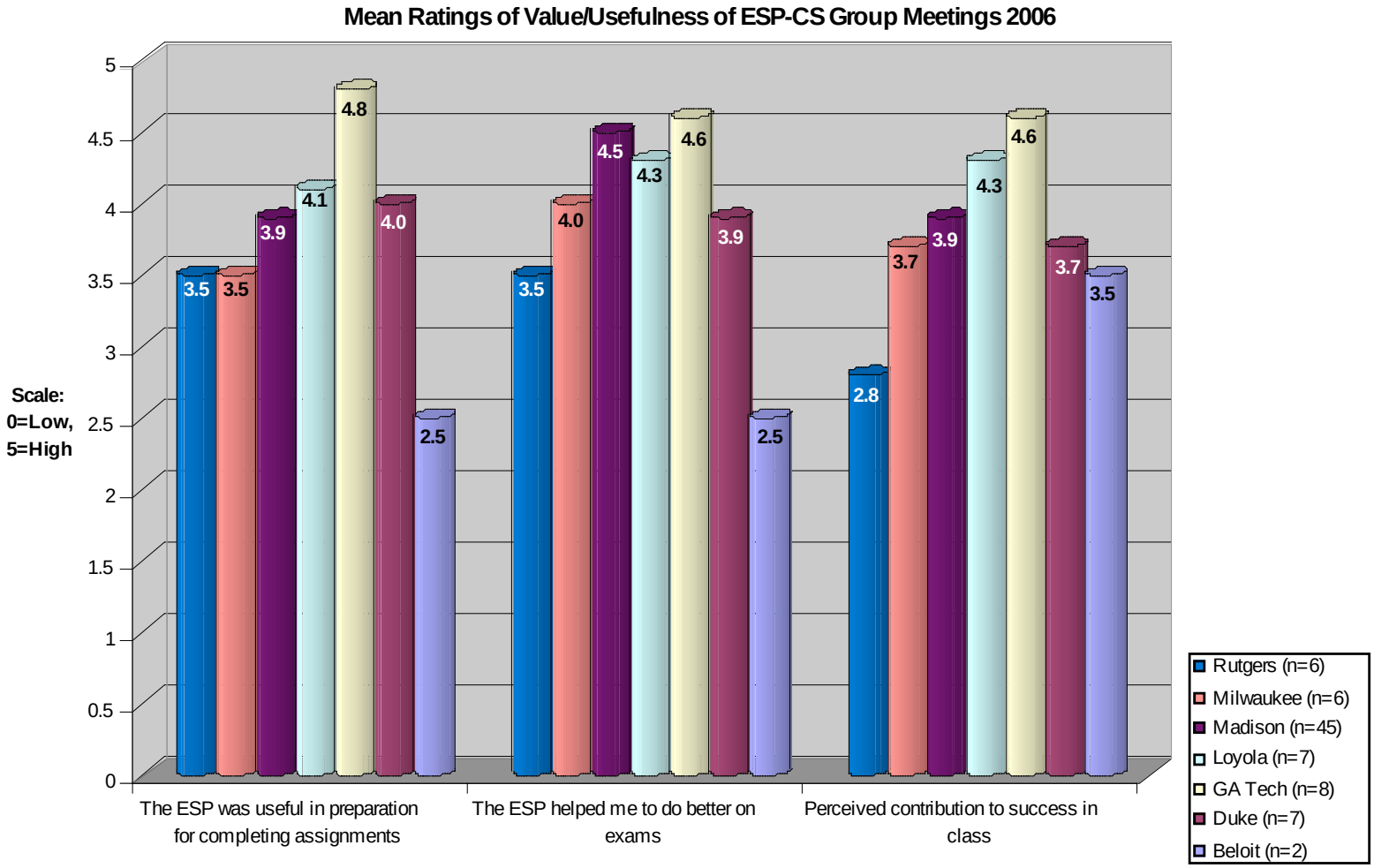
Aggregated Response - All Institutions



05 Student Perceptions



06 Students Perceptions



Effects on Peer Leaders

- Better understanding of the material
- Increased confidence to continue in CS
- Appreciation for different teaching / learning styles
- Improved leadership skills
- Collegial relationship with faculty

Student Comments

- The sessions were always fun and challenged students to think about computer science relevant problems. The sessions right before tests were often extremely valuable.
- It is extremely helpful because it provides more practice and more approaches to understanding the material.

Student Comments

- The program helped a lot since we worked in small groups because we got more one-on-one attention. I wish my discussions were like this for every class!
- I have several lectures that same day, and I originally thought, “Oh my God, by the time this comes around I'm going to be like, get me out of here.” But it's actually really enjoyable. It has to be the fastest two hours of my day

Questions?