

My experience with clickers during the last year

Organic Chemistry
CHEM 277 (120) and CHEM 372 (85)

How did I use clickers

My original objectives:

- Use clickers for lecture
 - Quizzes
 - Encourage/control attendance
 - Promote a continuous learning process
 - For feedback (statistically valid)
- Explore peer-instruction techniques
- To submit homework
- To establish if they increase students learning outcomes.

How did I use clickers

What I actually did:

- Used clickers for lecture quizzes (every lecture, also used for feedback)
- Used clickers to submit and grade homework
- Used clickers in peer-instruction techniques
- Used clickers during regular exams
- Used clickers for standard exams
- Used clickers for polls

Using clickers requires preparation

For the teacher:

Become proficient with the software

Develop a database of simple questions

Develop challenging questions for peer instruction

Implementation during lectures is not trivial

For the student:

Become familiar with the clicker. Training is necessary although simple to do.

Some survey results



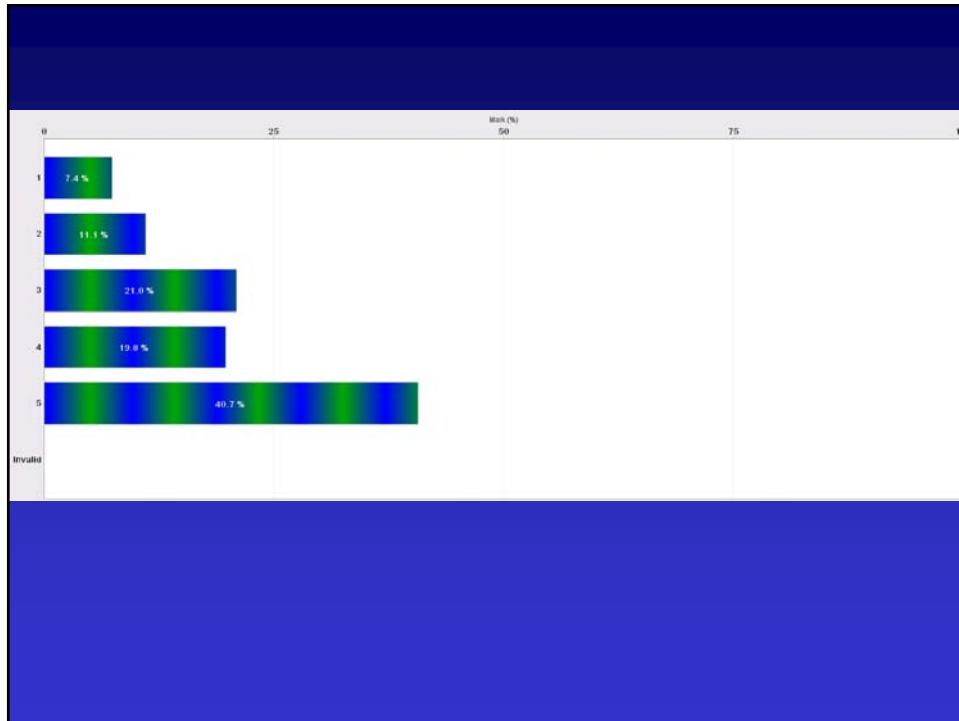
Getting feedback on my ideas
helps me learn better.

- 1) Strongly disagree
- 2) Disagree
- 3) Neutral
- 4) Agree
- 5) Strongly agree



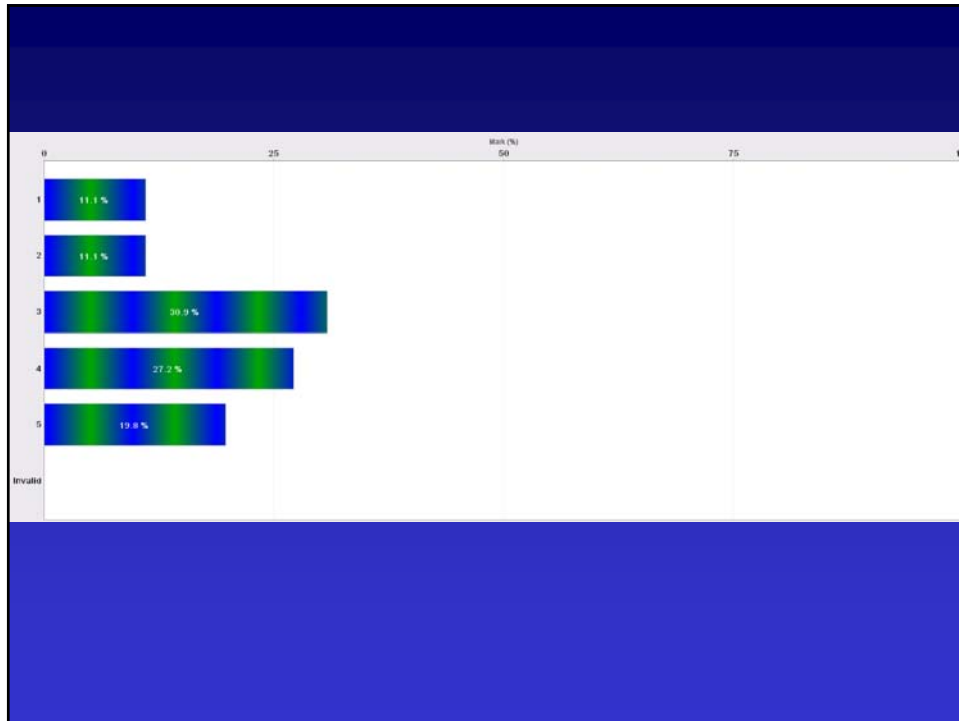
I prefer to be anonymous in large classes.

- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree



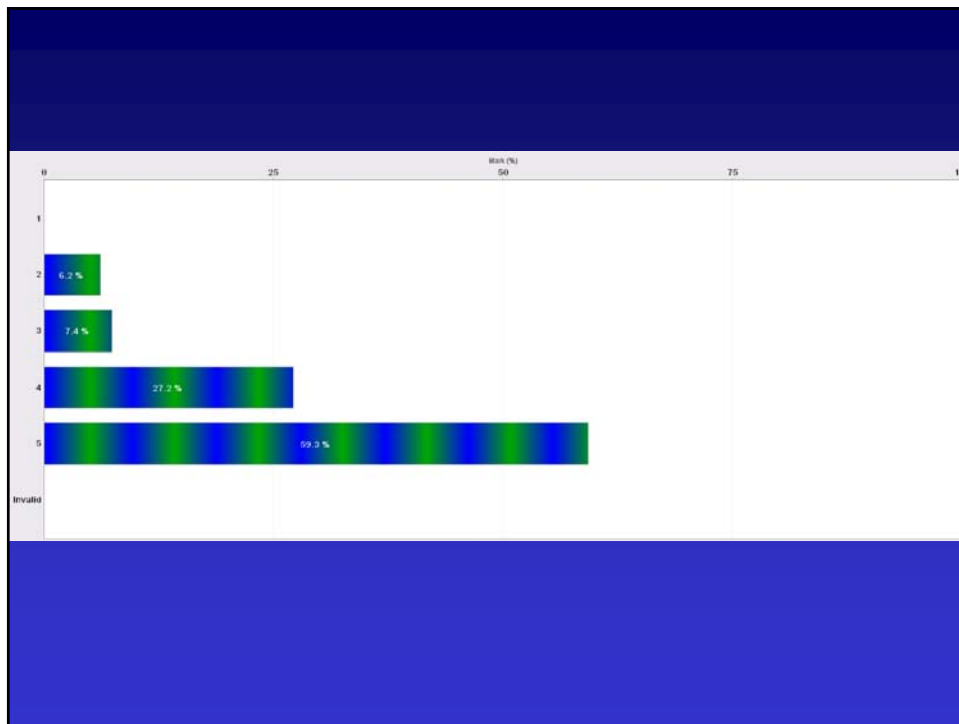
In large classes, I prefer to be involved and engaged.

- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree



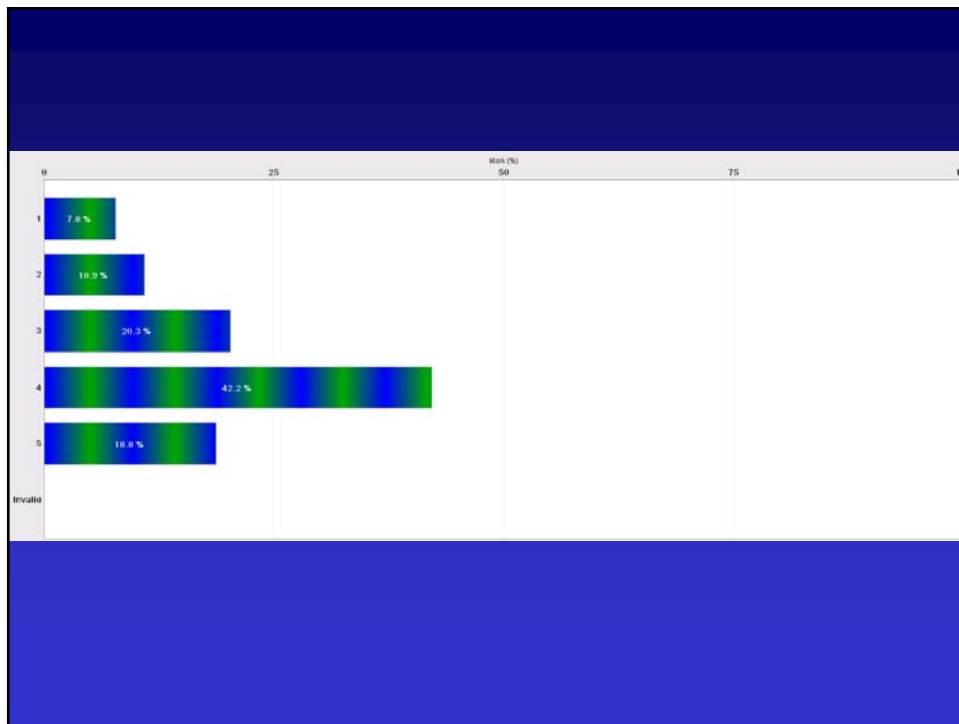
In small classes, I prefer to be involved and engaged.

- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree



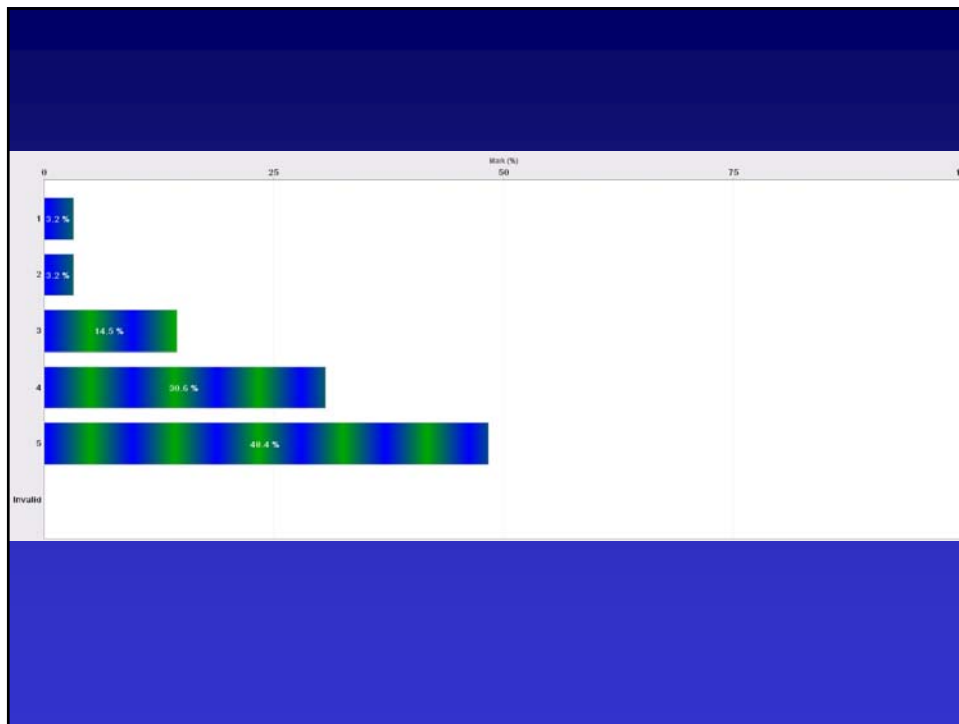
By using clickers in this class, I get feedback on my understanding of the class material.

- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree



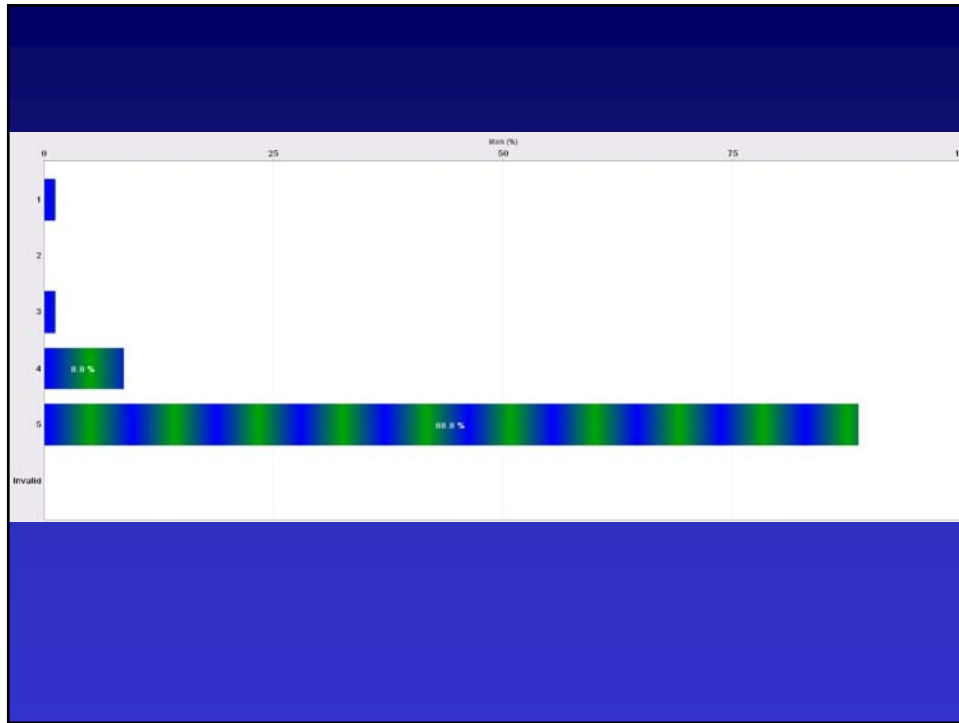
I chose my answer to each clicker question carefully.

- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree



I pay attention to whether or not my answer to a clicker question was right or wrong.

- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree

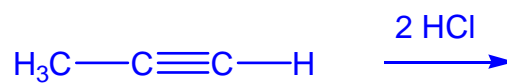


I am learning more from my peers
in this class than I do in other large
classes.

- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree

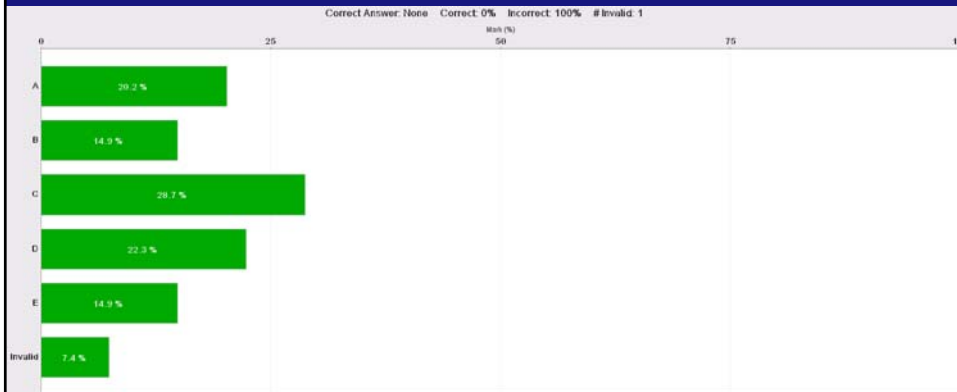


T1.

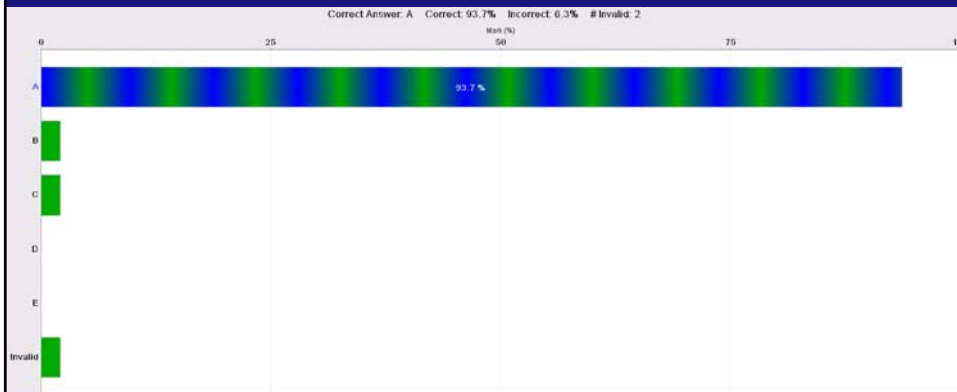


- A) $\text{CH}_3\text{C}(\text{Cl})_2\text{CH}_3$
- B) $\text{CH}_3\text{CH}_2\text{CHCl}_2$
- C) $\text{CH}_3\text{C}(\text{Cl})=\text{CH}_2$
- D) $\text{CH}_3\text{CH}=\text{CHCl}$ (*cis*)
- E) $\text{CH}_3\text{CH}=\text{CHCl}$ (*trans*)

Before



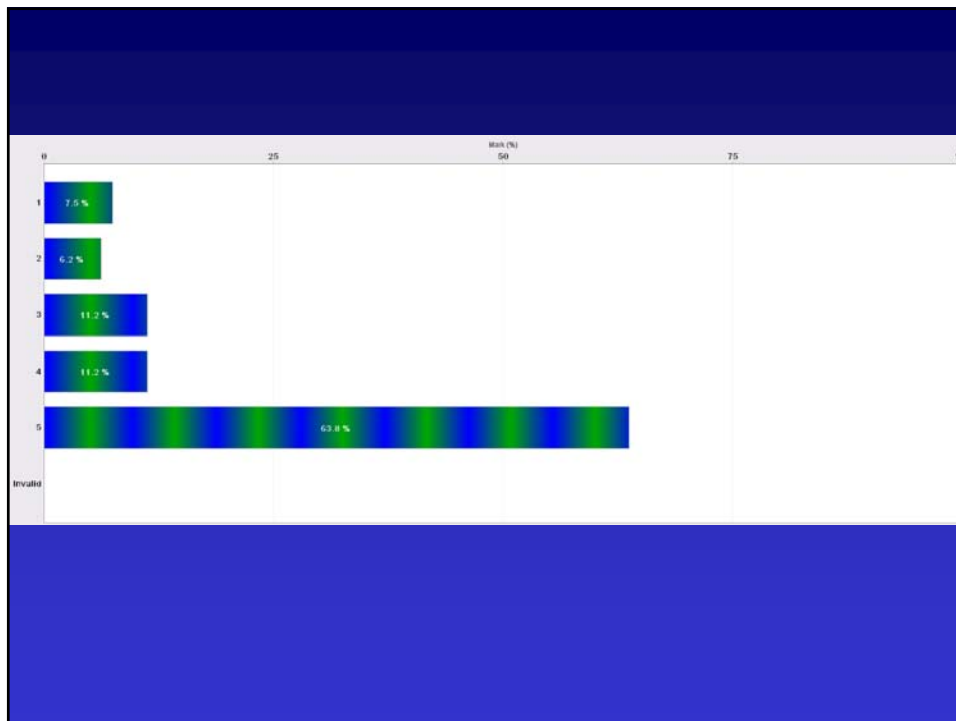
After





For me, earning “clicker” points motivates me to come to class.

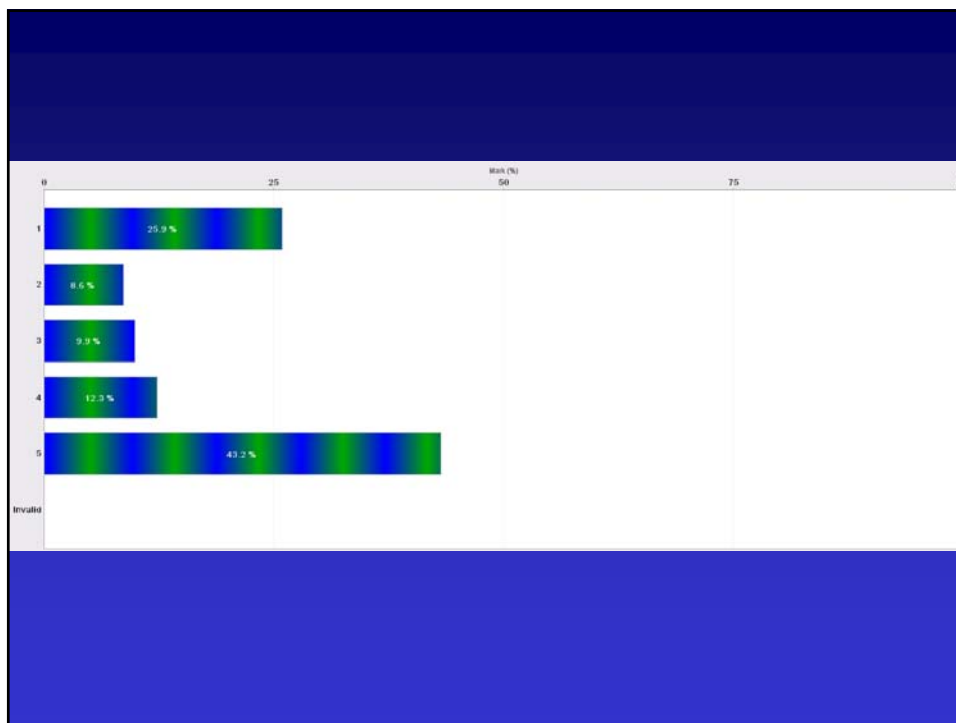
- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree





I attended class when I otherwise would not have because of the clickers points.

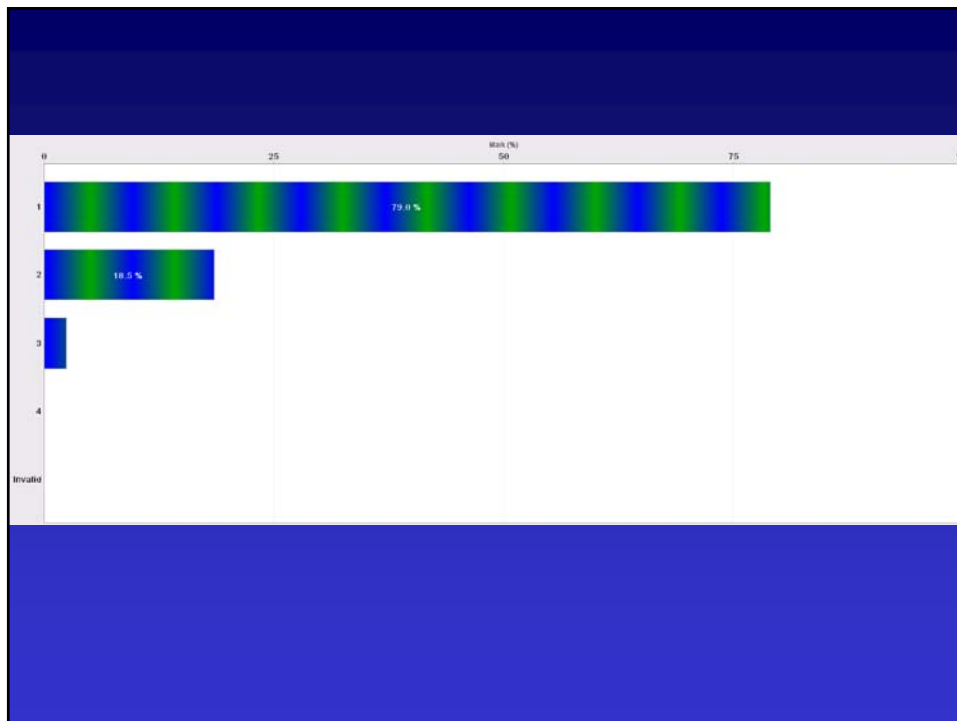
- 1) Strongly disagree
- 2)
- 3)
- 4)
- 5) Strongly agree





While at UI, I have used clickers in:

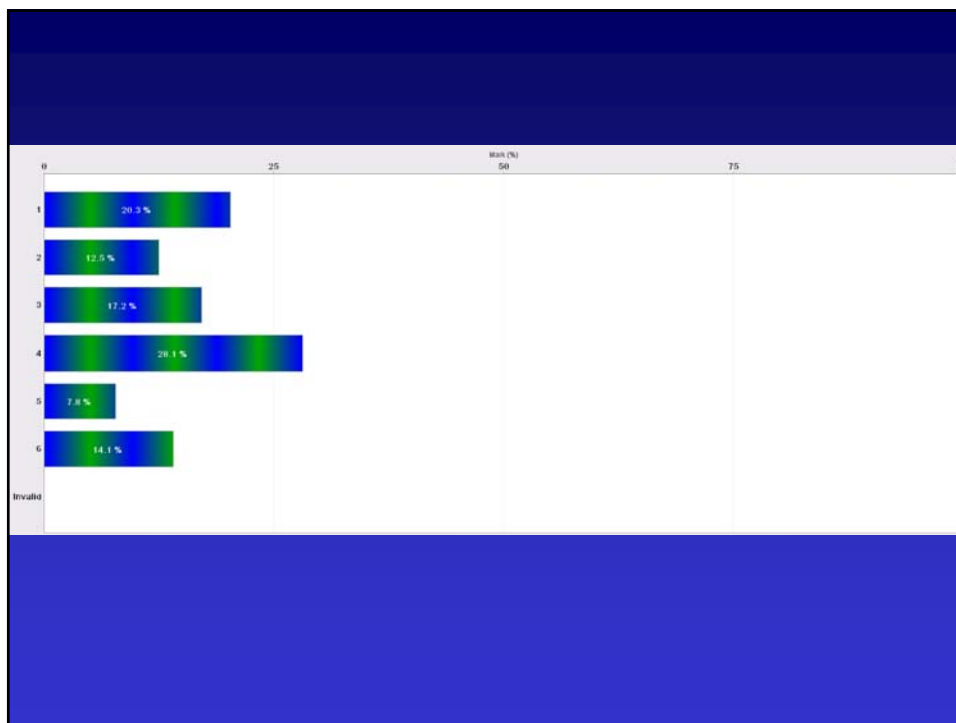
- 1) This course only
- 2) Two courses
- 3) Three courses
- 4) Four or more courses





In my opinion, clickers are:

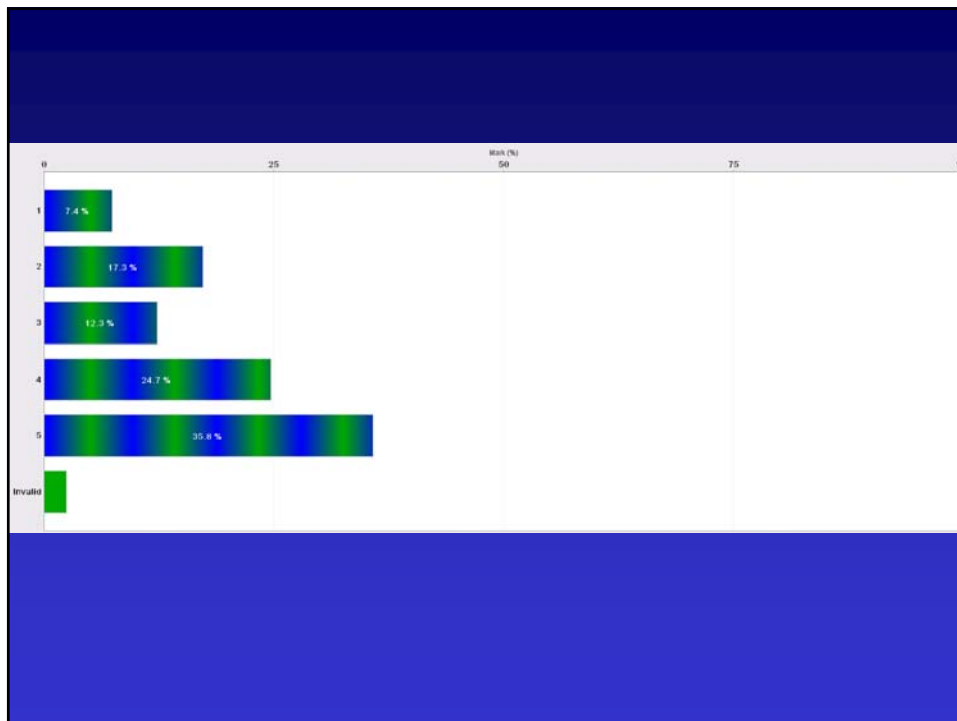
- 1) A learning tool
- 2) A break from a droning lecture
- 3) A way to check my attendance
- 4) A useful feedback tool to help me
- 5) A form of entertainment
- 6) An expensive tech tool





How many clicker points would you assign for the whole semester (this course assign 80 points out of 580 total):

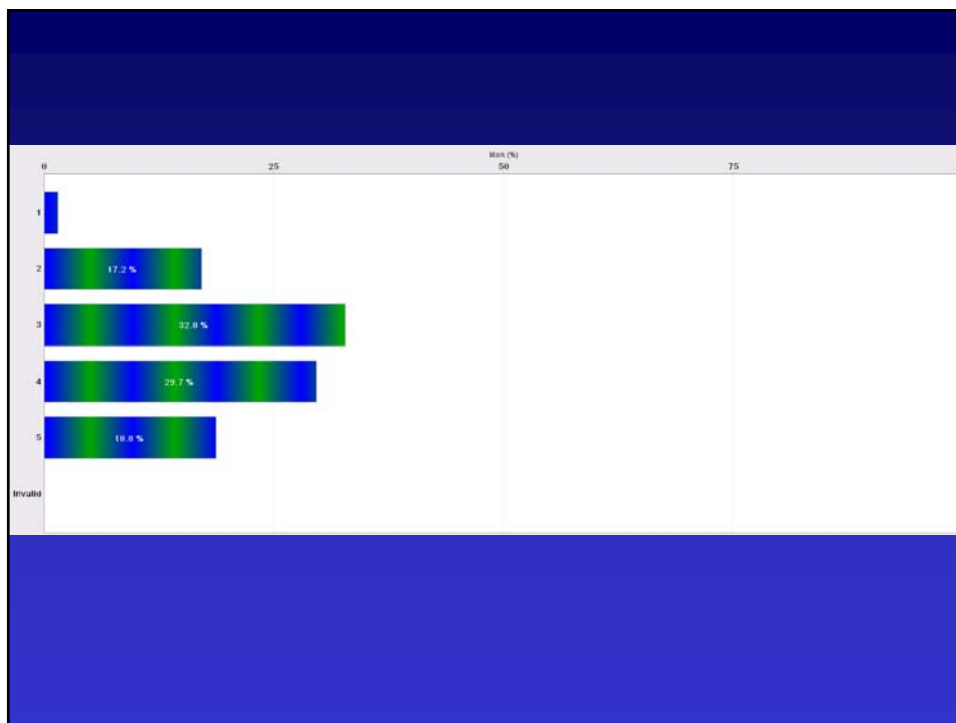
- 1) More than 100 points
- 2) 100 points
- 3) 80 points (as it is now)
- 4) 60 points
- 5) less than 60 points





How many clicker points would you assign for the whole semester (this course assign 60 points out of 560 total):

- 1) More than 100 points
- 2) 100 points
- 3) 60 points (as it is now)
- 4) 40 points
- 5) less than 40 points



Learning outcomes

Results from standard exams (Includes both Chem 277 & 372)

Year	Percentile (sample)
2000 ¹	42 (n=70)
2004 ²	68 (n=13)
2005 ²	59 (n=12)
2007	66 (n=80)

¹ Different instructor

² Only selected students took the exam

Some conclusions

Implementation is time consuming

Students and teacher benefit from immediate feedback

Excellent tool for peer-instruction in large classes

Practical tool to track individual students

Saves tons of time in grading exams

Keep students up-to-date with the material

Preliminary results from standard exams show improved mastering of concepts and their applications to solve problems