

Tuesday, June 05, 2007

Dear Bobbi,

Teaching Chemistry using Quantum Learning has added excitement, engagement, and learning. In the 2006-2007 school year I implemented Quantum Learning techniques in teaching Chemistry 1-2. In comparing data from the 2005-2006 school year to the 2006-2007 school year, I was able to conduct an experimental investigation of the use of Quantum Learning. There were few other changes in Instruction or assessment.

Using quantitative analysis I was able to determine that there was a statistical difference between pre-QL and post-QL. Students' grades went up in the A-B range by +7.48%. In addition, students' grades in the D-F range went down by -7.73% through using Quantum Learning. The distribution of grades after using Quantum Learning also had a smaller variation (standard deviation decreased by 3.6). The percentage of students who earned an A-C in Chemistry in 2005-2006 was 74.84%. After using Quantum Learning, 82.56% of students earned an A-C grade in Chemistry.

The graphs that are attached display histograms of data before and after using Quantum Learning. From looking at the data it can be seen that the distribution of A's and B's increased while D's and F's decreased for Unit Exams, Final Exams, and overall Grades. The circular charts(doughnuts) also show how this distribution changed through implementing Quantum Learning. The data was normalized for a population percentage instead of a population number so that the 2005-2006 data could be accurately compared to 2006-2007 (after QL). The final Exam histogram clearly shows that Quantum Learning enabled students to learn and **retain** their learning of Chemistry for a comprehensive exam. I saw evidence of this when students would use Quantum techniques in reviewing and say "I really remember all this!"

I was also able to observe how Quantum Learning increased students' motivation. In 2006-2007 (after QL) students received 9.16% less zeros on average. After using Quantum Learning techniques students had more motivation to do their work. They believed in themselves! With Chemistry this is remarkable because many students come in with preconceived notions of a "hard" class.

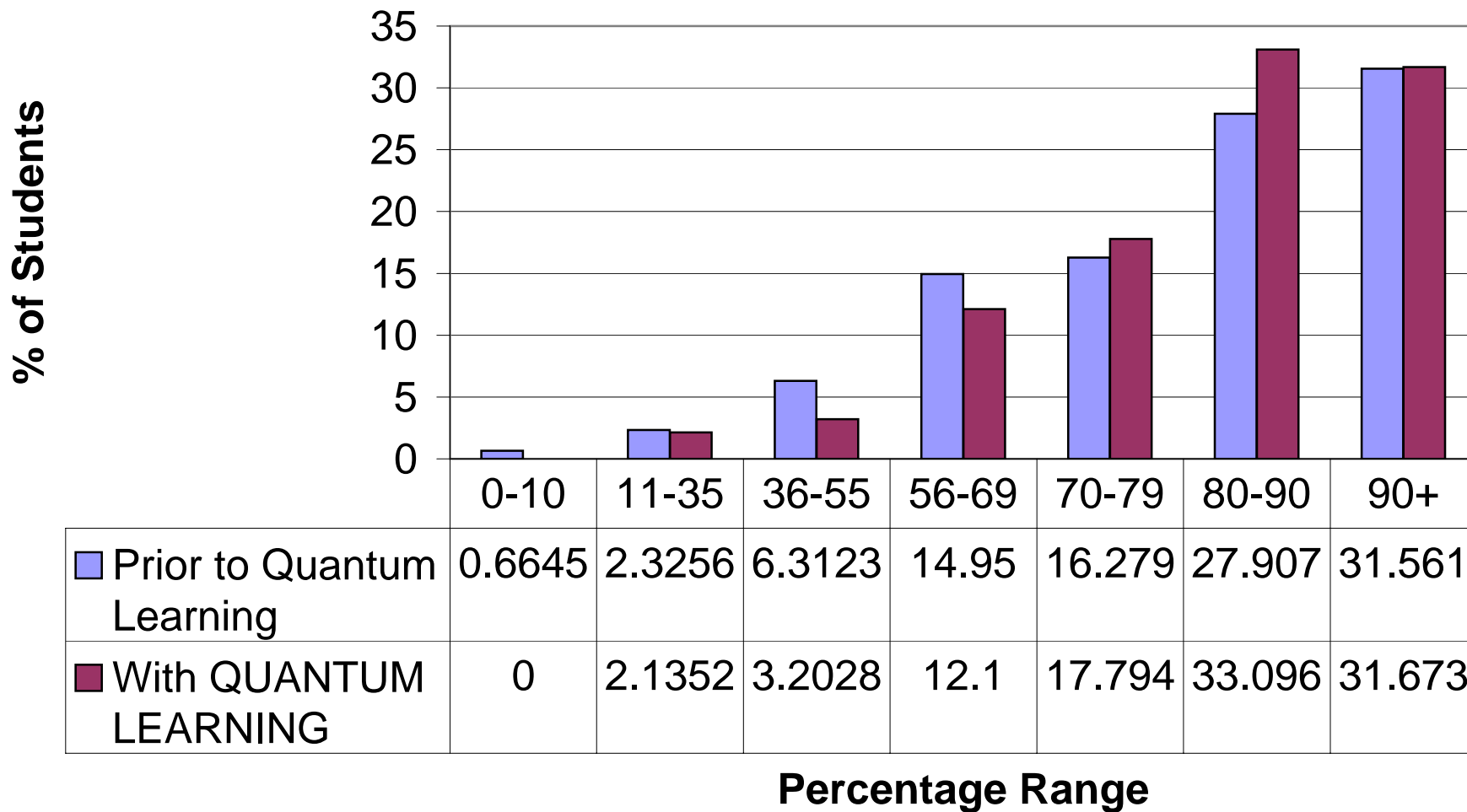
Using Quantum Learning has greatly increased student performance and teacher enjoyment. As a Quantum Learning instructor I have greatly increased my energy, joy, and fun in teaching Chemistry. Seeing students learn and remember by huge gains has shown the power of using Quantum Learning. I can prove without a doubt that Quantum Learning works!!

Sincerely,

Matt Christopher
Chemistry Teacher
Westview
Poway Unified School District

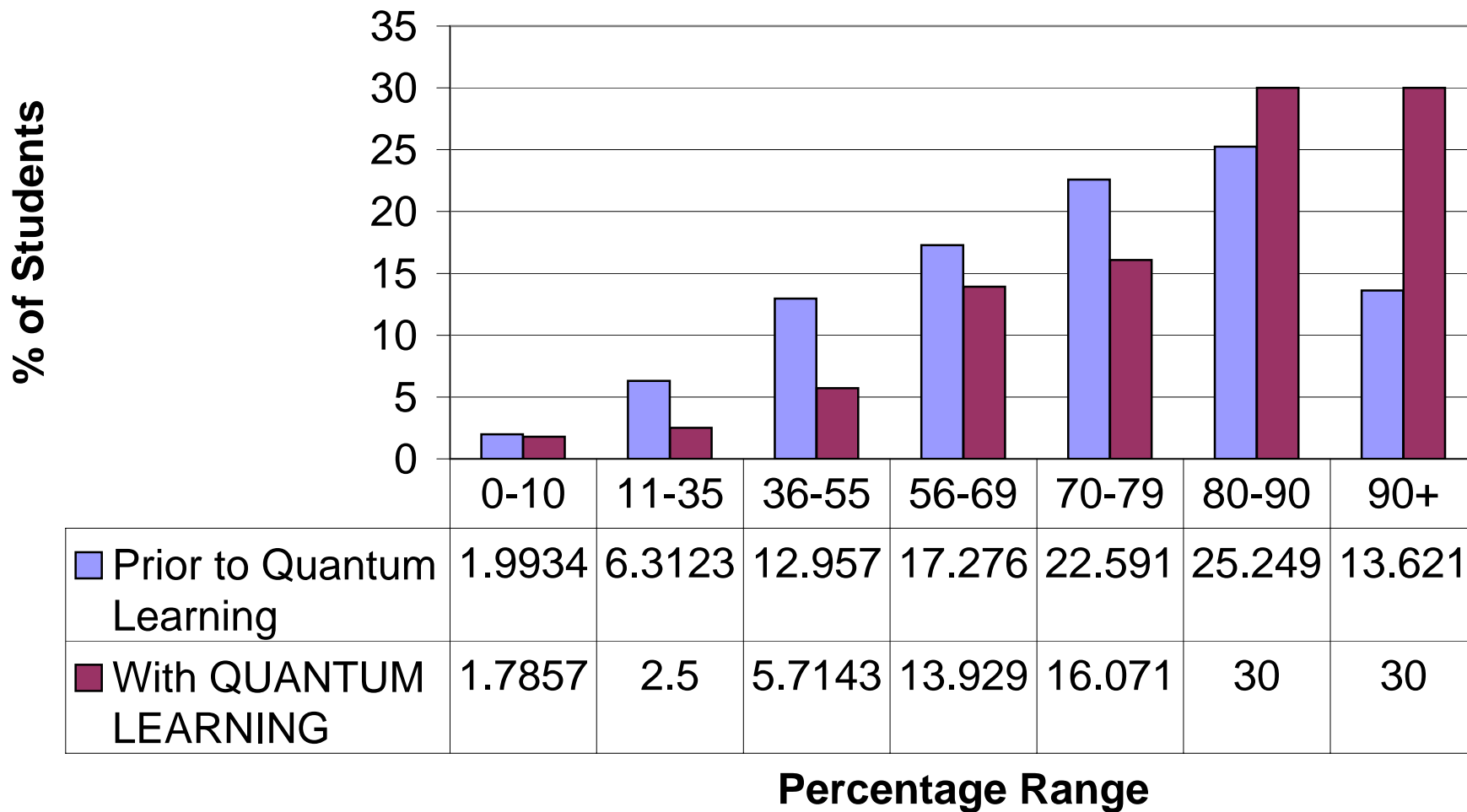
EXAMS % Histogram Comparison: Chemistry

Westview (Matt Christopher, 2007)- average BEFORE QL= 79.36% AFTER QL= 81.52%



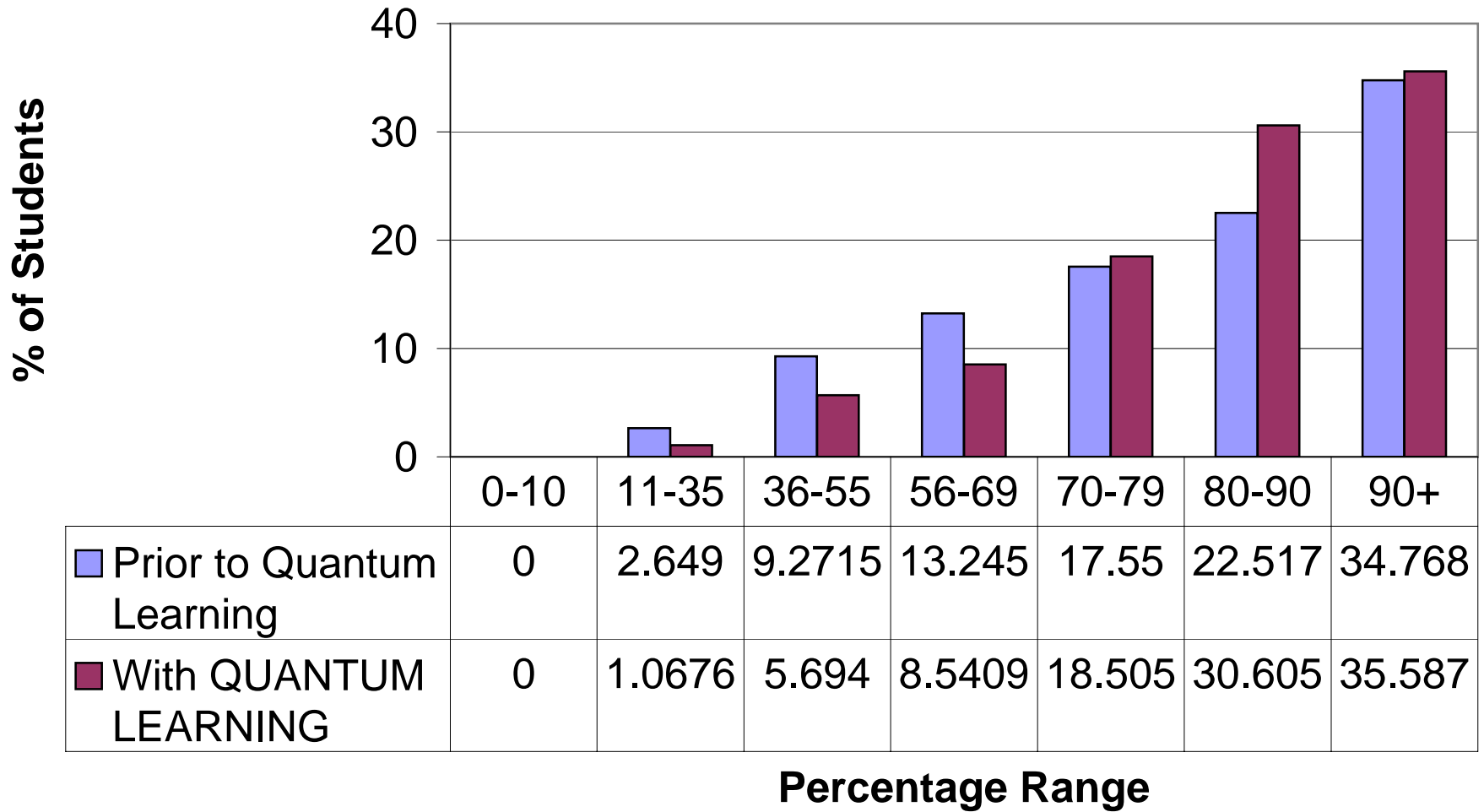
FINAL EXAM % Histogram Comparison

Westview (Matt Christopher, 2007)-average BEFORE QL= 70.08% AFTER QL= 79.25%



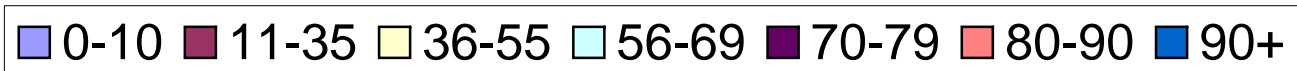
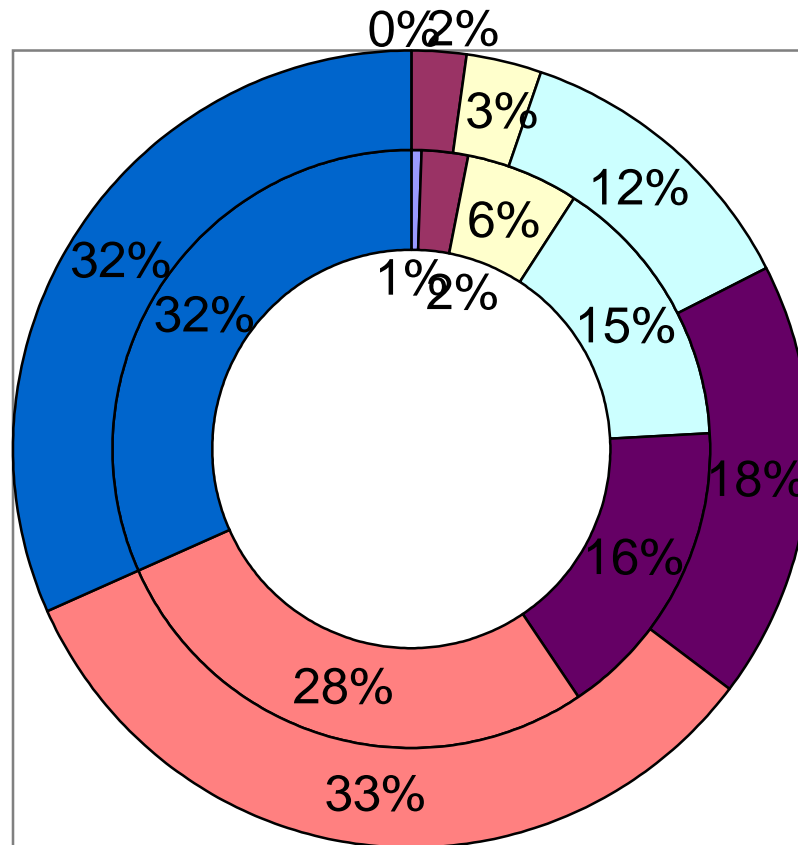
GRADE % Histogram Comparison

Westview (Matt Christopher, 2007)- average BEFORE QL= 78.74% AFTER QL= 81.09%



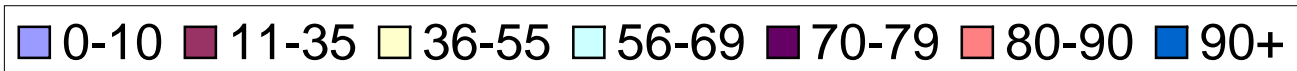
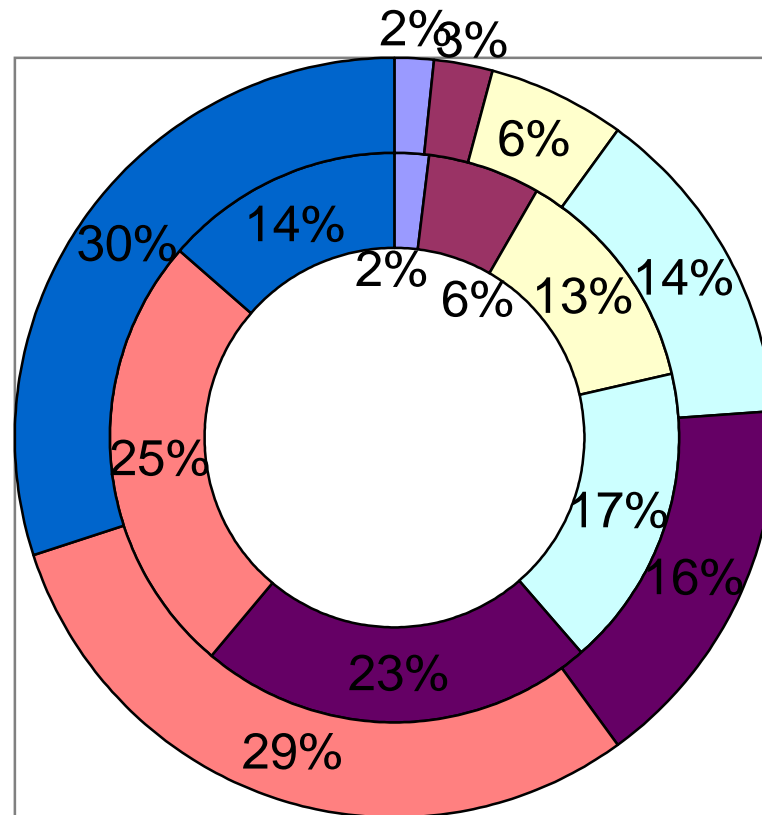
EXAMS % With QL on Outside

Westview (Matt Christopher, 2007)



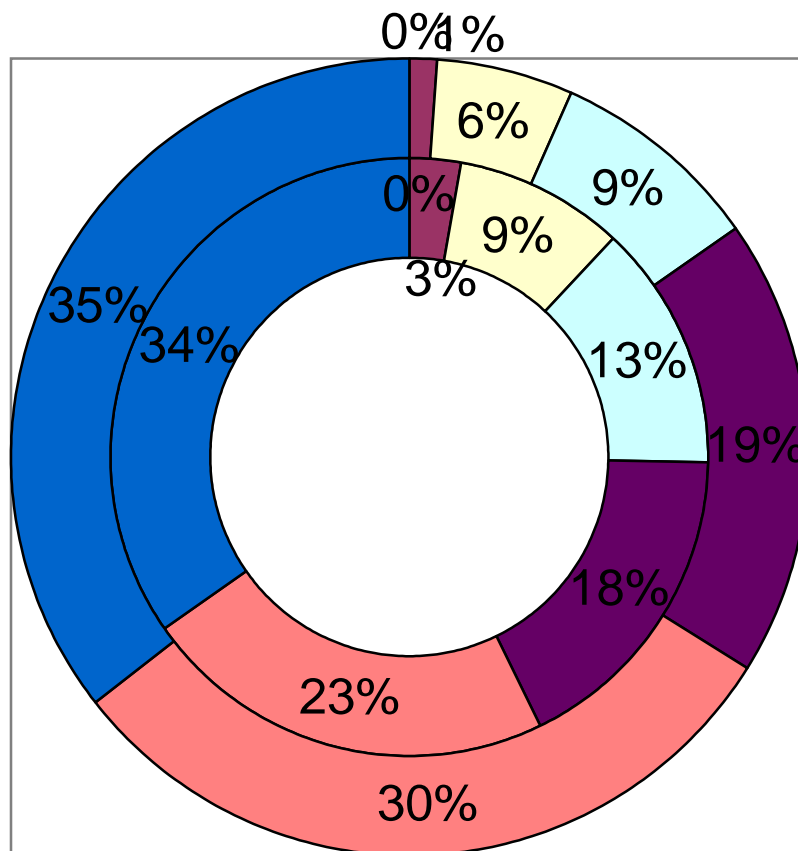
FINAL EXAM % With QL on Outside

**FINAL EXAMS WERE SLIGHTLY DIFFERENT on Grading
Westview (Matt Christopher, 2007)



GRADE % With QL on Outside

Westview (Matt Christopher, 2007)



0-10 11-35 36-55 56-69 70-79 80-90 90+