The Impacts of Blending the High School Advanced Placement Chemistry Classroom on Student Engagement and Performance
Jennifer Owen, Kiel High School
Kiel, Wisconsin

Background
- 2 credit course
- Full block for entire school year
- Burnout near end of term 2
- Disappointing performance on AP Exam
- Objective: provide students a path to personalizing their learning through blended practices
  - gain a deep understanding of content
  - retain the material
  - apply the concepts on the AP Exam and at the next level.

Traditional Classroom
- Paper and Pencil Warm-Up
- Lecture
- Text Book Homework
- Laboratory Exercises
- Performance Assessments
- Quizzes
- Paper/Pencil AP Prep

Blended Classroom
- Interactive Warm-up
- Interactive Background Content
- Shorter Lectures
- Mastering Chemistry Homework
- Laboratory Exercise
- Quizzes
- Blended AP Prep

Question 1 Data (Engagement):
- Sub-Question 1 Data (Engagement):
  - Pre- and post-treatment surveys
  - Homework completion rates
  - Adaptive follow-up attempts
  - Monitor evolution of question from superficial, what do I do next, to deeper inquiry based questions
  - Monitor in-class participation
  - Plus (+) / Delta (Δ) focus group

Question 2 Data (Performance):
- Sub-Question 2 Data (Performance):
  - Pre-test vs. Post-test results
  - Number of individuals needing to retake post-test
  - Midterm exam results
  - Practice AP exam results as predictor for AP score

Data Collection

Demographics
- Gender
  - Male 33%
  - Female 67%
- Grade
  - Junior 60%
  - Senior 40%

Conclusions

Analysis of the Blended Learning Environment
- Confirmed research: Results of blending not always statistically significant
- Fosters environment for deeper thinking and questioning
- Improved students’ engagement, self-regulation, and intrinsic motivation
- Students more open to blended environment after treatment period
- Slow, systematic changes essential to successfully blending a class

Value of the Blended Learning Environment
- Enhances traditional learning environment
- Flexibility (pace, delivery method, student practice, review methods, AP prep)
- Increased student engagement during entire course
- Better in-class assessment performance
- Increased individual, or small group, teacher contact time
- Student’s taking more ownership of learning path

Value of the Blended Learning Environment

Class pretest and post-test scores prior to treatment, chapters two and three, and during treatment, chapters four through fourteen and eighteen, (N=15).