

Increasing Student American College Test (ACT) Scores

**National Quality Education Conference
St. Louis, Missouri
November 11-13, 2007**

Lafayette High School Presenters

Professional Learning Community (PLC) Team Leaders



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Administrator



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Language Arts



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Mathematics



Mrs. Mary Mueller
Director, College Test Preparation



Mrs. Ann Marie Gilman
Science

'TEAM' at Lafayette High School

- Entire Faculty, Staff, and Student Body
 - Administration
 - Counseling department
 - Core curricular departments
 - English
 - Math
 - Science
 - Social Studies
 - American College Test (ACT) Prep Team

American College Test (ACT)

Score range 1-36

- National average 20.1
- Missouri average 20.3
- **Lafayette 1998 23.1**
- **Lafayette 2006 24.1**
- **Lafayette 2007 24.6**

1A. Project Selection How?

- Fewer post-high school options for graduating seniors due to low ACT scores
- Disconnect between student ability and student performance on ACT at LHS
- Low scores by high performing students on the ACT
- Low scores on the ACT by students enrolled in challenging courses

1B. Project Selection

District Key Goals

- World-Class Education
- School Climate
- Operations
- Student Achievement

1B. Rockwood School District MISSION STATEMENT

All students, with support from the community, parents, and staff, will be provided a dynamic curriculum within a safe and caring environment so they will develop the skills, abilities, and attitudes to be lifelong learners and citizens of good character who are prepared to contribute to an ever-changing, global society.

1B. Project Selection
Lafayette High School
Mission Statement

Provide for the intellectual, physical, emotional, and social development of **ALL** students to ensure their success in a global community.

1B. Project Selection
Lafayette High School Key Goal

**Increase average ACT score
for LHS seniors
from 24.1 in 2006
to 24.5 by 2009**

Project Team Selection Criteria

- Effect impact on the future of **ALL** students
- Increase post-secondary options for **ALL** students

1B. Project Support: Organizational Goals

Organizational Goals:

Theory

- Rockwood School District Mission Statement
- District Key Goals
- Lafayette Key Goals

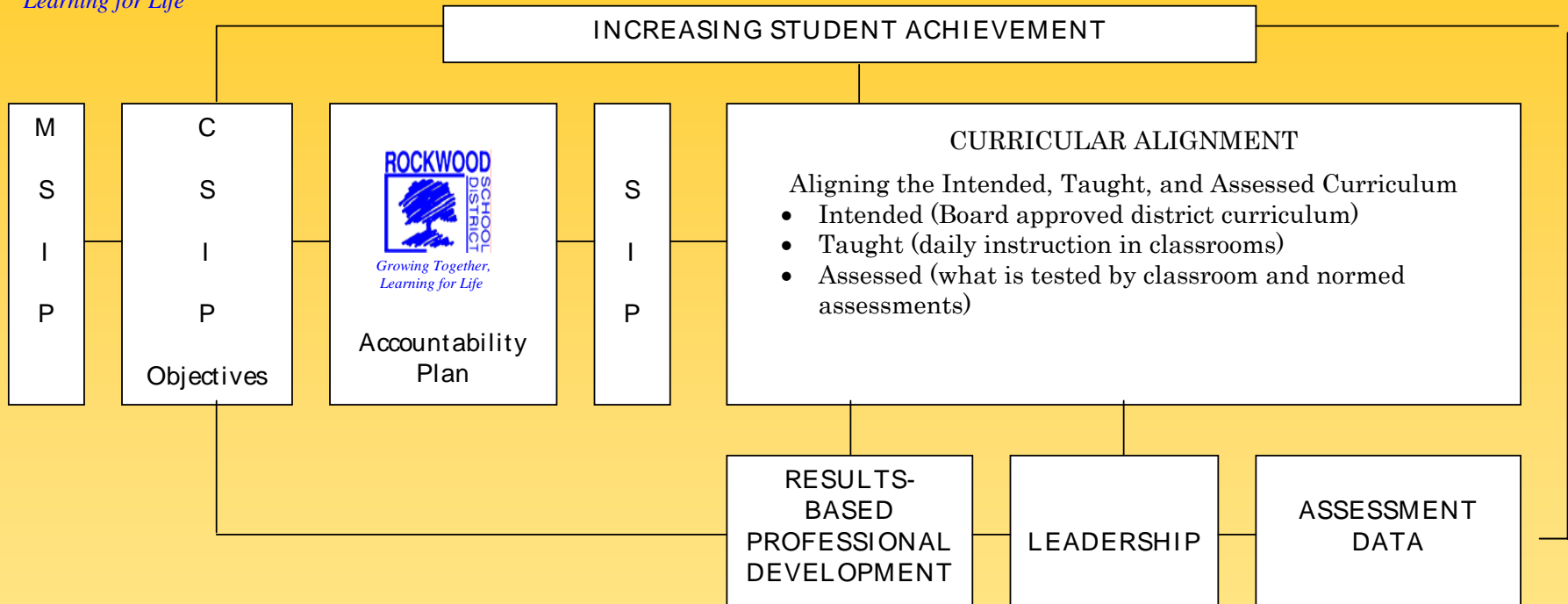
Process

- Use of Continuous Improvement Model
- Plan-Do-Study-Act (PDSA) Cycle



*Growing Together,
Learning for Life*

ROCKWOOD CONTINUOUS IMPROVEMENT MODEL



The objective of results-based professional development is increasing student achievement through curricular alignment.

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The Plan-Do-Study-Act Cycle

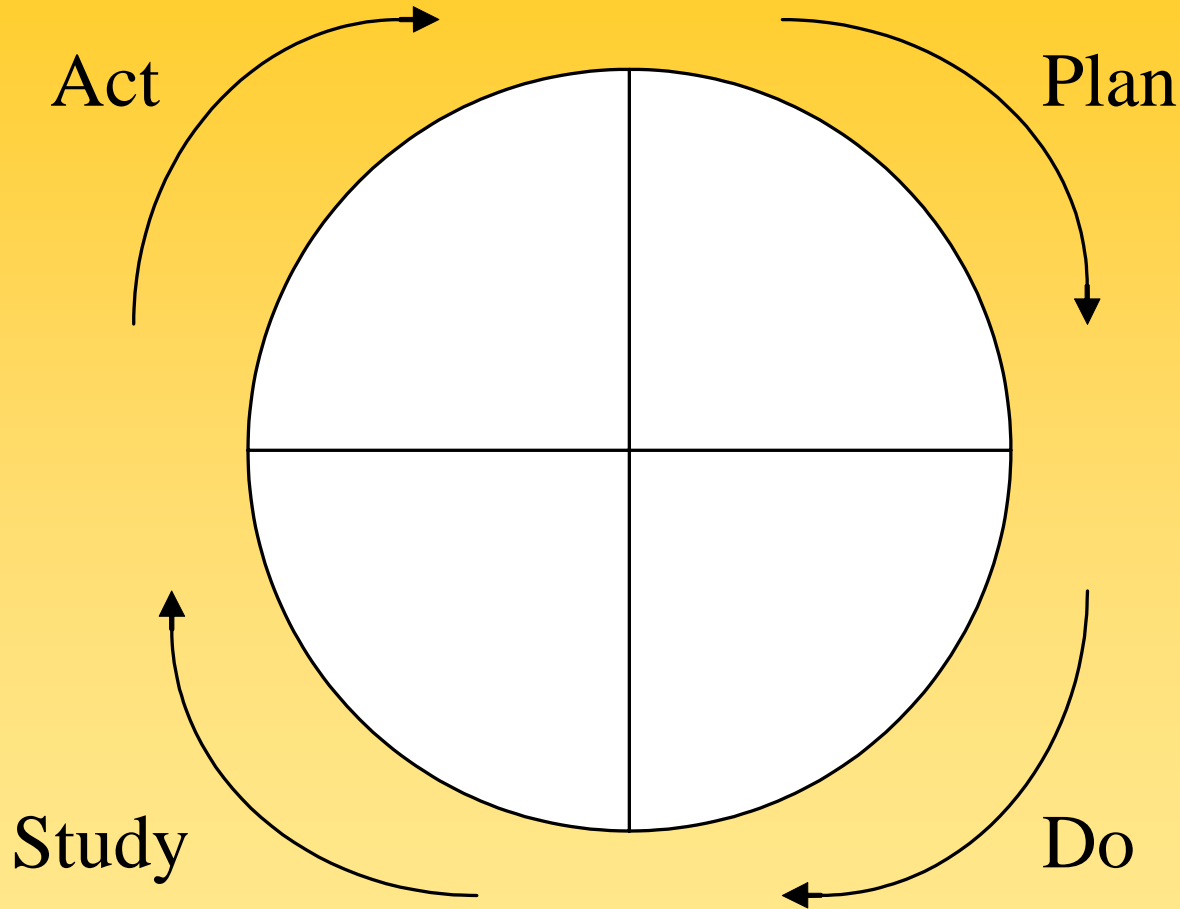


Figure 9.1
PDSA Cycle

1B. Project Support: Performance Measures

Increase:

- ACT composite score for Lafayette
- Number of students achieving Bright Flight Scholarships
- Number of AP tests administered to LHS students
- ACT composite scores of African American students

Continuous Improvement Model

Year	ACT Composite Score for LHS	Bright Flight Scholars	Number of Advanced Placement Courses offered	Number of Advanced Placement Tests Administered
2006-2007	24.6	91	21	982
2005-2006	24.1	81	18	849
2004-2005	23.8	74	18	617
2003-2004	24.1	63	18	640
2002-2003	23.9	58	18	578
2001-2002	24.3	55	18	487
2000-2001	23.6	43	18	508
1999-2000	23.7	53	16	Not Available
1998-1999	23.1	30	13	Not Available

1B. Project Support: Strategies

- Writing and implementing a rigorous curriculum
- Supporting Professional Learning Communities in aligning goals with school and district goals
- Offering test preparation program for all students
- Increasing enrollment in Advanced Placement and core classes

1C. Identification of Project's Key Stakeholders

- Groups **most important to the success** of the project
 - Administrators, Teachers, Students, Parents
- Groups **most affected by the outcome**
 - Students (primary)
 - Parents, Administrators, Teachers, District, Universities, and Community (secondary)

1D. Identification of Key Stakeholders and Explanation of Project Impact

- All Administrators
- All Students
- All Teachers
- Parents
- District
- Universities and Colleges
- Community

2A. Identification of Potential Root Cause(s): ACT Research Reveals Five Factors Predict High ACT Scores

- Enrollment in high number of core courses
- Academic rigor in core subjects
- Access of ALL students to high quality vertically-aligned curricula
- Teacher measurement of course results
- Completion of ACT Prep Course

2A. Identification of Potential Root Cause(s): Building Data and Information

- Relationship between minimum core courses and ACT scores
- Analysis of ACT performance and course selection of African American students

2A. Identification of Potential Root Cause(s):

Building Data and Information

Teacher evaluation of:

- Correlation between common assessments and curricular CCO's
- Vertical alignment of curriculum
- Incorporation of “most missed” ACT items in instruction

2A. Identification of Potential Root Cause(s): Building Data and Information

- Bright Flight students evaluation
 - completion of prep class,
 - number of core courses completed,
 - rigor of course selection as measured by AP
 - number of times test taken
- ACT prep course students
 - Pre-test ACT results
 - Post-test ACT results

2B. Use of Data in Analysis of the Potential Root Cause(s)

Eight root causes of lower ACT Performance:

Non-enrollment in core subjects

- Students who completed the core courses scored 3.8 points higher on the composite ACT score
- 2003, only 62% of the seniors completed ACT core courses.
- 95% BFS completed a rigorous core curriculum

Lack of rigor in core subjects

- Level of difficulty of questions

Decreased access of African American students to high quality curriculum

- 2003, 19 African American/Black students took the ACT. None of these students had completed core curriculum requirements.

2B. Eight root causes of lower ACT Performance (Continued)

Curricula alignment out of sequence with ACT

- Teacher evaluation of alignment determined approximately 20% of ACT test items were not covered in the subject-matter curriculum.
- Teachers determined that 28% of the “most missed” items were not covered or not covered in depth in curriculum

Non-participation in ACT Prep Courses

- Students who prepped gained 2.6 points.
- (2005) 76% BFS completed a prep class

2B. Eight root causes of lower ACT Performance (Continued)

Under-utilization of pre- and post-test strategy to assess achievement of CCO's in core courses

Students not taking ACT more than once

- BFS (2005) 81% tested more than once

No common final exam for core courses

- Administrative evaluation of teacher final exams determined extensive variance in the number of CCO's tested, difficulty level of test questions, and the test format.

2C. Identification of Key Data and Information Used in Analysis

- Students in core curriculum
- Students in rigorous curriculum
- African American students in core or rigorous curriculum
- Administrative assessment of final exams

2C. Identification of Key Data and Information Used in Analysis

- Students in core curriculum
- Students in rigorous curriculum
- African American students in core or rigorous curriculum
- Administrative assessment of final exams

2C. Identification of Key Data and Information Used in Analysis

- Teacher assessment of vertical alignment of curriculum and final exam content
- Correlation between achieving Bright Flight recognition and prepping, rigorous core curriculum, and repeat testing
- Analysis of “most missed items” on ACT
- Gains of students completing prep class

2D. Ensuring Identification of Actual Root Cause(s)

Lafayette hypothesis:

- IF>>Correct identification of root causes of lower ACT scores
 - THEN>>Increase in ACT scores, Bright Flight scores, and African American scores
- IF>>Cause identification incorrect
 - THEN>>No increase in scores

2D. Ensuring Identification of Actual Root Cause(s)

The identified root causes directly correlated to organizational goals:

- creating a **dynamic curriculum**
- increasing **student achievement**
- imparting **skills**
- maximizing the **student contribution** to the **community** through the workplace

2D. Ensuring Identification of Actual Root Cause(s)

The performance measures correlated to higher scores include:

- **Increased** performance on the ACT for ALL students
- **Increased** post secondary options
- **Increased** scholarship opportunities
- **Increased** workplace opportunities

2D. Ensuring Identification of Actual Root Cause(s)

Lafayette faculty **HOPE:**

Real root causes would be fewer in number than the potential root causes.

Data **REALITY:**

Improvement in ALL areas identified as potential root causes would positively and significantly impact the goal of higher ACT scores.

3A. and 3B. Identification of Potential and Final Solutions

Four improvement strategies-- ACT research

- Number of core courses
- Rigor of the courses
- Access of ACT prep courses for ALL students
- Meeting the needs of African American students

3A. and 3B. Identification of Potential and Final Solutions

Criteria for Final Solutions

- Time required for implementation
- Impact on ALL students
- Highest chance of success
- Buy-in of stakeholders
- Data-driven

3A. and 3B. Discarded Potential Solutions

Solutions

- Raising district core course requirements
- Teacher presentations in all core courses
- Written communication sent home with student
- Counselor classroom presentations

Rationale for discarding

- Low chance of success, too lengthy
- Hard to control quality and content
- Would not reach all parents
- Might not reach parents

3A. and 3B. Discarded Potential Solutions

Solutions

Rationale for discarding

- Feedback during teacher evaluation
- Administrative presentation of expectations
- District imperative

- Not cohesive
- Not data driven
- Reduced teacher buy-in
- Low chance of success, time consuming

3A. and 3B. Discarded Potential Solutions

Solutions

Rationale for discarding

- Credited prep class offering
- After-school or Saturday class
- Decreased enrollment in core subjects
- Avoided by top students because it would lower GPA
- Conflict with school/family activities

3A. and 3B. Discarded Potential Solutions: Plan for African-American Students

Solutions

Rationale for Discarding

- African-American students in ACT program for ALL students
- Program during day
- After school program with same sixteen sessions
- Low attendance, classes too large, inconvenient time
- Time away from core subjects and academics
- Lack of student buy-in if not voluntary and time commitment was too extensive

3A. and 3B. Final Solutions

- Increased enrollment in core courses and AP courses
- Implementation of rigorous curriculum
- ACT prep courses for all students
- Improved prep alternative for African-American students

3C. and 3D. Identification and Explanation of Expected Benefits

- ACT Research
- Professional Learning
Community Research

3C. and 3D. Expected Benefits: ACT Research

Student participation in a rigorous high school curriculum and an ACT prep class **would increase:**

- ACT scores for ALL students
- Post-secondary options
- Chance of success in college
- Work place performance

3C. and 3D. Expected Benefits: Professional Learning Communities Research

Implementation of professional learning communities **would increase:**

- Standardized (ACT) scores
- ALL student learning as measured by common assessments
- Teacher morale by content teaming

Actual Benefits

Year	ACT Composite Score for LHS	Bright Flight Scholars	Number of Advanced Placement Courses offered	Number of Advanced Placement Tests Administered
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Actual Benefits

Actual Benefits for Students in Prep Classes				
	African American Student Gains	All Student Gains	Percentage of Students Gaining Basic Skills	Percentage of Students Prepped Who Felt Comfortable with Test
2006-2007	2.1 points	2.6 points	77%	100%
2005-2006	1.3 points	2.6 points	74%	100%

4A. The Solution: Implementation Process

- Parent and student communication
- Individual student advisement sessions
- Grade level meetings

4A. The Solution Implementation Process: Professional Learning Communities

Challenges

- Curriculum not aligned
- Teacher buy-in
- Time commitment
- Change from 'my way'
- Planned training for all
- Overwhelming process
- Parent reprisal

Overcoming Challenges

- Vertically aligned curriculum
- Common planning time
- Shared lessons
- Shared best practices
- Common assessments
- Using technology to collect data
- Data driven decisions

4A. The Solution Implementation Process: ACT Prep Classes for ALL Students

Challenges

- Effectiveness
- Communication
- Attendance
- Information sharing

Overcoming Challenges

- Organized parent meetings
- Student friendly sessions
- Parent to parent communication
- Collaborative effort

4A. The Solution Implementation Process: Plan for African-American Students

Challenges

- Inconsistent interest in attending college
- Tendency to take ACT only once
- Tendency to sign up for the last test in the senior year
- Less interest in attending prep class
- Less gains in a prep class
- Inconsistent attendance

Overcoming Challenges

- Student and parent motivation
- Convenient prep class scheduling
- ACT sign up in counselor office as a junior
- Compacted prep class
- Higher gains with regular attendance

4B. Implementation of Solutions: Process, Procedure, System and Changes

- Language Arts
- Mathematics
- Science

4B. Language Arts

Examined Data for ACT Success

- Incorporation of effective, research-based strategies into everyday instruction
- Professional Learning Community goal setting specific to ACT success
- Intensified instruction for high frequency questions – usage and mechanics, rhetorical skills

Tailored Formative and Summative Assessments

- Integration of ACT-style questions
- Integration of “Not” questions
- Inclusion of “Cold” reading passages
- Inclusion of non-fiction passages
- Pre-testing with ACT-style exams used for Assessment for Learning opportunities

Intensified Grammar Instruction

- Pronoun/antecedent agreement
- Subject/verb agreement
- Comma usage
- Passive/Active verbs
- Verb tenses

Intensified Writing Instruction

- Evaluation of writing using a common Six Traits of Writing evaluation instrument
- Focus on proper mechanics usage
- Elimination of passive and “to be” verbs in formal writing

4B. Mathematics

- **Examine data, then incorporate ACT topics and concepts not specifically addressed in the high school curriculum into daily instruction**
- **Integrate ACT-style questions on summative assessments**
- Teach symbols and terminology frequently used on ACT tests
- Encourage students to take the ACT test as soon as possible after the completion of Geometry class
- Review of Geometry topics with junior and senior students
- Encourage students to pursue a rigorous math curriculum

4B. Science - Anatomy

ACT Goal

- 70% of students will evaluate complex ACT style reading passages once per unit of study with 70% accuracy.

Strategies:

- Identify students' range for ACT
 - **Initial**: Introduce ACT format questions on non-graded assignments.
 - **Progressing**: Integrate ACT format questions on quiz and test assessment.
 - **Advanced**: Integrate ACT “cold reading” format questions on summative assessment (unit exams, midterm, final semester exam)

4C. Achievement of Support and Buy-in for Solution's Implementation

- Improved communication with all stakeholders
- Appropriate training for all implementers
- Time and technology resources
- Technology support for data collection and analysis
- Research sharing of data and results

4D. Measured and Sustained Results

Results measured by tracking:

- Composite ACT score
- AP courses offered, student enrollment, tests administered
- Test preparation class data
- Pre-and post-test for ALL students

Results sustained by following the district's:

- Continuous Improvement Model
- Plan-Do-Study-Act Cycle

5A. Team Member Selection

- Professional Learning Communities Teacher Team (27 teams)
- Test Prep Team
- African American Program Team

5B. Team Member Preparation

- District and building staff development
- Professional development days
- Planned Professional Learning Community training and time for application of learning
- Planned data collection and analysis training
- Planned technology training

5B. Team Member Preparation

- Test prep team training
- Training for teachers for African American class
- Professional development days utilization

5C. Ensuring Team Member Contribution

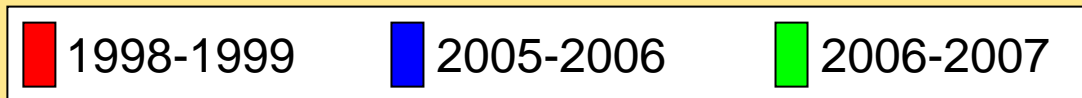
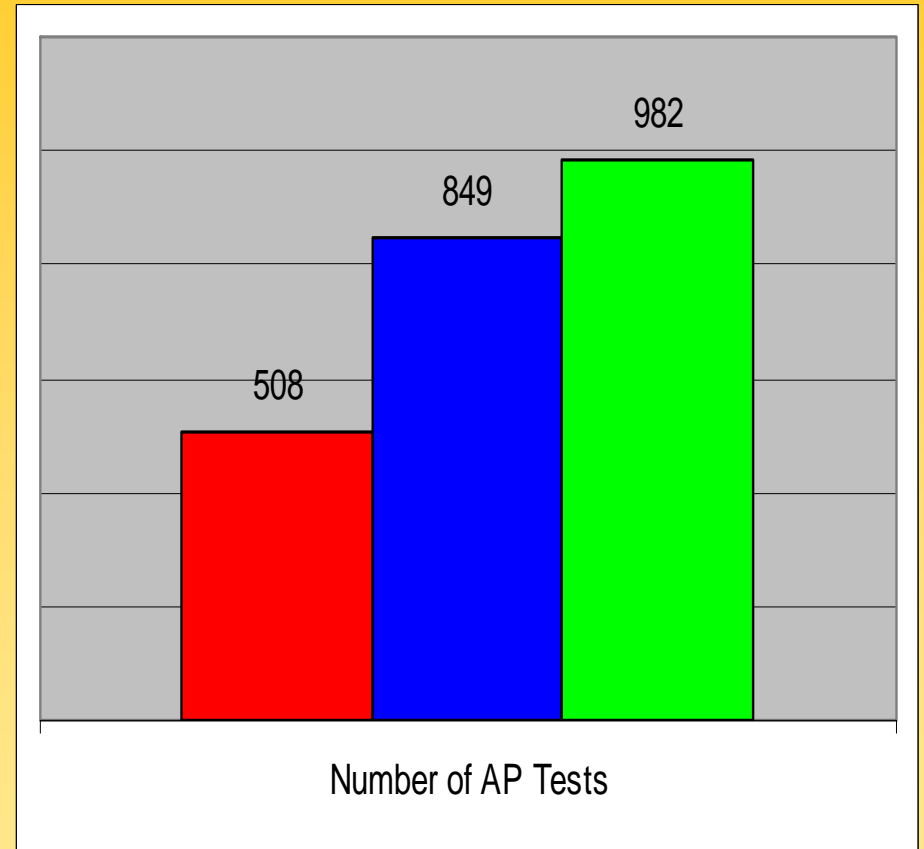
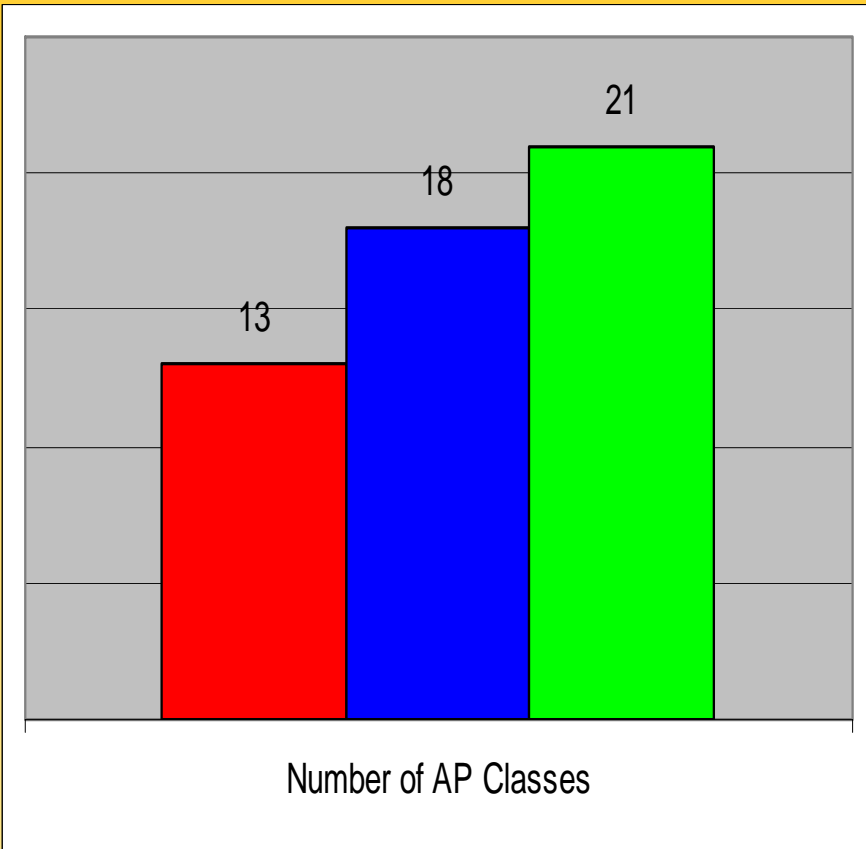
Activity Sheet

- Included team member responsibilities
- Noted team member accomplishments
- Maintained by team leaders
- Provided basis for discussion with team leaders for future staff development plans

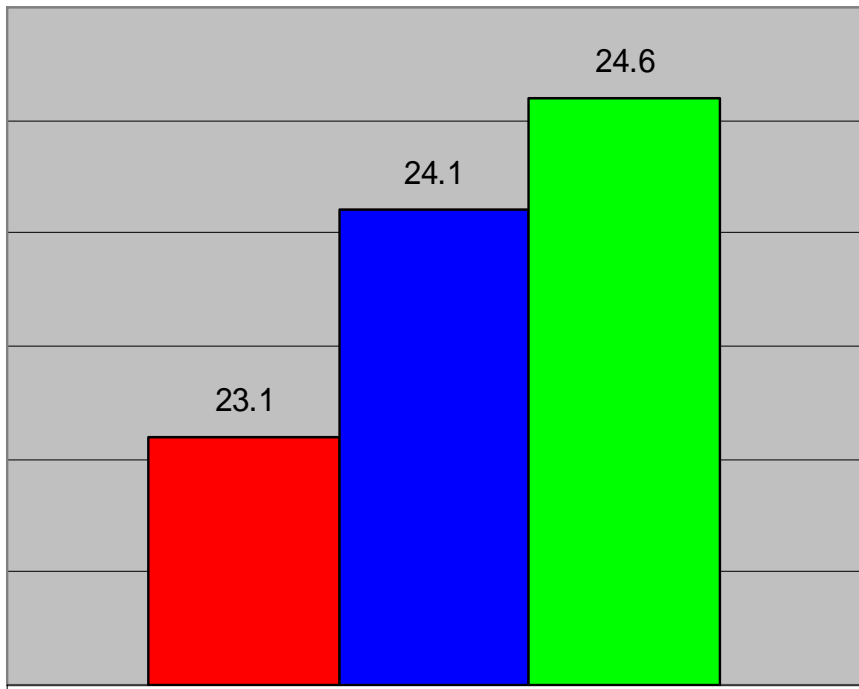
5D. Management of Team Performance

- Team performance was measured **in the early years** by task completion
- Team performance **in the later years** was measured by the PLC work of sharing best practices

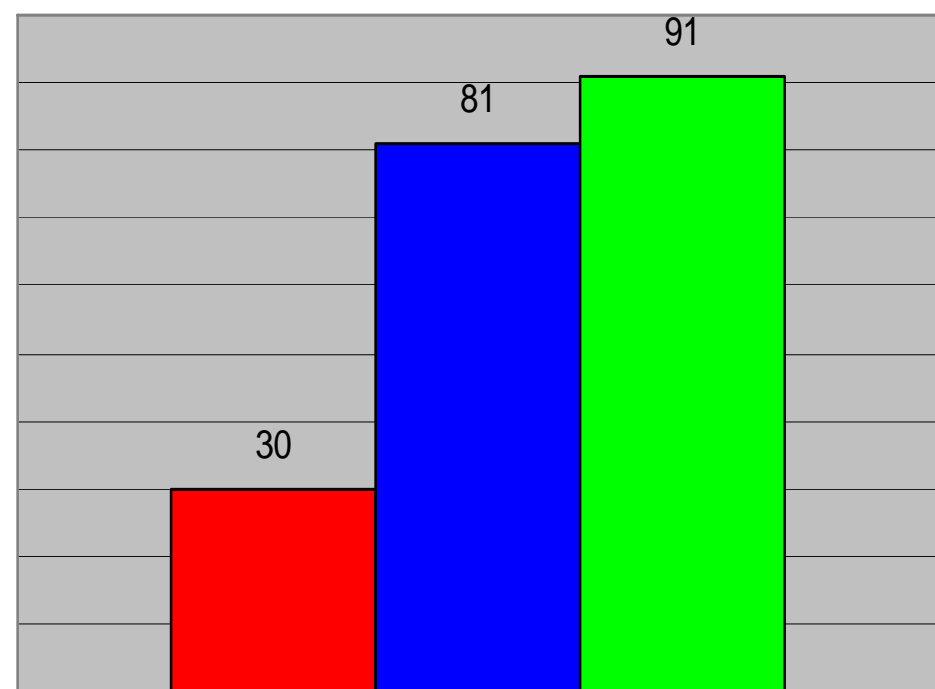
6A. Tangible Results: AP Progress



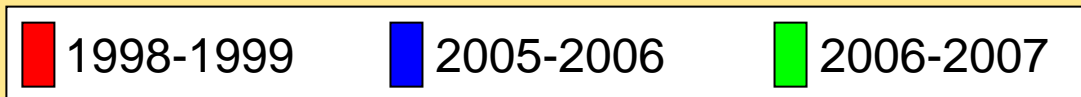
6A. Tangible Results: ACT Progress



ACT Composite



Bright Flight



6A. Tangible Results: ACT Progress

- State Recognition
 - *ACT Show Me Award*
 - Missouri Assessment Program Top Five (2006)
 - *Missouri Gold Star School* (1995, 2001)
- National Recognition
 - *National Blue Ribbon School* (2002)
 - *National Model Renaissance School* (since 1992)
 - Redbook Magazine selection as one of *America's Best High School*
 - *Newsweek Top 1000 High Schools* (2006)

6A. Less Tangible Results

- Improvement in student comfort with ACT
- Improvement in student confidence on standardized testing
- Improvement in student post-secondary options
- Improvement in PR with Parents
- Increased teacher confidence
- Buy-in to importance of ACT by parents, students, teachers
- Early interventions in grades 9 and 10
- Increase in number of students attending four year college

6B. Results Impact: Organizational Goals, Performance Measures and Strategies

- **Organizational goals** demanded the use of the Continuous Improvement Model
- **Performance measures** remained the same
- **Strategies** evolved using the Plan-Do-Study-Act Cycle

6C. Sharing of Results

- Shared with ALL stakeholders
- Doctoral dissertation at St. Louis University
- Presenting our best practice to other schools
- Providing observation opportunities for visiting educators from other districts
- National Quality Education Conference

To Replicate this Program Success Requires:

- Vision, determination, and resources of the administrators
- Patience of all stake holders
- Training and resources for implementers
- The use of the PDSA model
- Belief in the Continuous Improvement Model

Interviews

Was the ACT prep course valuable?

Do you believe that the ACT score is important to you?

Where does the program go from here?



© Increasing Student American College Test (ACT) Scores

Don't hesitate to contact us for questions:

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