

2012–2017

APEX DIRECTORY
OF PHYSICS
TEACHER
SCHOLARS

ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

NATIONAL SCIENCE FOUNDATION MSP PROJECT

ALABAMA A&M UNIVERSITY

APEX



Physics Department
Alabama A&M University



A NSF MSP Project
National Science Foundation
Division of Science Education

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ALABAMA A&M UNIVERSITY



DR. ANDREW HUGINE, JR.
President, Alabama A&M University

Alabama A&M University has a stellar record of producing graduates in the STEM disciplines, particularly physics. Alabama A&M University is ranked among the top universities in the nation in granting doctoral degrees to minorities in physics. This commitment to excellence in physics education extends to the public schools of Alabama. Through the innovative Alliance for Physics Excellence (APEX) Program and its related workshops, Alabama is also becoming a leader in transforming high school physics instruction. Thus, we are extremely proud to be the host of the APEX program. The program represents the dedication of those here at Alabama A&M University and the other APEX affiliated organizations that have put forth tremendous efforts toward the development, success, and the execution of APEX. The program has earned the high regard and gratitude of this university and its administration. The administration of AAMU is committed to its students, both present and future, and it supports APEX and those who make it happen.

The future university students of Alabama are being prepared for a higher education in physics through the tools and skills gained by secondary education teachers participating in this program. Teacher preparation is critical to ensure that the opportunities for students are not lost in the fields of science and physics due to the lack of proper training in the critical years of high school education. The APEX Program addresses the need for proper teaching tools, pedagogies, and classroom engagement of the students. Further, APEX affords Alabama educators the valuable opportunity to acquire those skills through the workshops tailored to the often difficult to teach subject of physics. Alabama students, high school teachers, and in the future, higher education instructors will feel the positive impact of this forward-thinking approach to physics. It is hoped that APEX will serve as a model for educators in other educational fields as well.

SPECIAL POSTHUMOUS DEDICATION



DR. MOSTAFA DOKHANIAN (1957-2014)

Dr. Mostafa Dokhanian, Professor of Physics, in the AAMU Dept. of Physics, Chemistry & Mathematics, spearheaded the penmanship of the APEX program at Alabama A&M University. His tireless dedication was instrumental in bringing about the success of the proposal for the grant and the program's implementation.

Dr. Dokhanian's devotion to the program, as the Principal Investigator (PI) for APEX, was paramount to the success of its various activities and workshops. He died on the job after working late on one of the program's workshops on January 26, 2014. Dr. Dokhanian was PI and Co-PI for various grants, including AAMU-REU, (PS)², and HBCU-UP.

For 22 years, Dr. Dokhanian taught many undergraduate and graduate students and worked on research projects in physics specializing in optics. As an academic advisor, he greatly influenced the education and lives of many undergraduate students, and also as an advisor or co-advisor to twelve M.S. and five Ph.D. students.

Dr. Dokhanian's dedication to Alabama A&M University, its Physics Department, the many students he taught or helped to fund, his friends, and family led to his being highly valued, respected, and revered by all who knew him.

ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

APEX OVERVIEW

The Alliance for Physics Excellence (APEX) is a Math & Science Partnership (MSP) Targeted project awarded and funded by the National Science Foundation for \$8 million over a five-year period. The overall goal of APEX is to transform secondary physics education in Alabama by enabling physics teachers to acquire a deeper knowledge of physics content and employ more effective pedagogical strategies based on physics education research, enabling students to achieve higher gains.

APEX is serving as a comprehensive agent of change by successfully integrating cutting edge teaching practices into all secondary physics programs, directly impacting 25% of the physics teachers (with 41,000 students) throughout all Alabama school systems. APEX is led by Alabama A&M University and includes as core partners the University of Alabama at Tuscaloosa, Drake State Community & Technical College, American Association of Physics Teachers/Physics Teaching Resource Agents and Huntsville City School System. The partnership also includes supporting partners from the eleven Alabama Math Science & Technology Initiative regional in-service centers, Madison County schools, Scottsboro City schools, Madison City schools, and the Alabama State Department of Education.

ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

APEX GOALS

- ❑ Increase the quantity of highly qualified pre and in-service physics teacher
- ❑ Enhance the quality of Alabama secondary physics education
- ❑ Establish an environment in which Alabama high school leadership (superintendents, principals, science coordinators) promotes research-based physics education in Alabama secondary school systems
- ❑ Identify and document successful pedagogical models and methods for teacher preparation and for in-service development of physics teachers
- ❑ Evaluate the implementation impact of APEX on teachers and students in their classrooms

ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

PHYSICS TEACHER INSTITUTE (PTI)

More high school graduates need a physics background for the 21st Century workplace. However, over the past decade the number of highly-qualified physics teachers has not kept pace with the demand. The PTI is a three-year experience that offers participants a coherent program of study to deepen their physics Discipline Content Knowledge (DCK), Pedagogical Content Knowledge (PCK), and Technological Pedagogical Content Knowledge (TPACK). Each year the Physics Teacher Institute will consist of a two-week summer institute followed by three two-day workshops during the academic year (see table on next page for specifics). These two-day sessions will include:

- ☐ Nationally renowned educators on various topics of pedagogy
- ☐ Additional DCK and TPACK content
- ☐ Feedback and reflection on classroom application of summer workshop materials (research)

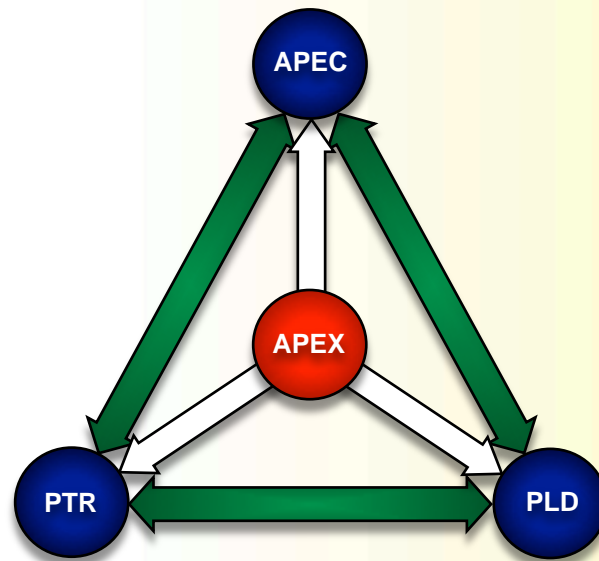
ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

Physics Teacher Institute Professional Development Program			
	First Year	Second Year	Third Year
DCK	Kinematics	Fluid Mechanics	Electromagnetism
	Newton's Laws of Motion	Temperature & Heat	Waves
	Work, Energy, Power	Thermodynamics	Sound
	Impulse & Momentum	Electrostatics	Geometrical Optics
	Circular Motion & Rotation	Conductors & Capacitors	Physical Optics
	Oscillations & Gravitation	Electric circuits	Atomic Physics
	Projectile Motion	Magnetic Fields	Nuclear Physics
PCK	Misconceptions & Ideas	Misconceptions & Ideas	Misconceptions & Ideas
	Effective Teaching Strategies	Metacognition	Assessment Methods
	Learning Environments	Collaborative Learning	Constructivist Epistemology
TPACK	Class Management Systems	Social Media	Audio Podcasting
	Blackboard	Groupware	Video Podcasting
	Computer Modeling	Class Presentation Tools	Visualization Tools

ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

THREE COMPONENTS OF APEX

1. Alabama Physics Education Center (APEC) - comprised of two components:
 - i. Physics Teacher Institute (PTI) - a multi-year experience offering participants a coherent program of study to deepen their DCK, PCK and increase their TPACK
 - ii. Physics Resource Enhancement Program (PREP) - a central clearinghouse for dissemination of best teaching practices
2. Physics Leadership Development (PLD) – aimed at involving teachers in every stage of policy-making affecting the physics curriculum
3. Physics Teaching Research (PTR) - establishes and sustains project outcomes in teaching and learning through development of a research priority, using a community of researchers focusing on physics education by action research



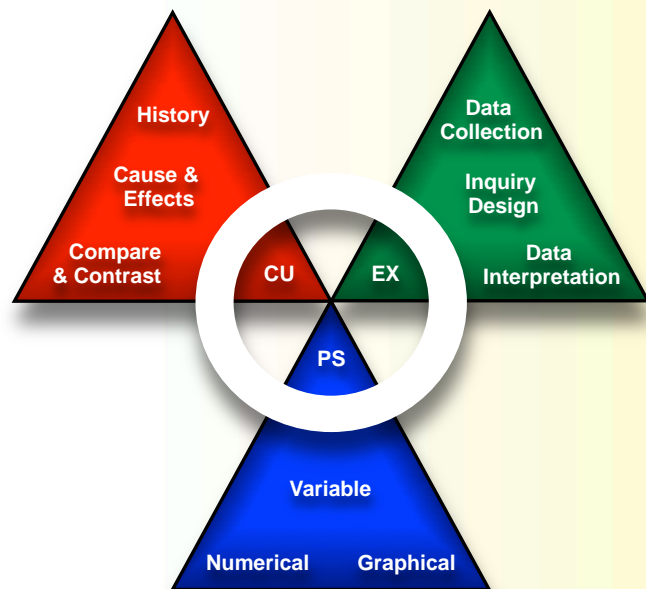
ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

DISCIPLINE CONTENT KNOWLEDGE (DCK)

The primary goal of DCK is to raise awareness that 21st century physics courses must integrate components of exploration (EX), conceptual understanding (CU), and problem solving (PS) within a single unit of study.

- ❑ EX will include training in PASCO equipment, safety issues, and development of graphing analysis using computer programs such as Excel and Logger Pro.
- ❑ CU will introduce teachers to resources for conceptual questions that can be used through peer instruction methods.
- ❑ PS will address the development of reading and communication skills for problem solving.

Teachers will see a variety of approaches (graphical, numerical, analytical, and verbal) that may be used to solve the same problem. The AAPT/PTRA teacher resource guides will act as a model for this effort. When completed, teachers will have a ready set of resources appropriate for their teaching situation



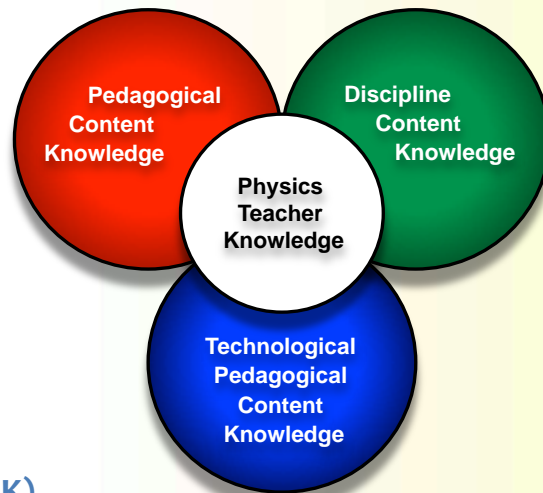
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PEDAGOGICAL CONTENT KNOWLEDGE (PCK)

PCK is defined as a special amalgam of content and pedagogy that is uniquely the providence of teachers. PCK is the teacher's comprehension of how to help students understand specific subject matter. It includes knowledge of particular subject matter topics, problems, and issues to be organized, represented and adapted to the diverse interests and abilities of learners.

TECHNOLOGY PEDAGOGICAL CONTENT KNOWLEDGE (TPACK)

TPACK builds on PCK and attempts to capture some of the essential qualities of knowledge required by teachers for technology integration in their teaching, while addressing the complex multifaceted and situated nature of teacher knowledge. Teachers shall be exposed to a systematic introduction into the use of technology as it pertains to pedagogics. Topics include presentation tools, simulations, visualization tools, podcasting, Wikis, blogs, groupware, and social media.



ALLIANCE FOR PHYSICS EXCELLENCE TEAM

APEX MANAGEMENT MEMBERS

Mohan Aggarwal	11	Dianne Kirnes	11
Barbara Cady	11	Marius Schamschula	12
Vernessa Edwards	11	Elizabeth VanderPutten	12
		Matthew Edwards	12

APEX PARTNERS

Alabama Department of Education		Huntsville City Schools	
Martha A. Allison	12	Cathy McNeal	15
Tommy Bice	13	Debbie Miser	15
Paul Norgaard	13	J. F. Drake State Community & Technical College	
Steve Ricks (AMSTI)	13	Tomeka Cross	16
American Assoc. of Physics Teachers		Brandi Little	16
Jane Nelson	13	John Reutter	16
Jim Nelson	14	Lesley Shotts	16
American Institute for Research		University of Alabama at Tuscaloosa	
Meredith Ludwig	14	J. W. Harrell	17
Carlos Rogriguez	14	Dennis Sunal	17
Facet Innovations		Donna Turner	17
James Minstrell	14		
Horizon Research, Inc.			
Eric Banilower	15		
Patrick Sean Smith	15		

Dr. Mohan Aggarwal



APEX Principal Investigator
Professor, Physics
Chair, Physics, Chemistry & Math Dept.
Alabama A&M University
Contact Information:
Address:
P. O. Box 428
Normal, AL 35762
Work: (256) 372-8132
mohan.aggarwal@aamu.edu

EDUCATION:

Ph.D., Saha Institute of Nuclear Physics, Calcutta University
Master of Science in Physics, Roorkee University
Bachelor of Science in Physics, Chemistry & Math, Punjab University

Dr. Vernessa Edwards



APEX Co-Principal Investigator
Assistant Professor, Optics
Alabama A&M University
Contact Information:
Address:
P. O. Box 1268
Normal, AL 35762
Work: (256) 372-8107
vernessa.edwards@aamu.edu

EDUCATION:

Ph.D., Alabama A&M University
Master of Science in Physics & Laser/Optics, Alabama A&M University
Bachelor of Science in AP Physics, Alabama A&M University

Dr. Barbara Cady



APEX Director of Education
Professor, Special Education,
Alabama A&M University
Contact Information:
Address:
P. O. Box 262
Normal, AL 35762
Work: (256) 372-4041
barbara.cady@aamu.edu

EDUCATION:

Ph.D., Speech Pathology & Audiology, University of Kansas
Master of Arts, Speech Pathology & Audiology, University of Alabama
Bachelor of Arts in Speech, Auburn University

Dianne Kirnes



APEX Program Manager
Program Co-ordinator
Alabama A&M University
Contact Information:
Address:
P. O. Box 1268
Normal, AL 35762
Work: (256) 372-8786
dianne.kirnes@aamu.edu

EDUCATION:

Master of Business Administration, Middle Tennessee State University
Bachelors in Management & Marketing, Middle Tennessee State University

Dr. Marius Schamschula



APEX Technology /Co-PI
 Assistant Professor, Optics & Physics
 Alabama A&M University
 Contact Information:
 Address:
 P. O. Box 1268
 Normal, AL 35762
 Work: (256) 372-8226
 marius.schamschula@aamu.edu

EDUCATION:

Ph.D., University of Alabama in Huntsville
 Master of Science in Physics, San Diego State University
 Bachelor of Arts in Physics, University of California at Berkeley

Dr. Matthew Edwards



APEX Internal Evaluator
 Professor, Physics
 Former Dean, School of Arts & Sciences
 Alabama A&M University
 Contact Information:
 Address:
 156 River Walk Trail
 New Market, AL 35761
 Work: (256) 337-0340
 matthew.edwards@aamu.edu

EDUCATION:

Ph.D. in Physics, Howard University
 Master of Science in Physics, Howard University
 Bachelor of Science in Engineering Physics, North Carolina A&T State University

Dr. Elizabeth VanderPutten



Program Director
 National Science Foundation
 Contact Information:
 Address:
 Nation Science Foundation
 4201 Wilson Blvd
 Arlington, VA 22230
 Work: (703) 292-5147
 evanderp@nsf.gov

EDUCATION:

Ph.D. in Education Policy, The George Washington University
 Master of Education, City University of New York
 Bachelor of Arts in History, College of New Rochelle

Martha A. Allison



Science Education Administrator
 Alabama Department of Education
 Contact Information:
 Address:
 P. O. Box 302101
 Montgomery, AL 36130-2101
 Work: 334-353-9151
 mallison@alsde.edu

EDUCATION:

Masters in Environmental Analysis & Management, Troy State University
 Bachelors in Secondary Ed., Biology & History, Troy State University

Dr. Tommy Bice



State Superintendent of Education
Alabama Department of Education
Contact Information:
Address:
P. O. Box 302101
Montgomery, AL 36130-2101
Work: (334) 242-9700
tbice@alsde.edu

EDUCATION:

Ed.D., Auburn University
Masters, University of Alabama at Birmingham
Bachelors, Auburn University

Steve Ricks



AMSTI State Director
Alabama Department of Education
Contact Information:
Address:
Gordon Persons Building
50 North Ripley Street
Montgomery, AL 36104
Work: (334) 353-9151
sricks@alsde.edu

EDUCATION:

Ed.S., Jacksonville State University
Master of Education, University of Montevallo
Bachelor of Science, University of Montevallo

Dr. Paul Norgaard



Secondary Science Specialist, AMSTI
Alabama Department of Education
Contact Information:
Address:
Gordon Persons Building
50 North Ripley Street
Montgomery, AL 36130-2101
Work: (334) 353-9172
pnorgaard@alsde.edu

EDUCATION:

Ph.D. in Chemistry, Auburn University
Bachelor of Science in Chemistry, Western Carolina University

Jane Nelson



AAPT/PTRA Certified Instructor
American Assoc. of Physics Teachers
Contact Information:
Address:
One Physics Ellipse
College Park, MD 20740-3845
Work: (301) 209-3311
nelsonjh@ix.netcom.com

EDUCATION:

Master of Education in Science Education, Memphis State University
Bachelor of Science in Chemistry, Florida State University

James (Jim) Nelson

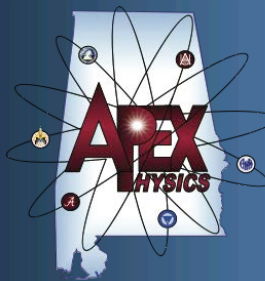


AAPT/PTRA Certified Instructor
 American Association of Physics Teachers
 Contact Information:
 Address:
 One Physics Ellipse
 College Park, MD 20740-3845
 Work: (301) 209-3311
nelsonjh@ix.netcom.com

EDUCATION:

Master of Science in Physics, Clarkson University
 Master of Education in Secondary Education, Temple University
 Bachelor of Science in Physics, Lebanon Valley College

Dr. Carlos Rodriguez



APEX External Evaluator
 Principal Researcher, Education Program
 American Institute for Research
 Contact Information:
 Address:
 1000 Thomas Jefferson Street NW
 Washington, D.C. 20007
 Work: (202) 403-5343
crodriguez@air.org

EDUCATION:

Ph.D. in Higher Education Administration, University of Arizona
 Master of Arts in Bilingual-Bicultural Studies, University of Texas at San Antonio
 Bachelor of Arts in English Literature, St. Edwards University

Dr. Meredith Ludwig



APEX External Evaluator
 Principal Research Analyst
 American Institute for Research
 Contact Information:
 Address:
 1000 Thomas Jefferson Street NW
 Washington, D.C. 20007
 Work: (202) 403-5246
mludwig@air.org

EDUCATION:

Ed.D. in Educational Analysis, Clark University
 Master of Education in Educational Analysis, Clark University
 Bachelor of Arts in French, University of North Carolina

James Minstrell



Education Expert
 Director of Operations & Co-Founder
 Facet Innovations
 Contact Information:
 Address:
 1314 NE 43rd St, Suite 207
 Seattle, WA 98105
 Work: (206) 634-9225
james@facetinnovations.com

EDUCATION:

Ph.D. in Curriculum & Instruction, University of Washington
 Master of Science in Science Education, University of Pennsylvania
 Bachelor of Arts in Geographic Information Sys., Univ. of Washington

Eric Banilower



APEX External Evaluator
Senior Researcher & Partner
Horizon Research, Inc
Contact Information:
Address:
326 Cloister Court
Chapel Hill, NC 27514
Work: (919) 489-1725
erb@horizon-research.com

EDUCATION:

Bachelor of Science in Physics, Haverford College
Doctoral coursework in Curriculum & Instruction, University of North Carolina

Dr. Cathy McNeal

Director, Assessment & Accountability
Huntsville City Schools
Contact Information:
Address:
200 White Street
Huntsville, AL 35801
Work: (256) 428-6966
mary.mcneal@hsv-k12.org

EDUCATION:

Ed.D. in Educational Administration Leadership,
University of Alabama
Ed.S. in Library Media, University of Alabama
Master of Education in Library Media, Auburn University
Bachelor of Science in Art & Business Ed., Auburn Univ.

Dr. Patrick Sean Smith



APEX External Evaluator
Senior Researcher & Managing Partner
Horizon Research, Inc
Contact Information:
Address:
326 Cloister Court
Chapel Hill, NC 27514
Work: (919) 489-1725
www.horizon-research.com

EDUCATION:

Ph.D. in Curriculum & Instruction, University of NC at Chapel Hill
Masters in Science Education
Bachelor of Science in Chemistry

Debbie Miser

Staff Development Coordinator
Talent Management Director
Huntsville City Schools
Contact Information:
Address:
200 White Street
Huntsville, AL 35801
Work: (256) 428-6973
dmiser@hsv.k12.al.us

EDUCATION:

Master of Education in Elementary Education,
Alabama A&M University
Reading Specialist, Alabama A&M University

Tomeka Cross

Career Placement Coordinator
 Job Placement Department
 J. F. Drake State Community & Technical College
 Contact Information:
 Address:
 3421 Meridian St.
 Huntsville, AL 35811-1584
 Work: (256) 551-7264
tomeka.cross@drakestate.edu

Dr. John Reutter



Dean, Research & Planning
 J. F. Drake Community & Tech. College
 Contact Information:
 Address:
 3421 Meridian St.
 Huntsville, AL 35811-1584
 Work: (256) 551-3119
john.reutter@drakestate.edu

EDUCATION:

Ed.D. in Higher Education Administration, University of Alabama
 M.B.A. in Management, University of North Alabama
 Master of Science in Computer Science, Rutgers University
 Bachelor of Science in AP Mathe., CA State Polytech. University

Brandy Little

Program Assistant
 Title III & Planning
 J. F. Drake State Community & Technical College
 Contact Information:
 Address:
 3421 Meridian St.
 Huntsville, AL 35811-1584
 Work: (256) 551-1703
brandy.little@drakestate.edu

Lesley Shotts

Research & Grants Coordinator
 Library & Technology Center
 J. F. Drake State Community & Technical College
 Contact Information:
 Address:
 3421 Meridian St.
 Huntsville, AL 35811-1584
 Work: (256) 551-5206
lesley.shotts@drakestate.edu

Dr. Dennis Sunal

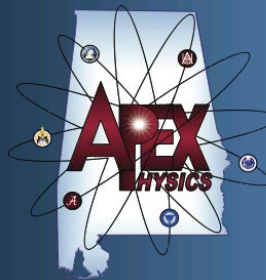


Co-PI UA Action Research
Professor, Secondary Science Education
University of Alabama
Contact Information:
Address:
College of Education
520 Colonial Drive
Tuscaloosa, AL 35401
Work: (205) 348-7010
dwsunal@bama.ua.edu

EDUCATION:

Ph.D. in Curriculum, Instruction & Science Ed., University of Michigan
Masters in Interdisciplinary Science, University of Michigan
Bachelor of Science in Physics, University of Michigan

Dr. Donna Turner



Data Collection Consultant
Assistant Professor
University of Alabama
Contact Information:
Address:
College of Education
520 Colonial Drive
Tuscaloosa, AL 35401
Work:
dpturner@bama.ua.edu

EDUCATION:

Ph.D. in Curriculum & Instruction/Science Ed., University of Alabama
Education Specialist in Science, University of Alabama at Birmingham
Master of Education in Biology, Alabama A&M University
Bachelor of Science in Biology & Chemistry, Alabama A&M University

Dr. James W. Harrell, Jr.



Professor of Physics
Physics Department
University of Alabama
Contact Information:
Address:
MINT Center, 134 Bevill
Tuscaloosa, AL 35487
Work: (205) 348-3785
jwharrelljr@gmail.com

EDUCATION:

Ph.D. in Physics, University of North Carolina
Master of Science in Physics, University of North Carolina

END OF APEX TEAM SECTION

APEX Scholars & AMSTI/ASIM Specialists

Alabama Science in Motion Specialists

Doreen Brisendine	19	Elizabeth T. Holsenbeck	21
Robin Chestnut	19	Tommy Morgan	22
Julie Covin	20	Bill Ossenfort	22
Charles Hanke	20	Christina Steele	23
Stan Hart	21		

Alabama Math, Science & Technology Initiative Specialists

Dan O'Halloran	24	Jeff Woods	24
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APEX Pre-Service Scholars & Classroom Observers

Rocky Elmore	25	Tara Ray	26
Kwyntero Kelso	25	Kaitlyn Marlowe	26
Ashley Owens	25	Marsha Simon	26
Khyana Price	25	Marilyn Stevens	26

Doreen Brisendine



ASIM Physics Specialist
University of North Alabama

Contact Information:

Address:

301 West Nassau Avenue
Muscle Shoals, AL 35661

Work: (256) 765-6944

Home/Cell: (256) 762-6953

dhbrisendine@una.edu

EDUCATION:

Masters in Education, Secondary Science, University of Alabama in Birmingham

Bachelors in Secondary Education, Athens State University

Bachelors in Animal Science, University of Connecticut

EXPERIENCE:

Sixteen years: Teacher, public education; seven years: ASIM Specialist.

APEX IMPACT OBSERVATIONS:

I now incorporate the four-step method into my workshops when appropriate.

Robin Chestnutt



ASIM Physics Specialist
University of South Alabama

Contact Information:

Address:

Physics Dept., D ILB 115
411 University Blvd. N.
Mobile, AL 36688-0002

Work: (251) 460-6927

Home/Cell: (251) 709-1244

robinc@southalabama.edu

EDUCATION:

Master of Education in Secondary Education General Science, University of South Alabama

Bachelor of Science in Secondary Education General Science, University of South Alabama

EXPERIENCE:

Five years: Teacher, Grand Bay High School; eighteen years: ASIM Specialist.

APEX IMPACT OBSERVATIONS:

Teachers in my district who have attended APEX use many of the activities in their classrooms and express that the activities and teaching strategies have improved their physics teaching and their students' learning

Julie Covin



Physics Specialist
University of Alabama

Contact Information:

Address:

10904 Middle Coaling Road
Cottondale, AL 35453

Work: (205) 348-6459

Home/Cell: (205) 531-3230
Jcovin@bamaed.ua.edu

EDUCATION:

Master of Education in Secondary Education, University of West Alabama

Bachelors in Secondary Education, University of Alabama

EXPERIENCE:

Twenty-two years: Teacher.

APEX IMPACT OBSERVATIONS:

I've very much enjoyed the strategy of white boarding as a formative assessment tool. The four-step method for analyzing graphical data is also extremely useful in helping students gain a better understanding of the relationship between variables. I love the Diagnoser.com website! I am using it as a formative assessment tool in my teacher trainings.

Charles Hanke



ASIM Physics Specialist
University of Montevallo

Contact Information:

Address:

999 Shades Crest Road
Birmingham, AL 35226

Work: (205) 665-6476

Home/Cell: (205) 901-5833
hankeC@montevallo.edu

EDUCATION:

Master of Education in Secondary Education

Bachelor of Science in Physics, Education, and Computer Information Science

EXPERIENCE:

Twenty years: Physics Teacher; nine years: Physics Specialist ASIM.

APEX IMPACT OBSERVATIONS:

I have seen my teachers implementing APEX training and more confidently implement new and revised lab experiences in their classrooms.

Stan Hart



ASIM Physics Specialist
University of Alabama at Birmingham

Contact Information:

Address:

436 Overlook Drive
Birmingham, AL 35222

Work: (205) 996-6998

Home/Cell: (205) 382-7148
stanhart@uab.edu

EDUCATION:

Masters, University of Alabama at Birmingham

Bachelors, Auburn University

Bachelors, University of Alabama at Birmingham

EXPERIENCE:

2003-present: Science in Motion Physics Specialist, University of Alabama at Birmingham; Teaching since 1993.

Elizabeth Tommi Holsenbeck



ASIM Physics Specialist
Alabama State University

Contact Information:

Address:

5062 County Road 13
Hardaway, AL 36039

Work: (334) 229-4776

Home/Cell: (334) 201-1986
eholsenbeck@alasu.edu

EDUCATION:

Bachelor of Science in Physics, Auburn University

Certification in General Science Secondary Education, University of Alabama

EXPERIENCE:

Nineteen years: Science Teacher, Jeff Davis High School-Physics, Chemistry, Physical Science, Principles of Technology, and Technology.

APEX IMPACT OBSERVATIONS:

I am thrilled with the impact APEX can make on physics in Alabama. Teachers will break out of the "giving the information" mode, allowing students to discover and internalize concepts. Alabama Physics Teachers now have learning cycles, formative assessment, video analysis, graphing for a reason, resources from Science in Motion specialists and more.

Tommy Morgan



ASIM Physics Specialist
Jacksonville State University

Contact Information:

Address:

730 Morgan Road
Gadsden, AL 35904
Work: (256)782-5304
Home/Cell: (256) 239-8626
tmorgan@jsu.edu

EDUCATION:

Master of Science in Education, Jacksonville State University
Bachelor of Science in Chemistry, Auburn University
Associate of Science in Math, Gadsden State Community College

EXPERIENCE:

1994-present: ASIM Physics Field Specialist, Jacksonville State University.

APEX IMPACT OBSERVATIONS:

I have observed that APEX teachers now use more hand on activities to deliver lessons. White boarding and the four-step analysis of graphs are often used. Formative feedback from Diagnoser is VERY popular.

William “Bill” Ossenfort



Physics Specialist
Troy University

Contact Information:

Address:

16659 Forest Hills Lane
Andalusia, AL 36420
Work: (334) 670-5927
Home/Cell: (334) 434-0850
wossenfort@troy.edu

EDUCATION:

Master of Science in Physics, Naval Postgraduate School
Bachelor of Science in Physics, Auburn University

EXPERIENCE:

2012–present: Physics Specialist, Alabama Science in Motion; 2008–2012: High School Science Teacher, various schools; 1988–2008: Nuclear Submarine Officer, US Navy.

APEX IMPACT OBSERVATIONS:

I keep getting to recruit teachers and communicate graphical analysis to my region. The modeling and graphical analysis has been a significant leap forward, especially for those teachers who have not had a strong background in physics.

Christina Steele



Physics Specialist
Auburn University

Contact Information:

Address:

1616 Clear Creek Drive
Prattville, AL 36067

Work: (334) 844-6950

Home/Cell: (334) 734-0448
christina.steele@auburn.edu

END OF ASIM SPECIALISTS BIOGRAPHY SECTION

EDUCATION:

Master of Education in Secondary Science, University of Montevallo
Bachelor of Science in Chemical Engineering, Oregon State University

EXPERIENCE:

Chemical Engineer, International Paper; Science Teacher, Holtville High School-Physics and Chemistry; Science Teacher, Prattville High School-AP Physics C, Physics, and Chemistry; Physics Specialist, Auburn University Science in Motion

APEX IMPACT OBSERVATIONS:

I serve several teachers that are participating in the APEX program. These teachers are very excited about the program. I have seen content growth and an increase in confidence.

Dan O'Halloran



AMSTI Physics in Motion Coordinator
University of Alabama at Huntsville

Contact Information:

Address:

7806 Michael Circle
Huntsville, AL 35802
Work: (256) 824-2991
Home/Cell: (256) 361-6146
doo001@uah.edu

EDUCATION:

Masters in Secondary Science Education, University of West AL
Bachelor of Science in Applied Physics, Auburn University
Bachelors in Secondary Education, Auburn University

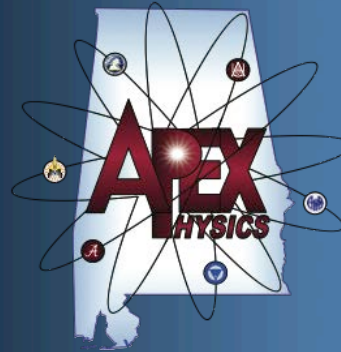
EXPERIENCE:

Fifteen years: Physics Specialist, Alabama Science in Motion;
three years: High School Physics Teacher; PLD sessions participant,
Huntsville and Birmingham areas.

APEX IMPACT OBSERVATIONS:

APEX has changed my approach to teaching and my perception of the role of laboratory activities in physics instruction. Due to APEX, hands-on activities used to build upon and challenge student thinking have decreased the dependency upon labs to verify concepts taught in class. Formative assessment of student thinking and misconceptions are a significant part of instructional planning, so I document how the physics teachers in my region have changed their use and frequency of hands-on activities in their classrooms.

Jeff Woods



AMSTI-ASIM Physics Specialist
Athens State University

Contact Information:

Address:

26688 Cedar Break Trail
Madison, AL 35756
Work: (256) 216-6622
Home/Cell: 256) 777-9121
jwoods0001@charter.net

EDUCATION:

Masters, University of North Alabama
Bachelors, Harding University

APEX IMPACT OBSERVATIONS:

The best thing about the APEX program is that it is so practical. It is not costly, and the ideas and equipment utilized can easily be made part of any physics class. It follows a logical process of development of ideas that is easy to understand.

Rocky Elmore



UA Pre-Service Scholar
Senior
University of Alabama
Contact Information:
Address:
College of Education; 520 Colonial Drive
Tuscaloosa, AL 35401

MAJOR:
Physics & Secondary Education

Ashley Owens



AAMU Pre-Service Scholar
Senior
Alabama A&M University
Contact Information:
Address:
Dept. of Physics, Chemistry & Mathematics
P. O. Box 1268
Normal, AL 35762
aowens12@bulldogs.aamu.edu

MAJOR:
Physics & Secondary Education

Kwyntero Kelso



AAMU Pre-Service Scholar
Junior
Alabama A&M University
Contact Information:
Address:
Dept. of Physics, Chemistry & Mathematics
P. O. Box 1268
Normal, AL 35762
kkelso@bulldogs.aamu.edu

MAJOR:
Physics

Khyana Price



AAMU Pre-Service Scholar
Junior
Alabama A&M University
Contact Information:
Address:
Dept. of Physics, Chemistry & Mathematics
P. O. Box 1268
Normal, AL 35762
kprice11@bulldogs.aamu.edu

MAJOR:
Physics & Secondary Education

Tara Ray



UA-Classroom Observer
Ph.D. Graduate Student
University of Alabama
Contact Information:
Address:
Dept. of Curriculum & Instruction
P. O. Box 870232
Tuscaloosa, AL 35487
tray@crimson.ua.edu

MAJOR:
Science Education

Marsha Simon



UA Pre-Service Scholar
Ph.D. Graduate Student
University of Alabama
Contact Information:
Address:
Dept. of Curriculum & Instruction
P. O. Box 870232
Tuscaloosa, AL 35487
mmstevens@crimson.ua.edu

MAJOR:
Educational Research

Kaitlyn Marlowe



UA Pre-Service Scholar
Ph.D. Graduate Student
University of Alabama
Contact Information:
Address:
Dept. of Curriculum & Instruction
P. O. Box 870232
Tuscaloosa, AL 35487

MAJOR:
Science Education

Marilyn Stevens



UA Pre-Service Scholar
Ph.D. Graduate Student
University of Alabama
Contact Information:
Address:
Dept. of Curriculum & Instruction
P. O. Box 870232
Tuscaloosa, AL 35487
mmstevens@crimson.ua.edu

MAJOR:
Science Education

ALLIANCE FOR PHYSICS EXCELLENCE COHORTS

PTI IN-SERVICE TEACHERS

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Christina Marie Caldwell



Science Teacher
 School: Gadsden City High School
 District: Gadsden City
 Principal: Keith Blackwell
 Superintendent: Dr. Ed Miller
 Contact Information:
 Address:
 102 Foxwood Way
 Attalla, AL 35954
 Work: (256) 543-3614
 Home/Cell: (256) 393-0027
 ccaldwell@gcs.k12.al.us
 ASIM Specialist: Tommy Morgan

EDUCATION:

Master of Education in Secondary Education General Science,
 Jacksonville State University
 Bachelor of Science in Secondary Education General Science,
 Jacksonville State University

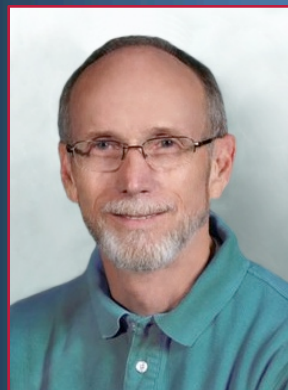
EXPERIENCE:

Ten years: teacher, Gadsden City High School-AP Physics and Physics
 (four years); four years: Science teacher, Emma Sansom High School-
 Physics.

APEX IMPACT OBSERVATIONS:

APEX has been the most beneficial workshop I have ever attended. It
 has given me tools to reduce the time I lecture and increase students'
 hands-on activities, all while increasing their physics knowledge.

David L. Hall



Science Teacher
 School: Sylacauga High School
 District: Sylacauga City Schools
 Principal: Jason Bryant
 Superintendent: Michael Freeman
 Contact Information:
 Address:
 1016 Sedgefield Drive
 Sylacauga, AL 35150
 Work: (256) 249-0911
 Home/Cell: (256) 872-4810
 halld@sylacauga.k12.al.us
 ASIM Specialist: Chuck Hanke

EDUCATION:

Master of Education, University of Montevallo
 Bachelor of Science in Physical Science & Biology, Troy University

Mara Johnson



Science Teacher
 School: Midfield High School
 District: Midfield City Schools
 Principal: Reggie Ware
 Superintendent: Demica Sanders
 Contact Information:
 Address:
 116 2nd Avenue Northeast
 Alabaster, AL 35007
 Work: (205) 923-2833
 Home/Cell: (205) 807-5566
 mjohnson@midfield.k12.al.us
 ASIM Specialist: Stan Hart

EDUCATION:

Master of Education in Biology Education, Alabama State University
 Bachelor of Science in Biology, University of Montevallo

EXPERIENCE:

Fifteen years: Science Teacher (currently: Chemistry, Physics, and Biology).

APEX IMPACT OBSERVATIONS:

Before APEX, I only received professional development and training as a Physics Teacher via Alabama Science In Motion. Since participating in the APEX program, I have learned and experienced so many things that are assisting me in becoming a better teacher, especially in physics. I am so grateful for the opportunity to further explore the world of physics as a teacher through APEX.

Mark Maddox



Science Teacher
 School: Sparkman High School
 District: Madison County
 Principal: Michael Campbell
 Superintendent: Dr. David Copeland
 Contact Information:
 Address:
 111 Steele Drive
 Madison, AL 35758
 Work: (256) 837-0331
 Home/Cell: (256) 653-7888
 sparkman.physics@gmail.com
 ASIM Specialist: Dan O'Halloran

EDUCATION:

Master of Divinity, Southern Baptist Theological Seminary
 Bachelors in Secondary Education (Majors: Physics & Math), Auburn University

EXPERIENCE:

Fifteen years: Teacher, public High School; five years: Teacher, college.

APEX IMPACT OBSERVATIONS:

APEX has impacted my classroom by making me more hands-on conscious and giving me a plethora of new ideas for effective physics instruction.

Angela Michelle McLeod



Science Teacher
School: Pleasant Grove High School
District: Jefferson County
Principal: Wayne A. Byram
Superintendent: Dr. Craig Pouncey
Contact Information:
Address:
 3527 Jeanne Lane
 Hueytown, AL 35023
Work: (205) 379-5250
Home/Cell: (205) 441-7354
amcleod@jefcoed.com
ASIM Specialist: Stan Hart

EDUCATION:

Master of Education in Secondary Science Education, University of Alabama at Birmingham
 Bachelor of Science in Biology (Minor: Chemistry), University of Alabama at Birmingham

EXPERIENCE:

2005-present: Teacher, Jefferson County-AP Chemistry & AP Physics.

APEX IMPACT OBSERVATIONS:

My teaching has completely changed. I have a student focused classroom as opposed to a teacher centered classroom. My students love physics class. We are always “doing things.” I believe my students really have a deeper understanding of physics concepts.

Angela Olguin



Science Teacher
School: Ashford High School
District: Houston County
Principal: James Odom
Superintendent: Tim Pitchford
Contact Information:
Address:
 410 Burt Drive, Apt. B-B
 Dothan, AL 36305
Work: (334) 899-5411
Home/Cell: (334) 790-4160
danner.angela@hcboe.us
ASIM Specialist: Bill Ossenfort

EDUCATION:

Masters in Comprehensive Science Education, Troy University
 Bachelors in Comprehensive Science Education, Troy University

EXPERIENCE:

Five years: Physics Teacher; one year: Participant, ASIM.

APEX IMPACT OBSERVATIONS:

My teaching has shifted to more inquiry learning and student-centered strategies as opposed to teacher lead, teacher centered.

Cynthia Phillips



AP Physics & Pre-Engg Academy
Coordinator
School: Demopolis High School
District: Demopolis City
Principal: Dr. Tony Speegle
Superintendent: Dr. Al Griffin
Contact Information:
Address:
65 Qual Ridge Drive
Linden, AL 36748
Work: (334) 289-0294
Home/Cell: (334) 341-0901
cphillips@dcsedu.com
ASIM Specialist: Julie Covin

EDUCATION:

Master of Arts in Science Comp., University of West Alabama
Bachelor of Science in Biology & Environmental Science, University of West Alabama

EXPERIENCE:

Sixteen years: Physics Teacher, Demopolis High School (2007 Teacher of the Year); 2004-2014: Science Dept. Head; Organizer: local Science Fairs; Science Olympiad teams Sponsor, Tuscaloosa, AL.

APEX IMPACT OBSERVATIONS:

The APEX program has completely changed the way I teach - no more lecture and PowerPoint presentations!! We do labs/activities to collect data and draw conclusions, and from this we derive formulas and make predictions. We love it! The kids struggle at first because it is a completely new way of thinking, but they realize that they are learning HOW to think instead of a mass of facts to memorize!

Rochelle Polnitz Williams



Science Teacher
School: The Calhoun School
District: Lowndes County
Principal: Kenneth E. Fair
Superintendent: Dr. Daniel Boyd
Contact Information:
Address:
361 Langston Hughes Drive
Burkville, AL 36752
Work: (334) 227-4515
Home/Cell: (334) 233-1063
rochellewilliams@lowndesboe.org
ASIM Specialist: Tommi Holsenbeck

EDUCATION:

Master of Education in Curriculum & Technology, Grand Canyon University
Bachelor of Science in Biology (Minors: Chemistry & Physics), Troy University

EXPERIENCE:

Fifteen years: Teacher, The Calhoun School (for nine years).

APEX IMPACT OBSERVATIONS:

Being a participant of the APEX program has allowed me to become more of a facilitator in my students learning.

Timothy Williams



Science Teacher
School: Baker High School
District: Mobile County
Principal: Clem Richardson
Superintendent: Martha L. Peek
Contact Information:
Address:
5332 Colonial Oaks Drive
Mobile, AL 36618
Work: (251) 221-3000
Home/Cell: (251) 404-7852
twilliams4@mcpss.com
ASIM Specialist: Robin Chestnutt

EDUCATION:

Bachelor of Science in Meteorology, University of South Alabama

EXPERIENCE:

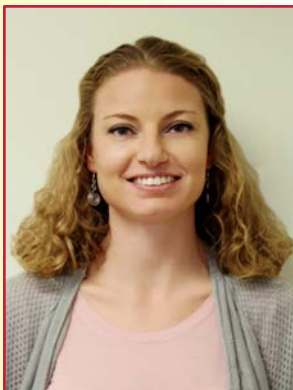
2010-present: Science Teacher, Baker High School (Physics HR); 2006-2010: Vigor High School, Prichard, AL (various sciences, including Physical Science, Physics, Earth/Space Science, Geology, and Meteorology); 2005-2006 Marine weather forecaster, Alert Weather Services, Lafayette, LA.

APEX IMPACT OBSERVATIONS:

The APEX program has taught me methods of teaching physics that I never realized existed. My students are challenged more and are able to really think about and discuss physics.

END OF CO-HORT 1 BIOGRAPHY SECTION

Krista Agerton



Science Teacher
 School: George W. Long High School
 District: Dale County
 Principal: Jason Steed
 Superintendent: Danny Bynum
 Contact Information:
 Address:
 864 County Road 2
 Ariton, AL 36311
 Work: (334) 774-2380
 Home/Cell: (334) 369-9033
kagerton@dalecountyboe.org
 ASIM Specialist: Bill Ossenfort

EDUCATION:

Bachelor of Science in Biology, Troy University

EXPERIENCE:

Eight years: Teacher.

APEX IMPACT OBSERVATIONS:

I have implemented more hands on activities and greatly reduced my lecture time. I allow the students to investigate and discover more on their own.

Timothy Ashley



Science Teacher
 School: Stanhope Elmore High School
 District: Elmore County
 Principal: Dr. Samby McGowin
 Superintendent: Dr. Andre Harrison
 Contact Information:
 Address:
 5320 McAdams Road
 Millbrook, AL 36054
 Work: (334) 285-4263
 Home/Cell: (251) 593-9572
timothy.ashley@elmoreco.com
 ASIM Specialist: Christina Steele

EDUCATION:

Bachelors, Auburn University

EXPERIENCE:

Eleven years: Teacher, Stanhope Elmore High School (currently); Hazel Green High School (one year); John L. LeFlore High School (six years).

APEX IMPACT OBSERVATIONS:

APEX has changed my entire teaching philosophy.

Mary Kate Beane



Science Teacher
 School: Theodore High School
 District: Mobile County
 Principal: Ronnie Rowell
 Superintendent: Martha L. Peek
 Contact Information:
 Address:
 8260 Pinebough Avenue
 Mobile, AL 36695
 Work: (251) 221-3351
 Home/Cell: (251) 583-8222
 mbeane@mcpss.com
 ASIM Specialist: Robin Chestnutt

EDUCATION:

Bachelor of Science in Biomedical Science, University of South Alabama

EXPERIENCE:

Seven years: Teacher, Theodore High School (currently: Chemistry CP, Honors Physics CP, and AP Chemistry).

APEX IMPACT OBSERVATIONS:

It has completely changed my method of instruction in physics - lots of PTI activities, white boarding, ranking tasks, and discussions. I have also applied these methods to my other classes and employ white boarding in AP chemistry and physical science.

Meredith Chiaro



Science Teacher
 School: Murphy High School
 District: Mobile County
 Principal: William S. Smith
 Superintendent: Martha L. Peek
 Contact Information:
 Address:
 9521 Labrador Run North
 Mobile, AL 36695
 Work: (251) 221-3186
 Home/Cell: (865) 742-5138
 mchiaro@mcpss.com
 ASIM Specialist: Robin Chestnutt

EDUCATION:

Bachelor of Science in Meteorology, University of South Alabama

Frances Coleman



Science Teacher
 School: Scottsboro High School
 District: Scottsboro City Schools
 Principal: Kathy Hughes
 Superintendent: Dr. Sandra Spivey
 Contact Information:
 Address:
 25053 John T. Reid Parkway
 Scottsboro, AL 35769
 Work: (256) 218-2054
 Home/Cell: (256) 244-2722
 fcoleman@scottsboroschools.net
 ASIM Specialist: Dan O'Halloran

EDUCATION:

Bachelor of Science in Microbiology, University of Alabama

EXPERIENCE:

Six years: Physics Teacher; Participant: Career Technology Engineering STEM classes (current).

APEX IMPACT OBSERVATIONS:

APEX has deepened my content understanding and taught me how to deepen my students' ability to make learning connections.

Joan Crocker



Science Teacher
 School: Wilcox Central High School
 District: Wilcox County
 Principal: Dr. Lenoise Richey
 Superintendent: Dr. Tyrone Yarbrough
 Contact Information:
 Address:
 1298 Beach Road
 Camden, AL 36726
 Work: (334) 682-9239
 Home/Cell: (205) 566-2912
 wchcrocker@wilcox.k12.al.us
 ASIM Specialist: Tommi Holsenbeck

EDUCATION:

Bachelors in Secondary Education, Univ. of AL at Birmingham
 Bachelor of Science in Secondary Education, University of Montevallo

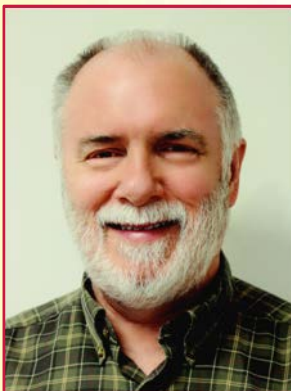
EXPERIENCE:

Five Years: Physics teacher

APEX IMPACT OBSERVATIONS:

Because of the APEX program, I have a different understanding of what is important about teaching physics from my previous understanding. I have been challenged to become a better teacher as a result of APEX. Now I understand that students not only need to be able to do calculations and graphs, but also exhibit graphing skills, be able to explain physics results in terms of graphs, communicate laboratory results to fellow students, and recognize they are part of the scientific community. I personally feel more confident that I have a better sense of the direction my physics class needs to take, and appreciate the opportunity the APEX program has provided.

David Frederick



Science Teacher

School: Bob Jones High School

District: Madison City Schools

Principal: Dr. Brian Clayton

Superintendent: Dr. Dee Fowler

Contact Information:

Address:

1272 Cathedral Circle

Madison, AL 35758

Work: (256) 772-2547

Home/Cell: (256) 714-4499

dfrederick@madisoncity.k12.al.us

ASIM Specialist: Dan O'Halloran

EDUCATION:

Master of Science in Geosciences, Mississippi State University

Master of Education, General Science, Alabama A&M University

Bachelor of Science in Human Biology, University of Wisconsin

EXPERIENCE:

Six years: Teacher, High School regular Physics, Pre-AP Physics, Astronomy, and Physical Science; one year: Teacher, Intro to Engineering Design & Aeronautical Engineering.

APEX IMPACT OBSERVATIONS:

In my classroom, I've increased the amount of activity based learning that occurs. I've also improved in the quantity and quality of the formative assessment that we do.

Lee Grosenbach



Science Teacher

School: Brantley High School

District: Crenshaw County

Principal: Dodd Hawthorne

Superintendent: Terry Holley

Contact Information:

Address:

P. O. Box 452

Brantley, AL 36009

Work: (334) 335-3331

Home/Cell: (251) 213-8378

lee.grosenbach@crenshaw-schools.org

ASIM Specialist: Bill Ossenfort

EDUCATION:

Bachelor of Science in Biology, Troy University

EXPERIENCE:

Five years: Teacher, Secondary Education science.

APEX IMPACT OBSERVATIONS:

APEX flipped the role of teacher as a facilitator of learning, not director. It brought inquiry based learning and hands-on activities back to science classes in my school.

Lynne Renee Hammonds



Science Teacher
 School: Oxford High School
 District: Oxford City Schools
 Principal: Chris Cox
 Superintendent: Dr. Jeff Goodwin
 Contact Information:
 Address:
 55 Sneh Street
 Oxford, AL 36203
 Work: (256) 241-3166
 Home/Cell: (256) 276-9944
 lhammond.oh@oxford.k12.al.us
 ASIM Specialist: Tommy Morgan

EDUCATION:

Masters in Secondary Education General Science, Jacksonville State University
 Bachelor of Science in Physics, University of Cincinnati

EXPERIENCE:

Currently: Teacher, Oxford High School-AP Physics, Honors Physics & Physics for Physical Science.

APEX IMPACT OBSERVATIONS:

APEX has impacted my teaching in several ways. First, it has taught me a way to teach and apply the four-step method for analyzing graphs that has greatly enhanced the understanding of data for the student. These understandings have linked over into understanding the science questions on the ACT as well. APEX has also given me teaching resources for making my class more hands-on. The students seem to get more knowledge out of an action-based class. Finally, APEX has broadened my subject or content knowledge, helping me with the topics that I have had a hard time understanding myself.

Deborah Harper



Science Teacher
 School: Amelia L. Johnson High School
 District: Marengo County
 Principal: Lepoleon Peterson
 Superintendent: Luther P. Hallmark
 Contact Information:
 Address:
 3725 Circle 55
 Thomasville, AL 36784
 Work: (334) 627-3364
 Home/Cell: (205) 243-9973
 dharper@marengo.k12.al.us
 ASIM Specialist: Julie Covin

EDUCATION:

Master of Arts in Education in Curriculum & Instruction, University of Alabama in Birmingham
 Bachelor of Science in Biology, University of Alabama

EXPERIENCE:

Eighteen years: Teacher & Substitute Teacher, Marengo County Schools, Georgia, Tennessee, New Mexico, Texas, Maryland, Alabama (Birmingham City Schools & Hoover City Schools), and Midfield City Schools; Member: ASIM Biology, Chemistry, and Physics, AMSTI (grades 7-8)

APEX IMPACT OBSERVATIONS:

The greatest impact upon my teaching is that I am much more conscious of the value of questioning in my teaching. The care that is taken in the designing and direction of questions is paramount to conceptual learning.

Jill Harrison



Science Teacher
 School: Wilson High School
 District: Lauderdale County
 Principal: Gary Horton
 Superintendent: Jennifer Gray
 Contact Information:
 Address:
 1812 Palmer Street
 Florence, AL 35630
 Work: (256) 764-8470
 Home/Cell: (256) 810-0198
 Jill.Harrison@LCschools.org
 ASIM Specialist: Doreen Brisendine

EDUCATION:

Master of Arts Degree in Secondary Education (Comprehensive Science), University of North Alabama
 Bachelor of Science Degree in Comprehensive Science Secondary Education, University of North Alabama

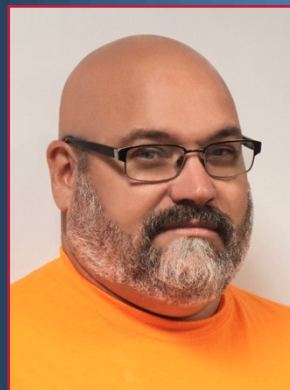
EXPERIENCE:

1995-present: Teacher, Wilson High School-Physics, Chemistry, Physical Science, Earth Science, Environ. Science, Biology, Anatomy, and Physiology; 1993-1995: Teacher, Belmont High School, MS-Advanced Biology & Chemistry; 1987-1993: Teacher, West Morgan & Danville High Schools -Physics, Chemistry, Biology, Environ. Science, Anatomy, Physiology, and Physical Science; 1987-1987: Intern Science Teacher, Hibbett Middle School.

APEX IMPACT OBSERVATIONS:

APEX has given me a different approach to presenting material, developing lessons and evaluating student success.

Gus Hembree



Science Teacher
 School: Pisgah High School
 District: Jackson County
 Principal: Mark Guffey
 Superintendent: Kenneth Harding
 Contact Information:
 Address:
 116 Circle 44
 Section, AL 35771
 Work: (256) 599-2438
 Home/Cell: (256) 599-2438
 hembreeg@jackson.k12.al.us
 ASIM Specialist: Dan O'Halloran

EDUCATION:

Masters in Secondary Science Education (Physics/Chemistry), Alabama A&M University
 Bachelor of Science in Earth Science, Auburn University

EXPERIENCE:

2008-present: Teacher, Pisgah High School-Chemistry, Physics & Forensic Science; 2003-2008: Teacher, Hollywood Elementary & Macedonia Elementary-Elementary School Science & English; 1992-2002: Teacher, Skyline High-Science; Teacher, Hatton High-Physics & Physical Sci.; Teacher, Douglas High-Physical Science; 1991-1992: Teacher, Stevenson Elementary/Middle School-Indian Heritage .

APEX IMPACT OBSERVATIONS:

I can tell a noticeable difference in my teaching and the impact on my students due to APEX.

Phillip Herring



Science Teacher
 School: Fairhope High School
 District: Baldwin County
 Principal: Jon Cardwell
 Superintendent: Robbie Owen
 Contact Information:
 Address:
 11025 County Rd 48
 Fairhope, AL 36532
 Work: (251) 928-8309
 Home/Cell: (251) 767-0910
 pherring@bcbe.org
 ASIM Specialist: Robin Chestnutt

EDUCATION:

Ph.D. in Educational Research, University of Southern Mississippi
 Ed. Specialist in Educational Leadership, Univ. of South Alabama
 Master of Education in Science, University of South Alabama
 Bachelor of Science in General Science, University of South Alabama

EXPERIENCE:

Nineteen years: Physics Teacher (currently: Physics & AP Physics C/Mechanics).

APEX IMPACT OBSERVATIONS:

The APEX program has allowed me to incorporate a broader range of hands-on activities in my classroom that time constraints do not allow me to develop on my own. As part of the APEX program, I am also provided the opportunity to work with other physics teachers. This is an enormous asset because we are usually isolated and we seldom have an opportunity to discuss physics topics and concepts with other teachers. Overall, the APEX program has had a positive impact on my students and me.

Kevin Horton



Physics Teacher
 School: Etowah High School
 District: Atalla City
 Principal: Jeff Colegrove
 Superintendent: David Bowman
 Contact Information:
 Address:
 802 Case Avenue
 Attalla, AL 35954
 Work: (256) 528-8381
 Home/Cell: (256) 328-3654
 khorton@attalla.k12.al.us
 ASIM Specialist: Tommy Morgan

EDUCATION:

Master of Education in Secondary Science Education, Jacksonville State University
 Bachelor of Education in Secondary Science Education, Jacksonville State University

EXPERIENCE:

Thirteen years: Teacher-Chemistry & Physics.

APEX IMPACT OBSERVATIONS:

APEX has brought real science into my classroom. Instead of teaching a lesson, I am simply providing my students with the opportunity to investigate.

Timothy E. Horton



Science Teacher
 School: Reeltown High School
 District: Tallapoosa City
 Principal: Tom Cochran
 Superintendent: Joseph Windle
 Contact Information:
 Address:
 409 Riverside Avenue
 Tallassee, AL 39768
 Work: (334) 257-1671
 Home/Cell: (205) 475-6899
 thorton@tallapoosak12.org
 ASIM Specialist: Christina Steele

EDUCATION:

Masters in Secondary Education, William Carey University
 Bachelor of Science in Fishery Management, Mississippi State University

EXPERIENCE:

Sixteen years: Teacher.

APEX IMPACT OBSERVATIONS:

APEX has impacted my classroom, school, and district in a positive manner.

Sheri Humphrey



Science Teacher
 School: Oak Mountain High School
 District: Shelby County
 Principal: Kristi Sayers
 Superintendent: Randy Fuller
 Contact Information:
 Address:
 2313 Woodland Circle
 Birmingham, AL 35242
 Work: (205) 682-5200
 Home/Cell: (205) 902-0854
 shumphrey@shelbyed.k12.al.us
 ASIM Specialist: Chuck Hanke

EDUCATION:

Master of Education in General Science, University of Montevallo
 Bachelor of Science in Pulp Paper Technology, North Carolina State University

EXPERIENCE:

2000-present: Science Teacher, Oak Mountain High School, Birmingham-General Physics, AP Physics C Mechanics & AP Physics 1;
 1982-1998: Process Engineer, International Paper, Mobile, AL.

APEX IMPACT OBSERVATIONS:

More labs, more inquiry, more discussion, more basic physics understanding, and more student-centered activities.

LaTisha Sexton Jackson



Science Teacher
 School: Cold Springs High School
 District: Cullman County
 Principal: Tim Burleson
 Superintendent: Dr. Craig Ross
 Contact Information:
 Address:
 31625 Alabama Highway 91
 Hanceville, AL 35077
 Work: (256) 287-1787
 Home/Cell: (256) 620-3047
 tjackson@ccboe.org
 ASIM Specialist: Jeff Woods

EDUCATION:

Master of Education in Biology, Alabama State University
 Bachelor of Science in Biochemistry, Auburn University
 Bachelor of Science in Medical Technology, Auburn University
 Bachelor of Science in Education, Athens University

EXPERIENCE:

Six years: Teacher.

APEX IMPACT OBSERVATIONS:

APEX has allowed me to do more inquiry lab activities than I had done in previous year. My students figure concepts out for themselves and are able to build their own knowledge.

Brandi Jones



Science Teacher
 School: Carver High School
 District: Montgomery Public Schools
 Principal: Gary Hall
 Superintendent: Margaret Allen
 Contact Information:
 Address:
 602 E. Edgemont Avenue
 Montgomery, AL 36111
 Work: (334) 269-3636
 Home/Cell: (334) 202-8970
 brandi.zeigler@mps.k12.al.us
 ASIM Specialist: Tommi Holsenbeck

EDUCATION:

Master of Education in Biology, Alabama State University
 Bachelor of Science in Chemistry, Miles College

EXPERIENCE:

2008-present: Teacher, Carver High School, Montgomery, AL; 2007-2008: Teacher, Bellingrath Junior High School, Montgomery, AL; 2007-2008: Teacher, Bellingrath Junior High School, Montgomery, AL; 1999-2001: Teacher, Calhoun High School, Lowndes County, AL.

APEX IMPACT OBSERVATIONS:

The laboratory activities are great! My students have an opportunity to observe concepts in action instead of only reading about them or memorizing them. They compare their preconceived notions with real data. The labs allow my students to confront their misconceptions and form a foundation upon which to build even more knowledge.

Michael Joreski, Jr.



Science Teacher
 School: Samson High School
 District: Geneva County
 Principal: DeWayne Hamalton
 Superintendent: Becky Birdsong
 Contact Information:
 Address:
 1088 County Road 725
 Enterprise, AL 36330
 Work: (334) 898-2371
 Home/Cell: (334) 477-1148
joreskim@genevacoboe.org
 ASIM Specialist: Bill Ossenfort

EDUCATION:

Masters in Math, Troy State University

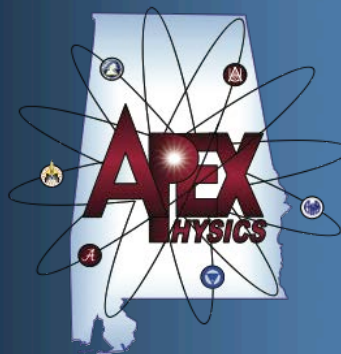
EXPERIENCE:

Fourteen years: Teacher (eight years: Math & Science); Certification: Math & General Science 6-12.

APEX IMPACT OBSERVATIONS:

APEX has taught me how to allow students to self discover what they are otherwise merely told about. It leads to greater understanding of physics ideas.

Jessica Nicole King



Science Teacher
 School: Baker High School
 District: Mobile County
 Principal: Clem Richardson
 Superintendent: Martha L. Peek
 Contact Information:
 Address:
 3532 Lyle Court
 Semmes, AL 36575
 Work: (251) 221-3000
 Home/Cell: (251) 366-2336
jking@mcpss.com
 ASIM Specialist: Robin Chestnutt

EDUCATION:

Bachelor of Science in Chemistry, University of Southern Mississippi

EXPERIENCE:

Fifteen years: Teacher (Mobile County Public Schools: five.years)

APEX IMPACT OBSERVATIONS:

This is an AMAZING program that I would strongly suggest to anyone! I truly believe in their teaching methods, and the work behind the scenes is tremendous. APEX is by far the best professional development that I have ever participated in during my sixteen years of teaching! I only wish they had the same program for Chemistry! During workshops, we are the students! We do the labs and follow the teaching methods as students. I truly recommend this program to anyone teaching physics! I give them an A+ hands down! APEX needs to continue, and I encourage every Physics Teacher to participate!

Samantha Erin-Ann McKissack



Science Teacher
 School: Pinson Valley High School
 District: Bibb County
 Principal: Terry Lawley
 Superintendent: Glenn Judd
 Contact Information:
 Address:
 4713 Renwood Drive
 Pinson, AL 35126
 Work: (205) 379-5100
 Home/Cell: (205) 335-9891
 smckissack@jefcoed.com
 ASIM Specialist: Stan Hart

EDUCATION:

Bachelors in General Science Education, Auburn University

EXPERIENCE:

Four years: Teacher-Physical Science, Biology, Chemistry, Advanced Chemistry, and one class of Physics.

APEX IMPACT OBSERVATIONS:

I taught the physics portion of physical science completely different than previous years because I used the things I learned here.

Rhonda Miller



Science Teacher
 School: Hartselle High School
 District: Hartselle City
 Principal: Jeff Hyche
 Superintendent: Dr. Paul Wilson
 Contact Information:
 Address:
 847 Francis Road
 Hartselle, AL 35640
 Work: (256) 751-5615
 Home/Cell: (256) 565-3181
 rhonda.miller@hcs.k12.al.us
 ASIM Specialist: Jeff Woods

EDUCATION:

Master of Science in both Math & Comprehensive Science,
 Athens State University
 Bachelor of Science in both Math & Comprehensive Science,
 University of North Alabama

EXPERIENCE:

Twenty-six years: Teacher-AP Physics, AP Statistics, Pre Ap Physics, and Pre AP Pre-Calculus.

APEX IMPACT OBSERVATIONS:

APEX has provided me the tools to change the way in which students learn physics. My classroom has become student-centered, rather than traditionally teacher-centered. Students are actively discovering concepts through labs, commenting on these concepts in class discussions, and, last but not least, participating and presenting in group-centered activities. These APEX foundational concepts have led to tremendous gains in my students understanding of physics.

Jessica Moore



Science Teacher
 School: Walker High School
 District: District 7, Jasper City Schools
 Principal: Gary Boling
 Superintendent: Dr. Ann Jackson
 Contact Information:
 Address:
 1601 Highland Avenue
 Jasper, AL 35504
 Work: (205) 221-9277
 Home/Cell: (205) 275-4553
 jmoore@jasper.k12.al.us
 ASIM Specialist: Doreen Brisendine

EDUCATION:

Master of Arts in Education, Secondary Comprehensive Science,
 University of Alabama at Birmingham
 Bachelor of Science in Zoology, Auburn University

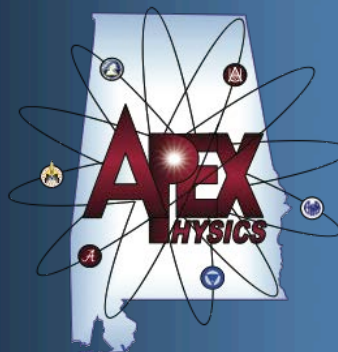
EXPERIENCE:

Five years: Teacher (presently-Walker High School); Sumiton
 Christian School-6th, 7th, and 8th grade sciences; two years: High
 School Biology, Chemistry, Zoology, and Environmental Science.

APEX IMPACT OBSERVATIONS:

APEX has not only been a great resource for teaching methods,
 resources, and colleagues but also a source of encouragement. After
 participation in physics labs and discussions, I am incorporating more
 guided inquiry lab investigations in my classroom and challenging my
 students to sharpen their thinking processes.

Rachel Morrison



Science Teacher
 School: Arthur H. Parker High School
 District: Montgomery Public Schools
 Principal: Darrell Hudson
 Superintendent: Dr. Craig Witherspoon
 Contact Information:
 Address:
 5637 9th Avenue South
 Birmingham, AL 35212
 Work: (205) 231-2370
 Home/Cell: (205) 415-0998
 racheldmorrison@gmail.com
 ASIM Specialist:

EDUCATION:

M.P.A., University of Alabama at Birmingham
 Bachelor of Science, University of Montevallo

Amy Martina Norton



Science Teacher
 School: Vestavia Hills High School
 District: Vestavia Hills City
 Principal: Tyler Burgess
 Superintendent: Sheilla Phillips
 Contact Information:
 Address:
 608 Dunmore Circle
 Birmingham, AL 35226
 Work: (205) 335-3582
 Home/Cell: (205) 402-5250
 nortonam@vestavia.k12.al.us
 ASIM Specialist: Chuck Hanke

EDUCATION:

Master of Art in Physics Education, University of Alabama at Birmingham

Bachelor of Science in Biology, Louisiana State University

EXPERIENCE:

1985-2015: Teacher, Vestavia Hills High School.

APEX IMPACT OBSERVATIONS:

We are doing more student-centered projects and activities to learn each concept before introducing mathematics to complete our mastery.

Wendy Roberts



Science Teacher
 School: Lincoln High School
 District: Talladega County
 Principal: Andy Keith
 Superintendent: Dr. Suzanne Lacey
 Contact Information:
 Address:
 615 Chaffee Street
 Talladega, AL 35160
 Work: (256) 315-5295
 Home/Cell: (256) 493-1469
 wroberts@tcboe.org
 ASIM Specialist: Chuck Hanke

EDUCATION:

Bachelor of Science in Chemistry, Jacksonville State University

EXPERIENCE:

Nine years teaching experience: B.B. Comer High School-three years; Lincoln High School-six years.

APEX IMPACT OBSERVATIONS:

The biggest impact I saw was in the deeper understanding of concepts my students gained from the APEX process. Combining the activities that Jane and Jim gave us with the elicitation activities and diagnostic quizzes from Jim was highly successful.

Justin Sanders



Science Teacher
 School: Huffman High School
 District: Birmingham City
 Principal: John Lyons
 Superintendent: Dr. Spencer Horn
 Contact Information:
 Address:
 4570 Haley Street
 Birmingham, AL 35235
 Work: (205) 231-5000
 Home/Cell: (334) 477-9808
 mrsandersclass@gmail.com
 ASIM Specialist: Stan Hart

EDUCATION:

Master of Science in Electrical Engineering, University of Michigan at Ann Arbor
 Bachelor of Science in Electrical Engineering, University of Michigan at Ann Arbor

EXPERIENCE:

Seven years: Teacher (Career/Tech Pre-Engineering-two years, Mathematics-three years, and Science-two years).

APEX IMPACT OBSERVATIONS:

APEX has opened my eyes to inquiry-based teaching. The methods I have learned have been helpful in getting students engaged in the learning process.

Brian Sexton



Science Teacher
 School: Hokes Bluff High School
 District: Etowah County
 Principal: Scott Calhoun
 Superintendent: Dr. Alan Cosby
 Contact Information:
 Address:
 1612 Rabbittown Road
 Glencoe, AL 35905
 Work: (256) 492-1360
 Home/Cell: (256) 613-2877
 brian_sexton@ecboe.org
 ASIM Specialist: Tommy Morgan

EDUCATION:

Master of Science in Secondary Education General Science, Jacksonville State University
 Bachelor of Science in General Education, Jacksonville State University
 Associate in Science, Gadsden State Community College

EXPERIENCE:

Science Teacher, Grades 9th-12th-Chemistry, Physics, Physical Science, and AP Chemistry.

APEX IMPACT OBSERVATIONS:

APEX is one of the most helpful programs I have participated in ten years of teaching. Teacher education at the university level should be structured more around classroom activities instead of research and philosophy. I would strongly encourage every physics teacher to participate in a program like APEX.

Chere Smith



Chemistry & Physics Teacher
 School: Smith's Station High School
 District: Lee County
 Principal: Joaquin Richards
 Superintendent: Dr. Mac McCoy
 Contact Information:
 Address:
 2510 Lee Road 165
 Salem, AL 36874
 Work: (334) 664-4060
 Home/Cell: (256) 309-7756
smith.chere@lee.k12.al.us
 ASIM Specialist: Christina Steele &
 DeWayne Riddle

EDUCATION:

Masters Graduate Student in General Science Education, University of Alabama
 Bachelors in General Science Education, Auburn University
 Associate of Science, Southern Union State Community College

EXPERIENCE:

Fourteen years: Teacher.

APEX IMPACT OBSERVATIONS:

APEX has provided my students with a variety of instructional strategies, activities, and assessment tools in the classroom. At our school, I am now working to provide students with the opportunity to take Physics yearly in a classroom setting, rather than online only. Our district is working with our school to provide opportunities to other teachers in our county while allowing me to continue the research.

Jennifer Talbot



Science Teacher
 School: Brindlee Mountain High School
 District: Marshall County
 Principal: Bobby Buford
 Superintendent: Cindy Wigley
 Contact Information:
 Address:
 268 Stoney Mountain Road
 Guntersville, AL 35976
 Work: (256) 753-2800
 Home/Cell: (256) 361-3747
talbotj@marshallk12.org
 ASIM Specialist: Dan O'Halloran

EDUCATION:

Bachelor of Science in Zoology, University of New Hampshire

EXPERIENCE:

Nine years: Teacher, Marshall County; five years: Middle School Teacher-7th & 8th grade science; three years: Participant, IMPACTSEED (improving Physics & Chemistry teaching in Secondary Education).

APEX IMPACT OBSERVATIONS:

The use of the four-step analysis has helped students realize where equations come from. New labs with hands on activities to teach and/or reinforce physics concepts.

Cynthia Thomas



Science Teacher
 School: Shades Valley High School
 District: Jefferson County
 Principal: Mary B. Blankenship
 Superintendent: Dr. Craig Pouncey
 Contact Information:
 Address:
 1032 53rd Street South
 Birmingham, AL 35222
 Work: (205) 379-3300
 Home/Cell: (205) 335-5336
 cynthiathomas@jefcoed.com
 ASIM Specialist: Stan Hart

EDUCATION:

Bachelors in Secondary Education Comprehensive Science, University of Alabama
 National Board Certified Teacher AYA Science (Physics concentration)

EXPERIENCE:

Nineteen years: Teacher.

APEX IMPACT OBSERVATIONS:

APEX has really helped provide lab investigation to introduce students to the concepts instead of simply confirming a concept.
 Four-Step Analysis ROCKS!

Brian Usry



Science Teacher
 School: Gadsden High School
 District: Etowah County
 Principal: Dr. Miria King-Garner
 Superintendent: Dr. Alan Cosby
 Contact Information:
 Address:
 80 US Highway 411 South
 Gadsden, AL 35901
 Work: (256) 547-8828
 Home/Cell: (256) 504-8356
 brian_usry@ecboe.org
 ASIM Specialist: Christina Steele

EDUCATION:

Master of Science in Marine Science, NCST
 Bachelor of Science in Geology, University of South Alabama

EXPERIENCE:

Ten years: Teacher.

APEX IMPACT OBSERVATIONS:

My students were not attending class (absences were a problem) prior to implementing APEX activities, now they rarely miss and enjoy physics.

APEX ALLIANCE PARTNERS



Alabama Agricultural & Mechanical University



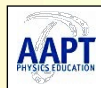
American Institute of Research (External Evaluator)



Alabama Math, Science & Technology Initiative (AMSTI)



Alabama State Department of Education



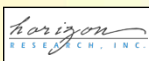
American Association of Physics Teachers (AAPT)



J. F. Drake State Community & Technical College



Huntsville City School System



Horizon Research (External Evaluator)



National Science Foundation (NSF)



University of Alabama, Tuscaloosa

ALLIANCE FOR PHYSICS EXCELLENCE (APEX)

APEX LINKS

<http://physics.aamu.edu>

<http://youtube.com/AAMUPhysics>

<http://apex.aamu.edu>

