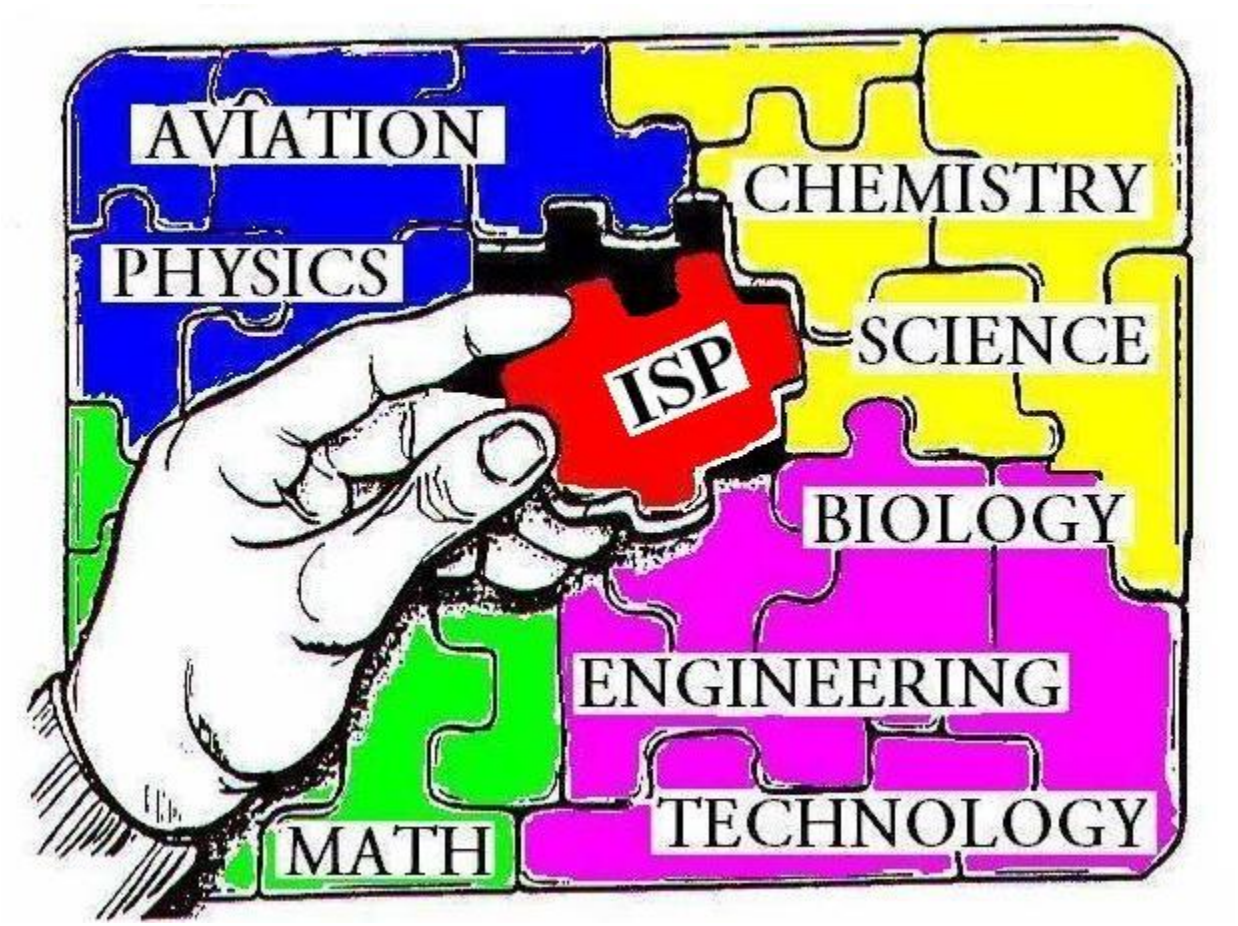
2015 Annual Report

Of

interactive science programs



Interactive Science Programs
Is a division of Minority Aviation
Education Association Inc.

PO Box 6870, Wheeling WV, 26003 304-233-1536

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Letter from the President

The faces of the students light up and you hear comments like “this is cool” and “when are you coming back”. These comments and others like it are elicited by our presenters where ever they are interacting with students and teachers. Malcom X said “knowledge is the key to the future, for tomorrow belongs to those who prepare today”. We at ISP agree with the statement that knowledge is the key to the future, but we also see students as the lock that needs to be opened to get to that bright future.

Einstein said “imagination is more important than knowledge”. ISP strives to develop both imagination and knowledge. In 1992, ISP was formed to address the under-representation of minorities, especially African American’s and women in the science, technology, engineering and math related fields.

To that end, over the years we have traveled over a million miles around the country providing science programs. That is equivalent to traveling around the world 40 times. As we see images from around the world, we see kids struggling to survive from day to day. We have children right here in the United States who are not struggling to survive necessarily, but struggling in schools that are not adequately preparing them to be successful in the global marketplace which is their reality.

In 2015 ISP continued to develop new STEM products to impact K-12 students and teachers. Many of the school districts that ISP works with have fallen on hard economic times and don’t have budgets to bring ISP in for programs in their schools. These districts include Philadelphia, District of Columbia, Detroit, Newark, Columbus, Cleveland, Chicago, St. Louis, Indianapolis, Kansas City, etc. Many of the districts that have large minority populations who are the students ISP most want to work with. *“President’s Council of Advisors on Science and Technology has concluded that roughly 40% of college students planning to major in engineering and science end up switching to other subjects”*.

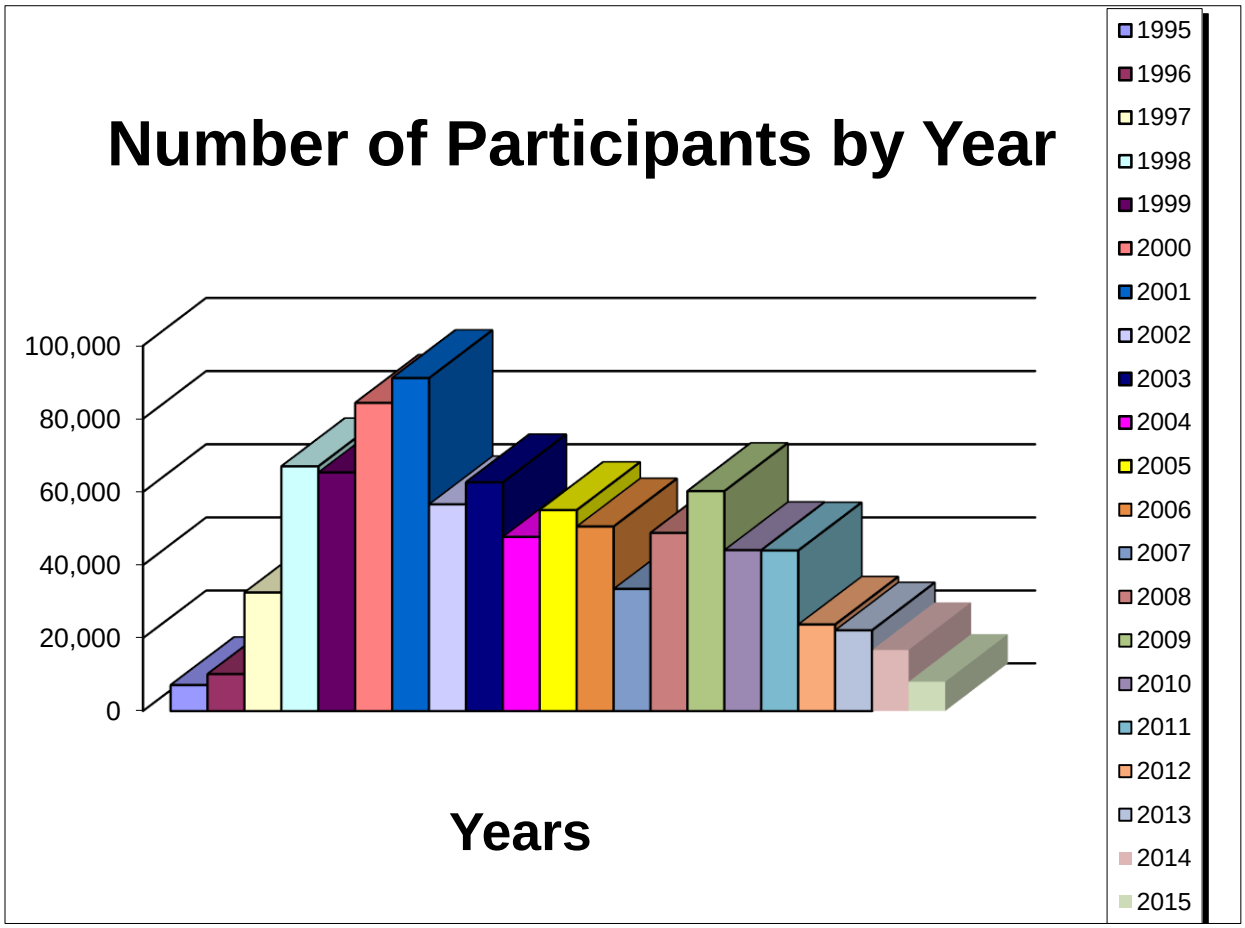
We have 21st century students being taught by 20th century teachers. Some of these instructors don’t know how to connect with the students they are charged to instruct. I hope to help those instructors who are in need of a refresher course on new ways to teach that influences the students they interact with on a daily basis by moving into academia. I am not sure where I will end up, but hopefully this time next year I will be working in a university helping teachers to learn how to teach hands on science in the classroom.

“We are all scientists; we wonder, question and test our theories about the world. An understanding of science is nothing more than an understanding of ourselves” **Darryl Lee Baynes, Ph.D.**
President & Founder ISP

Program Statistics

Year to Year Comparisons 1995 - 2015

ISP was incorporated in 1992 in Pittsburgh, Pennsylvania. Program statistics began being recorded in 1995. Since 1992 the focus had been on increasing the overall number of students, teachers and parents impacted. To date we have provided programs for more than 924,000 students, teachers and parents. Along with the number of participants we interact with each year, we also continue on the development of our summer camps and other outreach programs.



ISP ‘s programs have been decreasing over the years as a result of educational budget decreases. The resultant decrease in the overall number of participants is a direct reflection of my personal increase in the amount of time spent on other STEAM developments.

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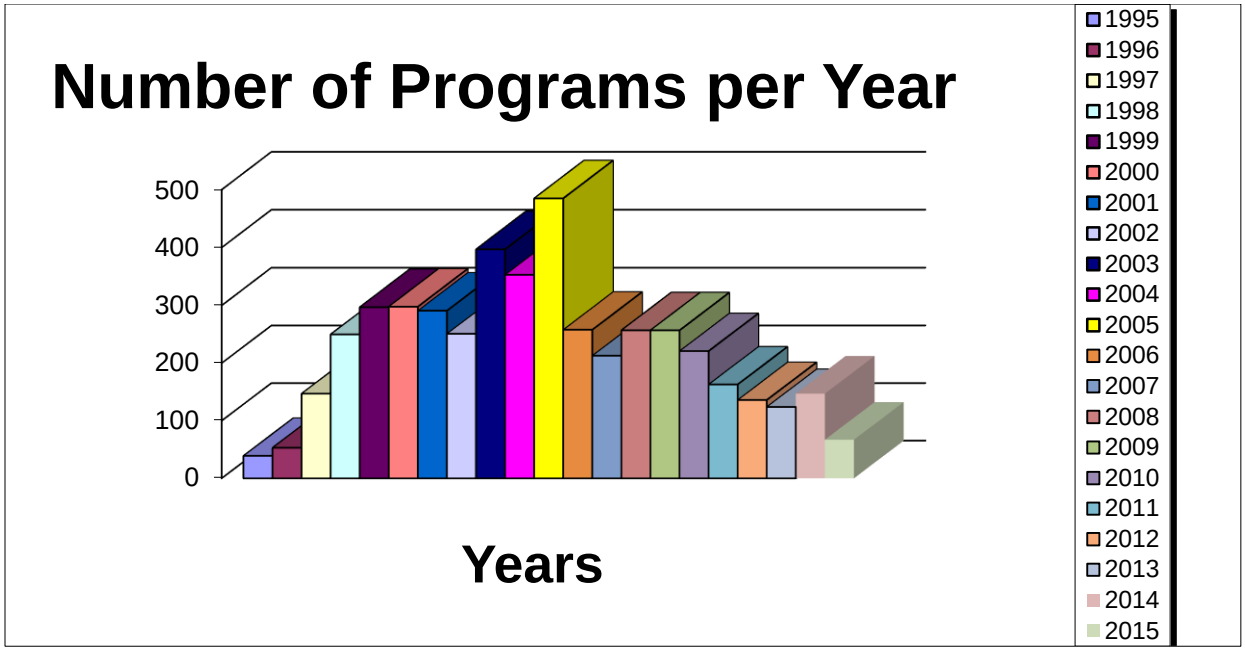
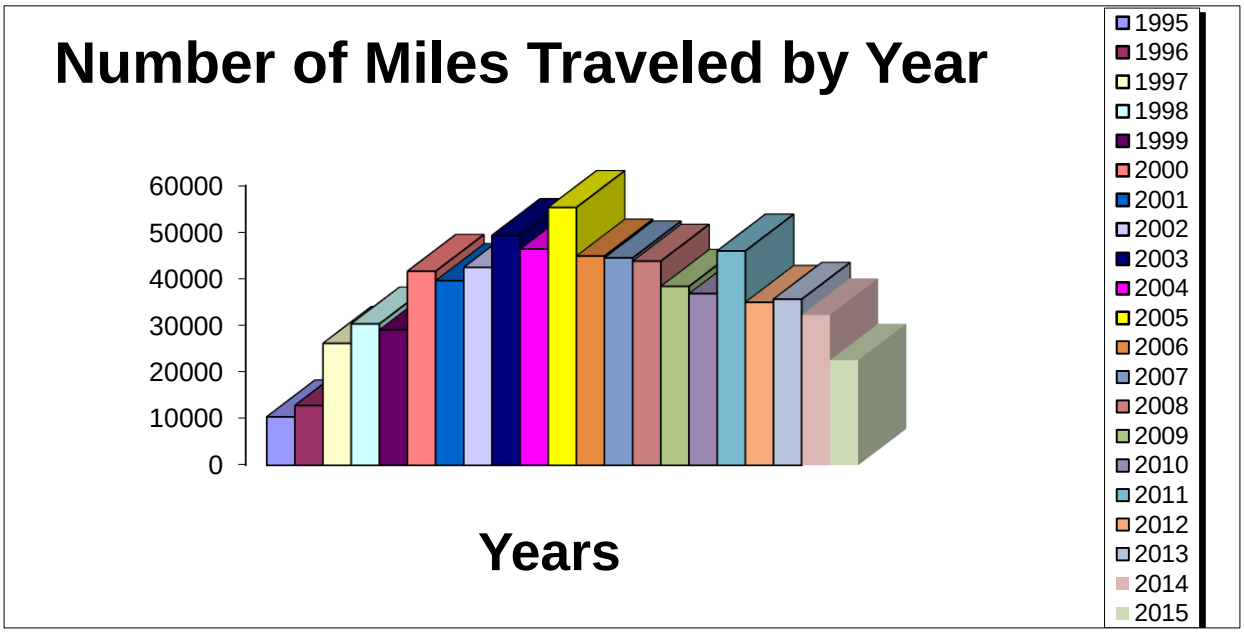
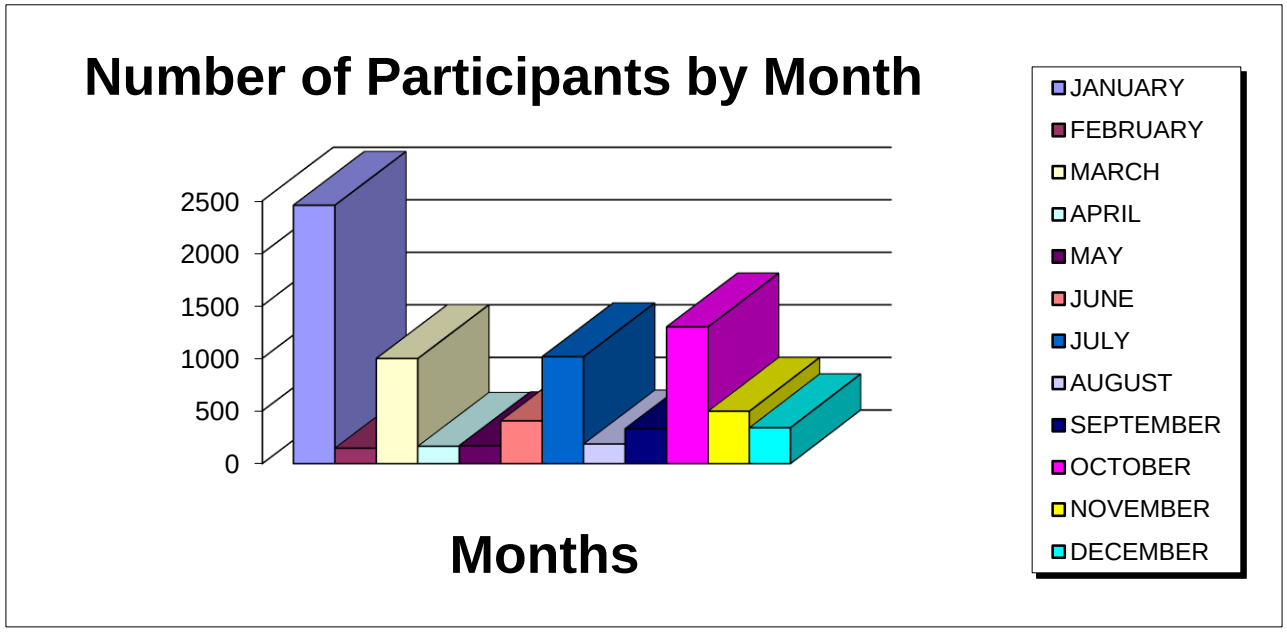
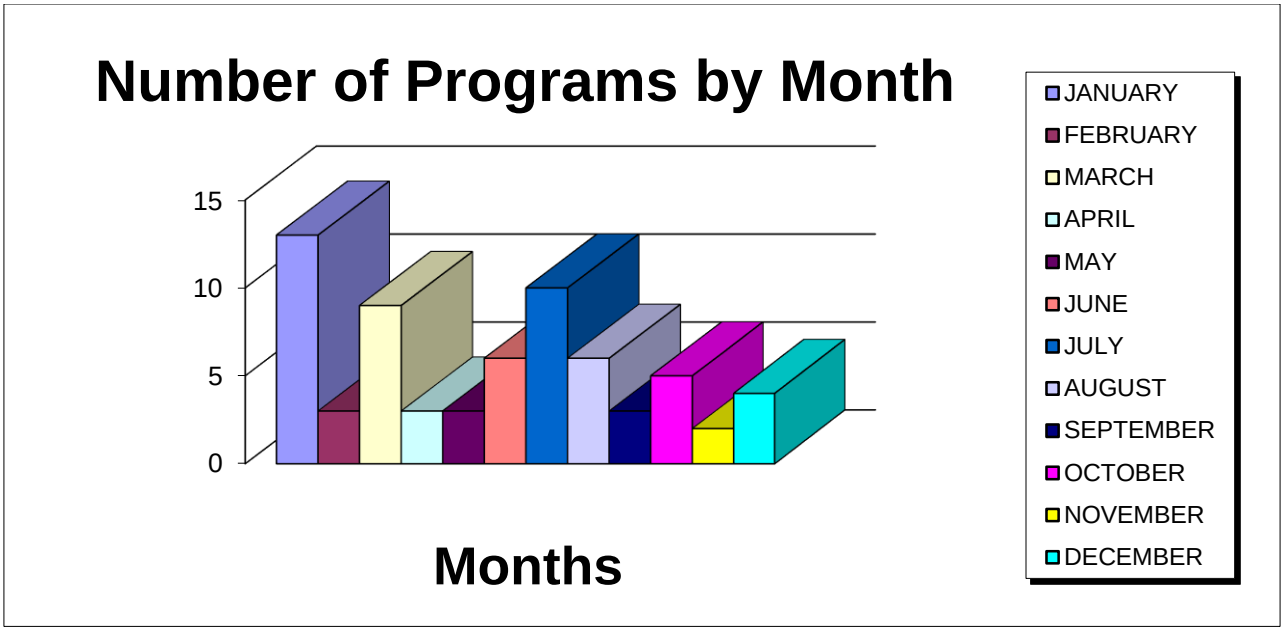


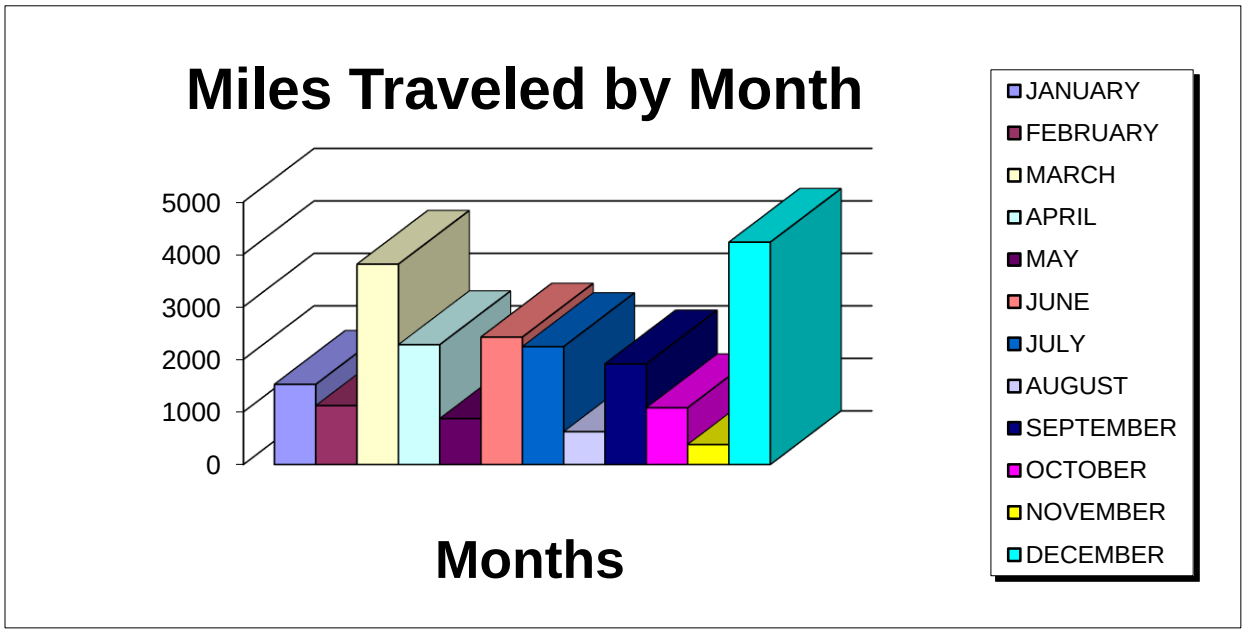
ISP is looking forward to continuing its outreach in a new location on a part time basis as we move to a new state. 2015 was the slowest year we have had since early in our history. Our statistics show that the number of programs decreased, as did the number of students, teachers and parents. This trend of lower number of programs and participants is the main reason for my move into academia. By impacting more teachers, I can continue to impact students.



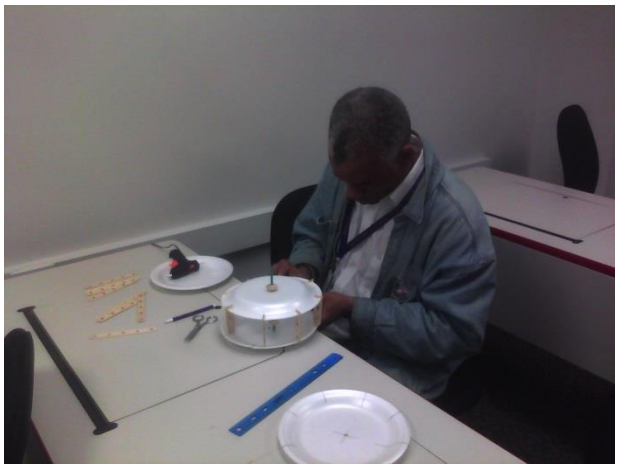


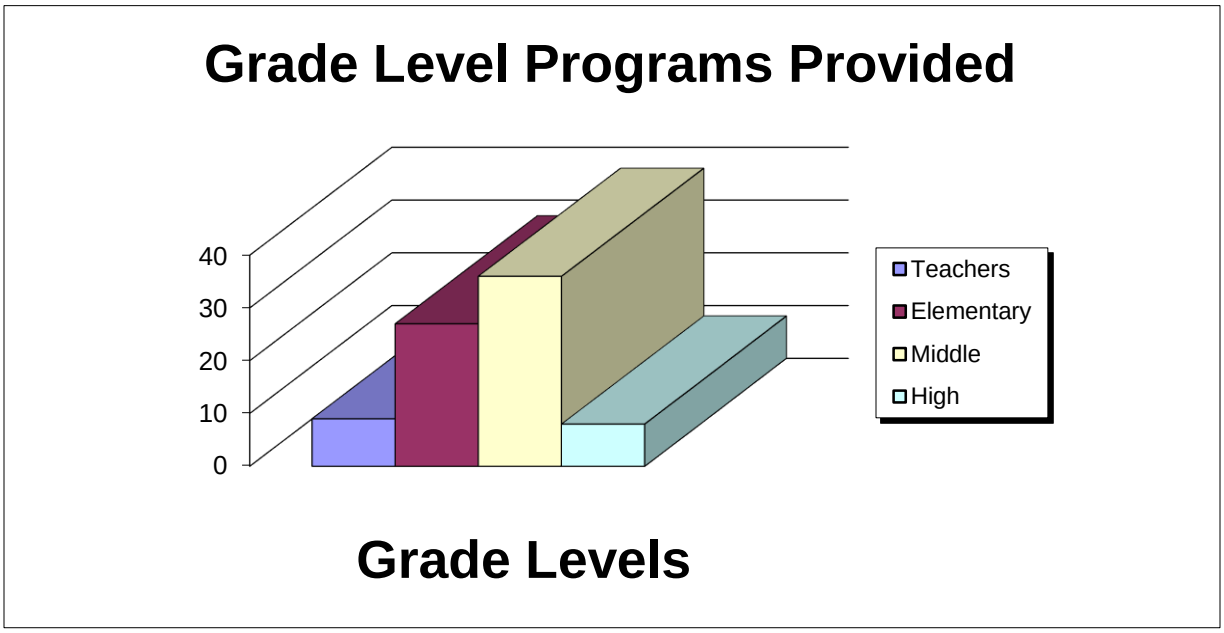
ISP is looking forward to increasing the number of programs we provide in the summer months by increasing the number of Summer Science Camps that we plan to offer.



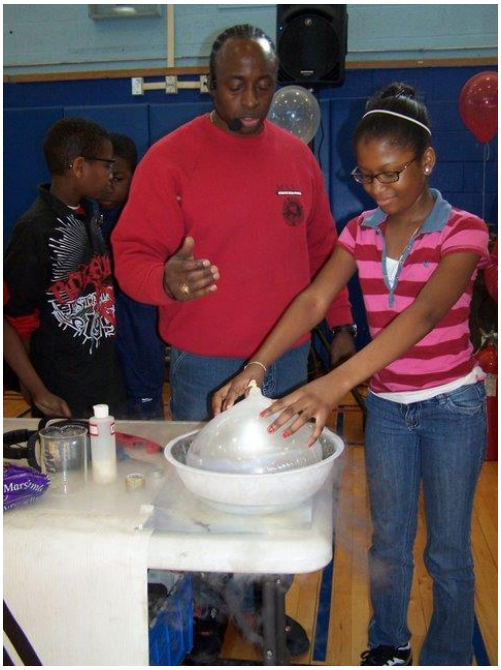


The large number of miles traveled in March and December reflects ISP's work in Colorado Springs, CO and Albuquerque, NM.

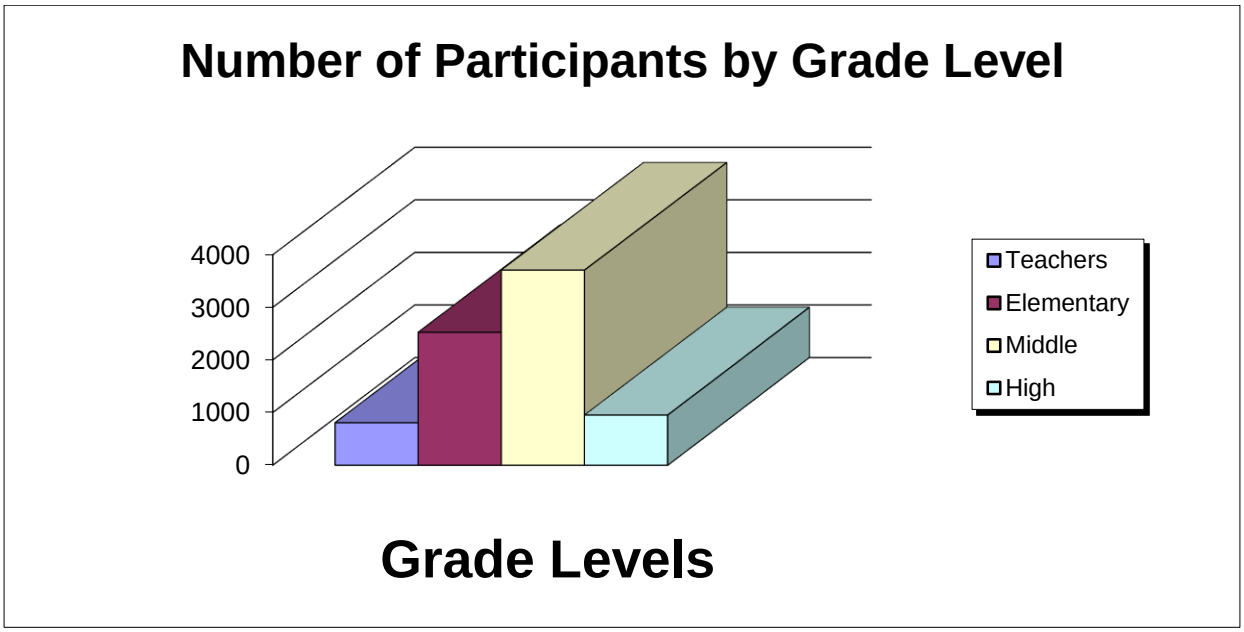




As displayed on the above chart, the numbers of teachers programs that we provide professional development to have continued to decreased during 2015. One of the consistent trends we saw in 2015 as compared to 2014 is that our overall percentage of middle school programs has stayed the same, and continues to lead our number of elementary and high school programs.



It was ISP's goal for 2015 to increase the number of middle school students impacted. This emphasis is a direct result of the TIMMS test results showing the international gap in science and math beginning in middle school. Our results show this increase as was projected.




Evaluations

In 2013 ISP completed our development of an evaluation web site so that evaluations can be taken online at schools before and after ISP provides a STEM program.

Evaluation Analysis:

PRE
Pre evaluations are used to get a base line of how the students see their interaction with science and math in their everyday life. It will also give you a baseline of how the majority of students feel about the science classes they have now. Finally, the pre evaluation can give a teacher or administrator an idea of the percentage of students that can see themselves in a STEM based career in the future.

POST
The post evaluations are used to focus any percentage changes from the pre evaluations as a function of the hands on experience from the programs ISP provided. The difference in the percentages of how someone sees their interaction with science and math is a direct result of this hands on interaction, and the ability of the teacher to show their students how much science and math are around them everyday. One of the problems with making this connection with students is that many teachers don't recognize the connection themselves. The post evaluation will also show a hands on science approach's motivating ability on how seriously students view their science classes. These evaluations are also used to show how hands-on science can change a students' perception on how they see themselves working in a STEM based career once they see how much fun science can be. Finally, teachers and administrators can see how students want the type of hands-on activities that ISP provides. In fact, the students are asking for more hands-on science. Students tend to be harsh critics. Their responses will be used to show whether students would recommend ISP's programs for other students. The recommendations of both student and staff will be used as evidence to schools administrations of the effectiveness of our programs and a hands-on approach to science.

STAFF
The staff evaluations are used by ISP to insure that the teachers we interact with see value in the programs we provide. When the teachers see value in a program for their students, it often gives them ideas on how they can create similar excitement in the classroom. It also makes it easier to go back to those same teachers and provide professional development in the future. The staff evaluations also show how teachers see our programs relating to the learning outcomes that they are responsible for imparting to their students.

In 2012 we just established our online pre and post evaluation program. The results on the following pages are actual school results from the first half of 2013. The previous results that we showed included beta testing statistics and not actual schools.

We did not use the evaluation very much in 2015, but hope to use it much more extensively in 2016.

Comprehensive Staff Results

Yearly Average

Staff Evaluation (Average)	
1. The science that is provided in my school is all hands-on.	3.7
2. The best way to teach science is with hands-on activities.	5
3. The overall program was excellent.	4.7
4. The overall program was excellent compared to others I have seen.	5
5. The program addressed many aspects of my state's learning outcomes.	4.3
6. My students benefited from the program.	4.3
7. I benefited from the program.	4.3
8. The presenter was excellent.	4.3
9. I would like the organization to come back again.	5
10. I will tell other colleagues about this program.	5

Agree	5
Somewhat Agree	4
Not Sure	3
Somewhat Disagree	2
Disagree	1

http://www.Climatechangepictures.org

Comprehensive Staff Results - (Professional Development)

Yearly Average

Staff Pre Evaluation (Average)	
1. I would like to receive more science professional development each year.	4.7
2. I always look forward to science professional development.	4.7
3. I am looking forward to this particular professional development.	4.2
4. I think I will benefit greatly from this professional development.	4.6
5. Most science PD I receive I can implement in my classroom immediately.	4.1
6. I think I will learn techniques I can use immediately in my classroom.	4.3
7. Most science PD I receive, address aspects of my state's learning outcomes.	4.6
8. Most science PD I receive gives me resources I can use in my classroom.	3.7
9. When or if I teach science, I would use hands-on techniques.	4.7
10. I have enough content knowledge to show students science in daily life.	4.8
11. I think my students will benefit from me taking this professional development.	4.9
12. Most science PD I receive help me make the connection to everyday life.	4.4
13. I would rate most science program presenters as excellent.	4.2
14. If I thought the PD was beneficial, I would tell other colleagues about it.	5

http://www.interactivescienceprograms.org

Yearly Average

Staff Post Evaluation (Average)	
1. The overall professional development was excellent.	5
2. The program was excellent compared to others I have experienced.	4
3. The program addressed many aspects of my state's learning outcomes.	5
4. When or if I teach science, I would use hands-on techniques.	5
5. I benefited greatly from the program.	5
6. When or if I teach science, I have learned techniques I can use immediatley.	5
7. I would rate the program presenter as excellent.	4
8. I would like the organization to come back again.	5
9. I will tell other colleagues about this program.	5

Agree	5
Somewhat Agree	4
Not Sure	3
Somewhat Disagree	2
Disagree	1

http://www.professornoodle.com/

Comprehensive Student Results

Yearly Average

Student Pre (Average)	
1. I like the science I have in school now. The subject, NOT the teacher.	3.6
2. I deal with science a lot in my everyday life.	3.8
3. I deal with math a lot in my everyday life.	4.4
4. Science can be fun.	4.7
5. I need to understand science.	3.8
6. You need to be smart to understand science.	2.8
7. am smart enough to understand science.	4.3
8. I would consider a science or math based field as a possible future career.	3.8

Yearly Average

Student Post (Average)	
1. I deal with science a lot in my everyday life.	4.3
2. I deal with math a lot in my everyday life.	4.6
3. I will be more interested in my science classes now.	4.4
4. You need to be smart to understand science.	2.5
5. I am smart enough to understand science.	4.5
6. Science can be fun.	4.8
7. I would consider a science or math based field as a possible future career.	3.9
8. The overall program was excellent.	4.7
9. I would like the organization to come back.	4.6
10. Other students could benefit from seeing this presentation.	4.4
11. I will tell my friends about this presentation.	4.6

Agree	5
Somewhat Agree	4
Not Sure	3
Somewhat Disagree	2
Disagree	1

http://www.madscientistunion.com/

Science Camp Activities and Report

Engineering and Architecture

Scientific Method
Card Construction
Tallest Tower
Penny Bridges
Wooden Bridges
Lego Robotics
Domino Fall
Bioengineering

Biology

DNA & Heredity
Taxonomy
Animal Bites
Bones
Body Measurements
Dissections & Suturing
Forensics

Physics

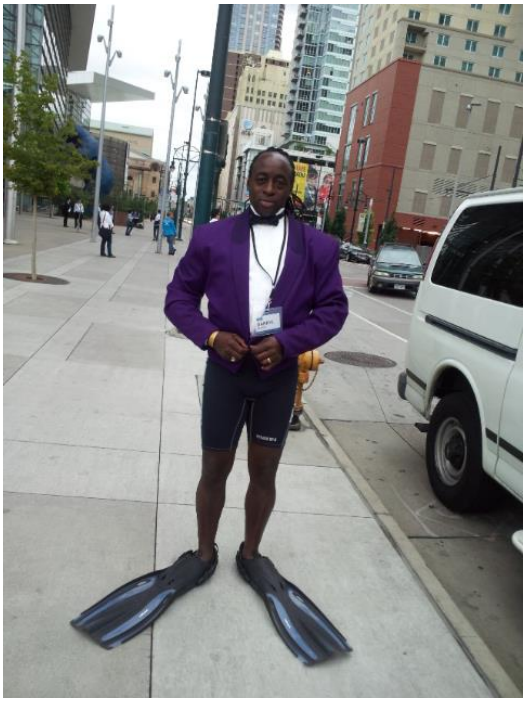
Bernoulli's Principal
Aerodynamic Engineering
Making Boomerangs
Boomerang Demo
Making and Racing Hovercrafts
Riding Hovercrafts
Solar System
Force and Motion
Simple Machines

Rocketry

Air Rockets
CO2 Rockets
Rocket Cars
Water Rockets
Boomerang Testing & Painting
Sun Spotter

Chemistry

Polymers
Universal Solvent
States of Matter
Cryogenics
Crayola Chemistry
Party Time



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Darryl Lee Baynes President & Founder ISP

Pre and Post Test Comparison

ISP prides itself on its level of informal science education. Our science programs in the summer provide an educational opportunity in a fun and entertaining way, (Edutainment). Edutainment is one of the most under-utilized strategies in education. To show the effectiveness of this strategy, ISP implemented a pre and posttest during our science camps to quantify the learning that took place during the week of camp.

Our pretest consisted of 10 questions that are administered on the first day of camp prior to any experiments being conducted. Our posttest is a duplicate of the pretest. The post test was administered on the last day of camp after all of the experiments were completed. These increases were achieved through a series of experiments conducted throughout the week of camp. The same rubric was used to score both pre and posttests during each week. The questions used for the tests change depending on the experiments planned for each week.

The following is the descriptive statistics of the comparison between the pre and posttests of the subject areas covered in the camps and the number of teachers participating in either professional development camps or helping with the student camps.

Science Camp Locations

Jackson, MS	Hempstead, NY	Philadelphia, PA
Pittsburgh, PA	Westboro, MA	Worcester, MA

STUDENT STATISTICS

Females 28.6%	Males 71.4%	N=1,510
Students 1,361	Teachers 69	Parents 80
Avg. Pre 15.4	Avg. Post 71.0	Difference 55.6

ISP's Family of Web Sites:

http://www.interactivescienceprograms.org
This is ISP's main web site with information about programs and fees for teachers and administrators.

http://www.interactivescienceprograms.net
This is ISP's teacher networking site where science teachers can connect with other science teachers to learn techniques to use in the classroom.

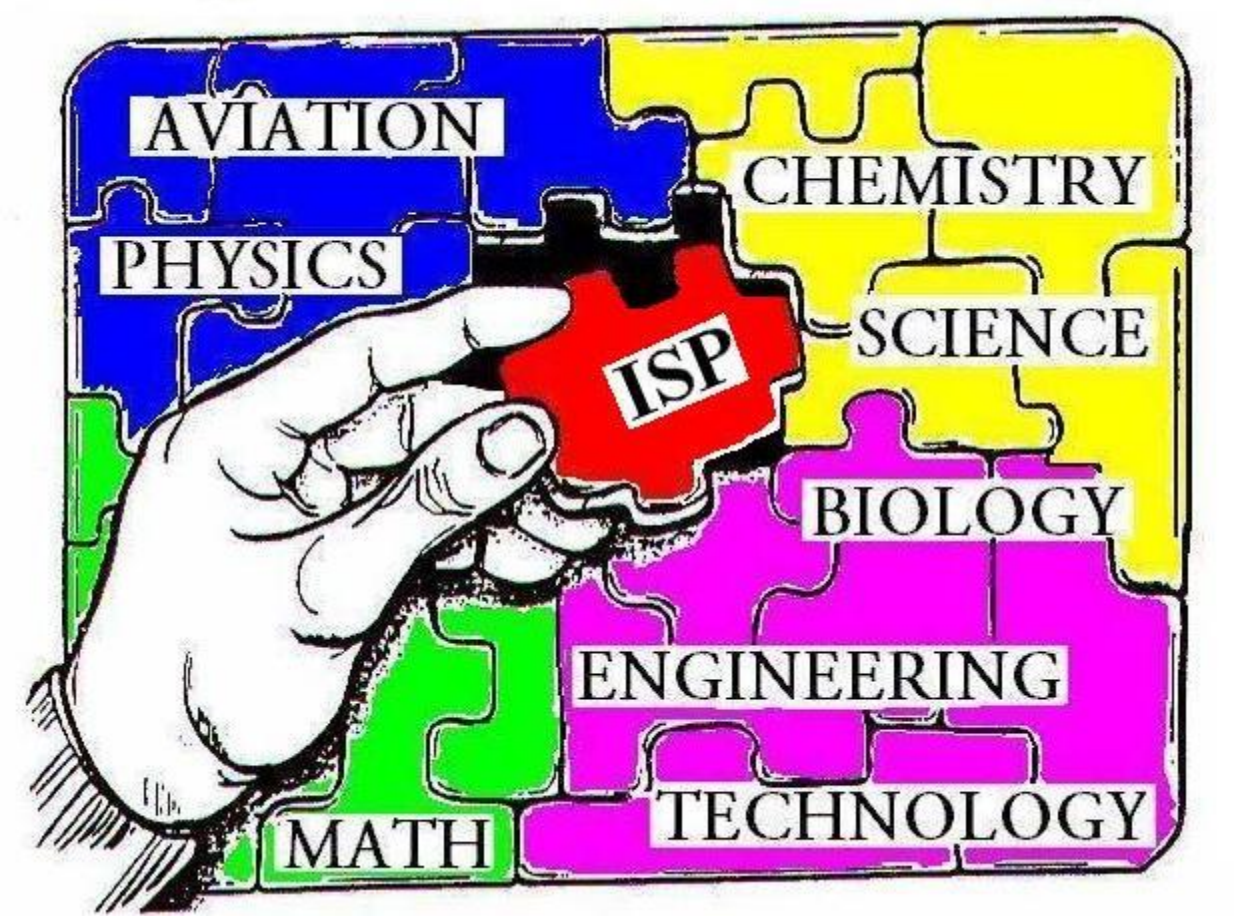
http://www.interactivescienceprograms.info
This is ISP's site for evaluations for schools that will experience a science program.

http://www.interactivescienceprograms.us
This is ISP's student site and is under construction and is hoped to be completed sometime in early 2013.

http://www.Climatechangepictures.org
This is ISP's international research site for climate change. This research can be done by anyone, anywhere in the world.

http://www.madscientistunion.com/ .net, .info, .org
This is ISP's informal science educator site. This site is a place where you can get information about informal science educators from around the country.

http://www.professornoodle.com/ .net, .info, .org
This is ISP's own master informal science educator's site.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