



3rd Quarter LASTEM Advisory Council Meeting
Laser Interferometer Gravitational-Wave Observatory (LIGO)
8/15/2024

Today's Agenda

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1) Roll Call and Welcome

- Dr. Joseph Giaime, Observatory Head, LIGO

2) Introduction of New Council Members

- Mark Bond, LED Faststart

3) Approval of 1st Quarter Meeting Minutes

4) Dr. Daniel McCarthy, Dean of Research and Innovation, Region 9 Director

5) Dr. Bonnie Achée, Interim Department Head & Instructor, Department of Computer Science, 'Outcomes of Energize Computer Science Training Initiative'

6) Louisiana Department of Education, Dr. Timberly Monaghan, Executive Director of Fast Forward, Office of Career and College Readiness

7) LASTEM Updates

- #SummerofLASTEM

8) Dr. William Katzman, Program Leader, Science Education Center "LIGO & LIGO SEC: An Overview

9) Adjournment



Lunch Provided by Region 9 STEM Center

- Followed by tour of LIGO

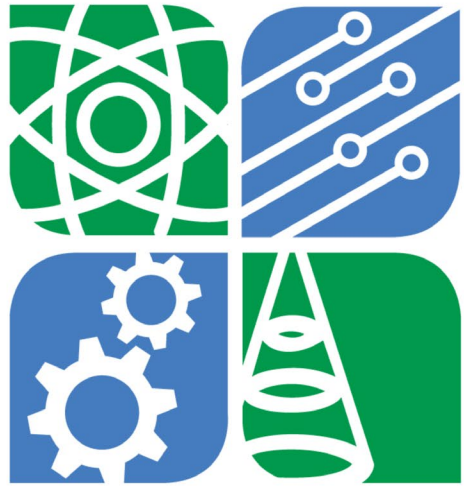
Welcome From Host



Dr. Joseph Giaime
Observatory Head
LIGO

- **Introduction of New Councilmember**
 - Mr. Mark Bond
- **Roll Call**
- **Approval of 1st Quarter Minutes**

REGION 9



NORTHSHORE
LASTEM
Science • Technology • Engineering • Math
C E N T E R



Dr. Daniel McCarthy

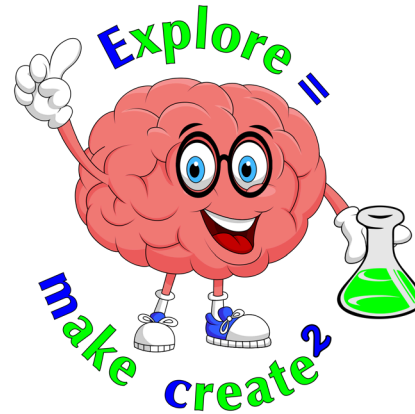
Dean of Research and Innovation,
Southeastern Louisiana University
Interim Director, Northshore Regional STEM Center

Signature Projects



Dynamic searchable database for STEM resources in our region.

BRAIN FOOD TRUCK



A mobile STEM resource providing activities with a focus on 3-8th grade students in under-resourced and rural communities.



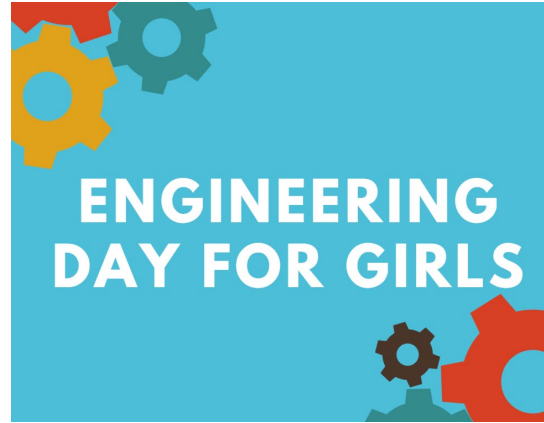
Whole family events designed to excite and inspire youth in STEM and build relationships within our community.

Featured Annual Events

Back-to-School



Region wide event focused on hands-on minds-on STEM fun. Over 1000 youth and their families attend each year.



Girl lead engineers complete an engineering challenge simultaneously across 5 locations. Led by female industry professionals and a virtual panel of NASA engineers.



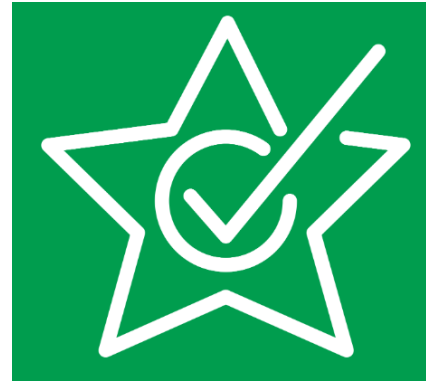
seaperch

Collaborating with and supporting the Northshore Underwater Robotics Community. Sponsor of teacher trainings, kit distribution, and the regional competition.

Achievements & Successes



6000+ youth
served across
the region



Had an amazing
SeaPerch
Regional
Competition



Successfully
hosted our first
Regional
Science Fair

Future Goals and Planning



Create and facilitate high school events, like the Community STEM Café, focusing on college and career readiness featuring STEM pathways under the top jobs defined in LA Workforce Development.

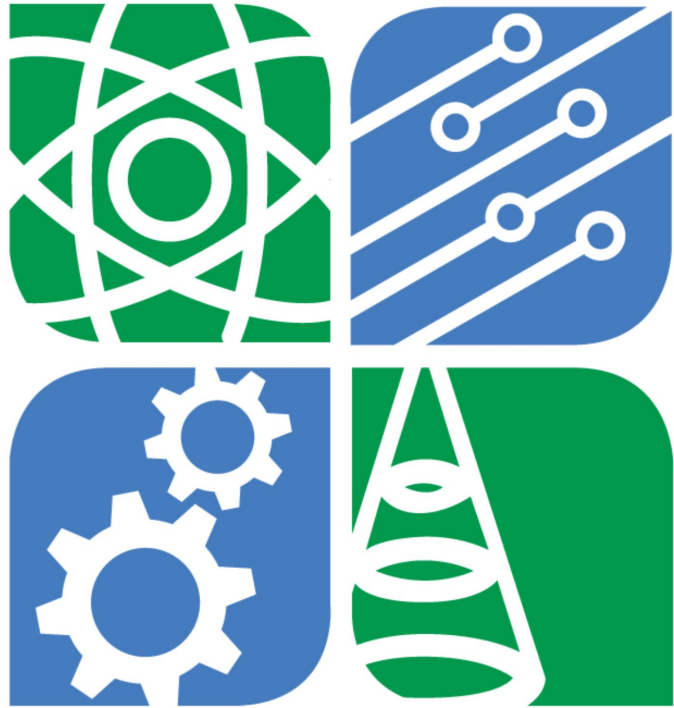


Create a community hub and resources fostering industry and education connections for young adults (18-24 years) in our region with a focus on Workforce Development in STEM pathways.



Work with our partners of Southeastern Louisiana University and Northshore Technical Community College to build community robotics teams.

REGION 9



NORTHSHORE

LA STEM

Science • Technology • Engineering • Math

C E N T E R





SOUTHEASTERN
LOUISIANA UNIVERSITY



Bonnie Achee, Ph.D.

Interim Department Head and Instructor
Department of Computer Science
Director, Innovation Hub (a.k.a iHub)



A blue speech bubble containing the text "IGNITE, INSPIRE, ENERGIZE" in white and light blue capital letters.

IGNITE, INSPIRE,
ENERGIZE

Purpose:

- Increase the number of certified Computer Science teachers in LA
- Develop and Deliver professional development training to prepare 6th - 12th grade teachers to pass the Computer Science Praxis Exam 5652.

Goal: 1000 teachers

Prepare teachers for the 5 content areas:

- Impacts of Computing
- Algorithms and Computational Thinking
- Programming
- Data
- Computing Systems and Networks



A blue speech bubble with a wavy tail containing the text "IGNITE, INSPIRE, ENERGIZE" in white and blue.

IGNITE, INSPIRE,
ENERGIZE

5 cohorts (4 - virtual / 1 - hybrid)

- 767 teachers registered
- 597 actually participated
- Cohorts 1-4
 - Weekly 3 hour sessions for 8 weeks
 - 619 registered
- Cohort 5
 - June 3 - 6
 - 9a - 4p
 - 148 registered



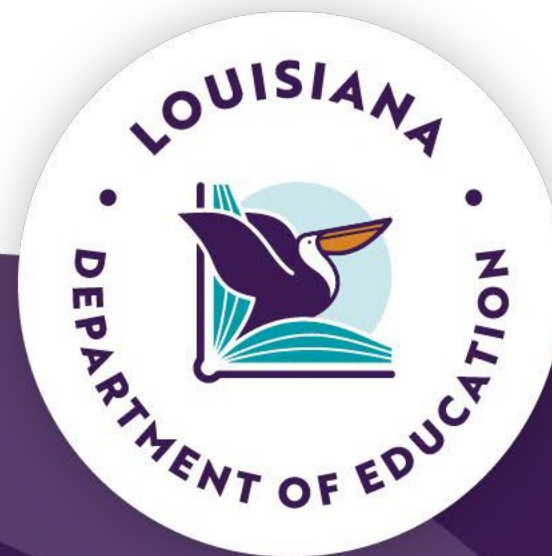
IGNITE, INSPIRE,
ENERGIZE



SOUTHEASTERN
LOUISIANA UNIVERSITY



Grow. Achieve. Thrive.



Louisiana's Revised Accountability System

Louisiana expects students to...

Grow

Students should grow in math and English, with special attention paid to the lowest achieving students

Achieve

Students should be proficient in math, English, science, and social studies

Thrive

High school students should graduate on time, show readiness on a nationally recognized exam, and be prepared to accelerate in a career, college, or service



Thrive



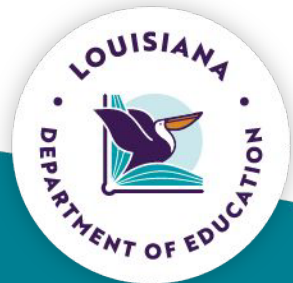
Graduation Rate

- Percent of cohort earning a diploma



Nationally Recognized Assessment

- **Percent of students earning at least:**
 - ACT of 20, *or*
 - SAT of 1040, *or*
 - CLT of 67, *or*
 - WorkKeys Gold, *or*
 - 59% or better on the ASVAB (AFQT)



Career, College, or Service Acceleration

University Accelerator

- ACT of 20 or SAT of 1040 or CLT of 67, PLUS...
- TOPS Aligned AP of 3, or IB of 4, or 6 DE credits with a C or Better, Math 25+, ENG 26+, SAT math 590+, SAT W&L 33+, 3 CLEP recognized by BoR flagship

Career Accelerator

(High-Quality Credentials)*

- Basic Bundle + Internship, or
- Advanced Credential + Internship, or
- 2 years of a Fast-Forward Aligned Registered Apprenticeship, or
- Certificate of technical studies in a high wage / high demand industry.

Service Accelerator

- Signed Military Acceptance Letter
- or
- Service Academy Acceptance

*All apprenticeships, and credentials must be LWC approved.



Louisiana's revised *accountability system is decoupled from graduation requirements*. A student can still earn an **emerging credential** and **meet graduation requirements**.



Building Capacity

Impacts and Opportunities



Work-based Learning

LASTEM is uniquely positioned between schools and industry, creating an opportunity for systems and STEM fields to connect. This opportunity can be leveraged to support Work-based Learning initiatives by

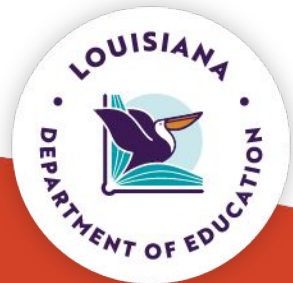
- Offering LaSTEM internships to students
- Connecting system leaders to STEM industry leaders in your Region
 - Supporting the development of internships with those regional STEM employers
- Working with school systems to include STEM-specific workplace content in their work-based learning classrooms



Career and Technical Education (CTE)

LASTEM programs are already embedded in their communities, so focusing on supporting school systems' STEM CTE programs that align with their region's economic priorities would be a powerful step in preparing students for the workforce. This can be done by:

- Expanding access by offering programming that leads to the attainment of STEM IBC's from the state focus list.
 - Ex: CompTIA A+, AutoDesk Inventor
- Providing just in time supports for students identified as needing additional assistance



Grow. Achieve. Thrive.

Louisiana's revised accountability system

- Simple and transparent
- High student expectations
- Career and college readiness

Goes into effect for the 2025-2026 school year



Visit our website

- Preview video
- Email updates
- FAQs



#SummerOfLASTEM

- **2024 Statewide impact:**

- The LASTEM Network's Regional STEM Centers offered a wide range of activities across Louisiana, reaching students, teachers, and community members of all ages.

- **Innovative programs:**

- Capital Area STEM Network Center's "Spark" program for single moms, teaching practical skills.

- Along with the SELU led “Energize” program, the "Ignite!" collaboration between LDOE and LASTEM, training over 950 teachers in computer science activities for K-6th grade classrooms with majority being this Spring and Summer.



**The
Ignite
Project**
Ignite.
Inspire.
Engage.

#SummerOfLASTEM

- **Innovative programs:**

- Sci-Port Discovery Center's "Be a Space Scientist!" program and "Museum in a Box" project with NASA have garnered national attention!

- CenlaSTEM's "RECIPE for Rural STEM" initiative bringing STEM to smaller communities.

- SCILS' "STEM Her Way" initiative to encourage girls in STEM.



Louisiana Girls Collaborative Project

STEM HerWay:

Inspiring Future STEMinists

- National webinar exposing middle and high school girls to STEM careers available to them
- Hear firsthand from Dr. Heather Kleiner, Director of the Northwest LaSTEM Innovation Center, Region 7.

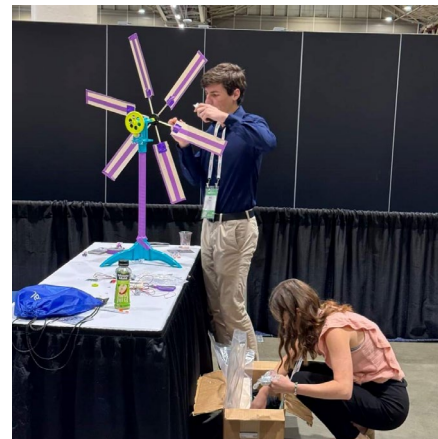
#SummerOfLASTEM

- Innovative programs:

- Engineering is Elementary (Y.E.S.) teacher professional development kicked off at LSU and LA Tech!
 - Goal of 525 K-5 teachers trained

- KidWind partnership resulted in our first competitions!

- Cedar Creek school represented SCILS Region 8 at the IPF Offshore Wind Energy Conference earlier this year in New Orleans.



KidWind Challenge at Tech

Local students excel at wind, solar energy event

By Cathi Cox-Bonoli
community@ustonleader.com

Thanks to a rich collaborative partnership within the SCILS Region 8 LASTEM Center at Louisiana Tech University, Louisiana recently hosted its first KidWind Challenge.

"We have been working on this event for close to a year now," said Missy Woolley, SCILS assistant director. "Having worked with KidWind last summer to offer a student camp and teacher professional development, we knew they would be a strong partner in making this happen. And they did not disappoint."

The KidWind Challenge is a hands-on design celebration that engages students through the lens of wind and solar energy. Student teams design, construct and test small scale wind turbines and solar structures at events all over the world.

"KidWind is so excited to have held our first ever Louisiana KidWind Challenge through the SCILS



Cedar Creek School students trailblazing the recent KidWind Challenge while bringing home major awards are (above from left) David Lopez Alvarado, Dallas Gouedy, Anders McGehee and Evan Lancaster, third place overall in the Wind Turbine Challenge. Below, from left, are Evelyn Mills, Saanvi Patel, Jorgia Holladay, and Chloe Jackson, Sailcar Challenge winners.



#SummerOfLASTEM

- **Innovative programs:**

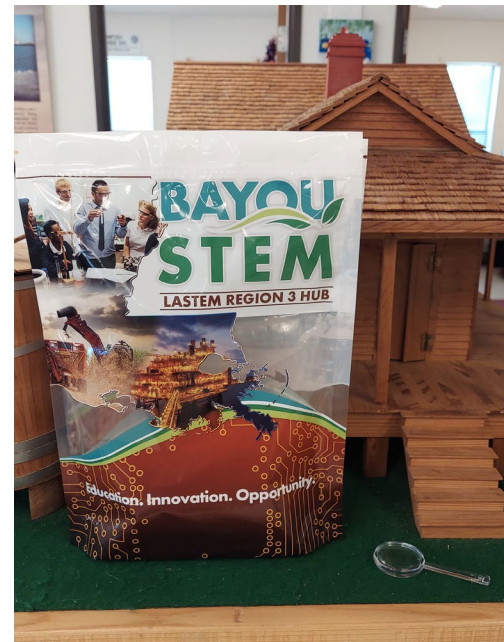
- Robonation's Seaperch program continues to grow throughout the network.
- Sent our first teams to the International Challenge held at the University of Maryland.



#SummerOfLASTEM

- **Impressive numbers!!!**

- Region 5 STEM Center hosted over 600 students in summer camps and welcomed over 5,000 students for field trips.
- Sci-Port Discovery Center reached 740 youth through their space program and hosted 693 kids in on-site summer camps.
- SCILS delivered over 600 STEM kits to rural northeast Louisiana areas.
- Bayou STEM attracted over 1000 camp registrations across 7 weeks.
- UL-Lafayette's STEM Extravaganza entertained over 500 students.



#SummerOfLASTEM

- **Robotics**

- **Beyond Seaperch, robotics teams were honored at competitions around the state!**

- **Several LASTEM-supported VEX and FIRST teams saw success this year**

- Lake Charles Elementary School IQ teams took 5 of 6 awards at state

- Lake Charles Middle School VRC teams took 6 out of 6 awards

- Several K-12 teams were invited to VEX World Championships this summer

- **FIRST robotics ‘community’ teams are gaining popularity in the network.**

- DCC recently provided classroom space on their westbank campus for robotics.



#SummerOfLASTEM

- **Mayor Nic Hunter hosted a luncheon earlier this week**
 - STEM Center seen as an essential part of Lake Charles
- **Congrats to Region 5 STEM Center for the successful \$1.25M bond passage! An additional \$1.25M match was provided by CPSB.**
 - Infrastructure repairs

Update provided on Region 5 STEM Center

Published: Aug. 12, 2024 at 5:11 PM CDT





Thousands of science educators will gather at the New Orleans Convention Center to learn, network, and celebrate our profession. They will be joined by sponsors, exhibitors and partners.

- 11/6 Preconference Institutes (includes Leaders Institute) followed by Opening Reception and Keynote
- 11/7 Keynote, concurrent sessions, Exhibit Hall opening and exclusive hours
- 11/8 Concurrent sessions and Exhibit Hall
- 11/9 Concurrent sessions, final Exhibit Hall hours, and Closing Reception

Early Bird Registration ends 9/27. Discount offered to current NSTA and LSTA members.

Group discounts available.

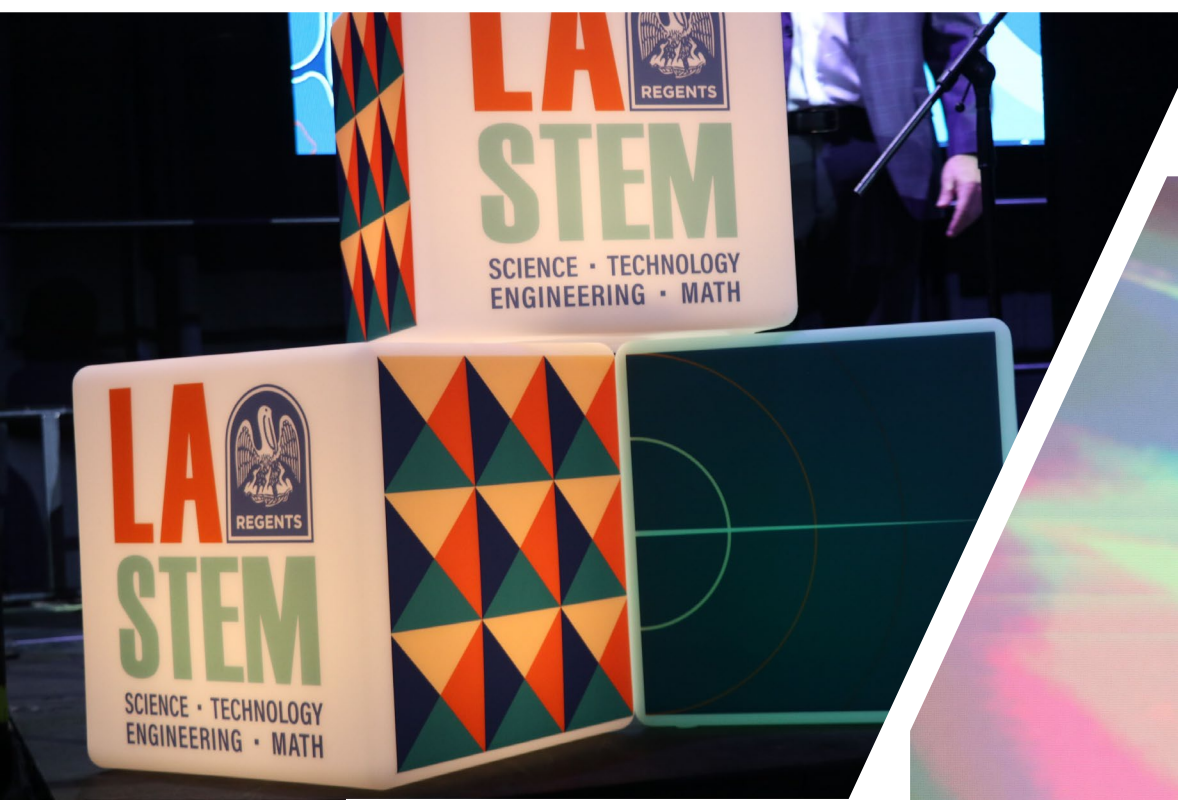
Exhibit Hall spaces and Exhibitor Workshops still available.

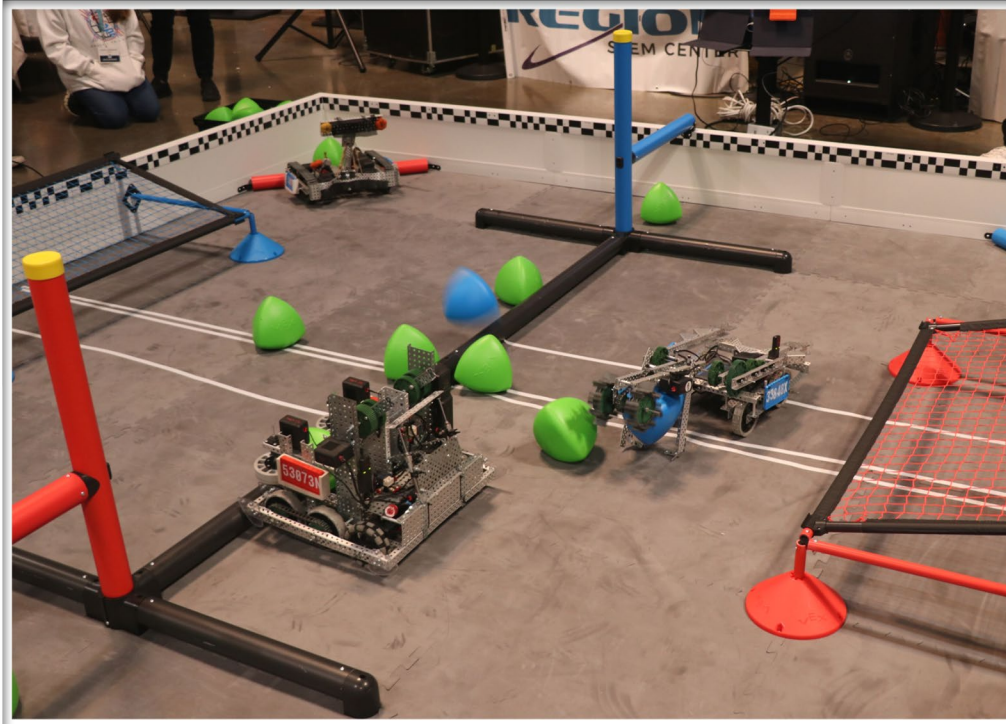
More information at nsta.org/nola24

Email conferences@nsta.org with questions.

LA Tech/NSF PI meeting

- **1st time NSF has hosted this meeting outside of the DC area.**
- **Opportunity to showcase the LASTEM network to NSF**
- **Dr. Vincent can share more information as it becomes available!**











LIGO

“Inspiring Science”

William Katzman
Science Education Center Lead, LLO
LIGO-G2300242, Aug. 25, 2024



What is LIGO?

- Laser
 - Interferometer
- The Instrument**
- Gravitational wave → **What we detect (ripples in space-time)**
 - Observatory → **We've observed hundreds of gravitational waves – mostly from colliding blackholes**



Laser Interferometer



**Tiny change
detector**

4 km long arms

**Changes < a
proton**

What is LIGO?

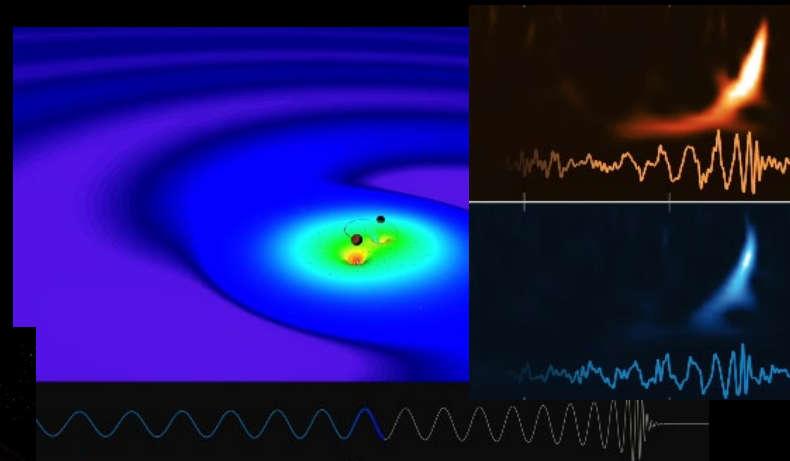
LIGO consists of two Observatories: LHO Washington (right) & LLO Louisiana (below)



Each Observatory is a large-scale interferometer with 4 km long arms that detects changes less than a proton.

LIGO Detections

After major upgrades in 2015, the first detection of gravitational waves: colliding black holes



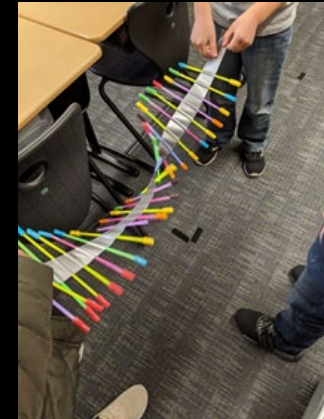
Colliding neutron stars have been seen – Multi-messenger Astronomy!

Desired Impacts Big Picture

LIGO EPO's mission is to inspire a sense of wonder, to engage curiosity and to encourage and diversify the future STEM workforce.

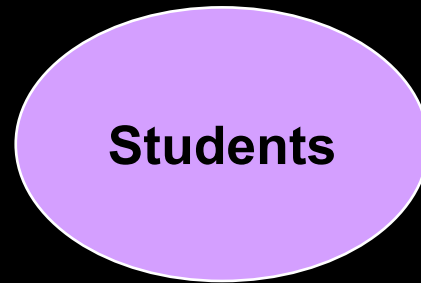


- Field Trips
- Public Tours
- Classroom Visits
- STEM Nights
- Speakers
- Teacher Workshops





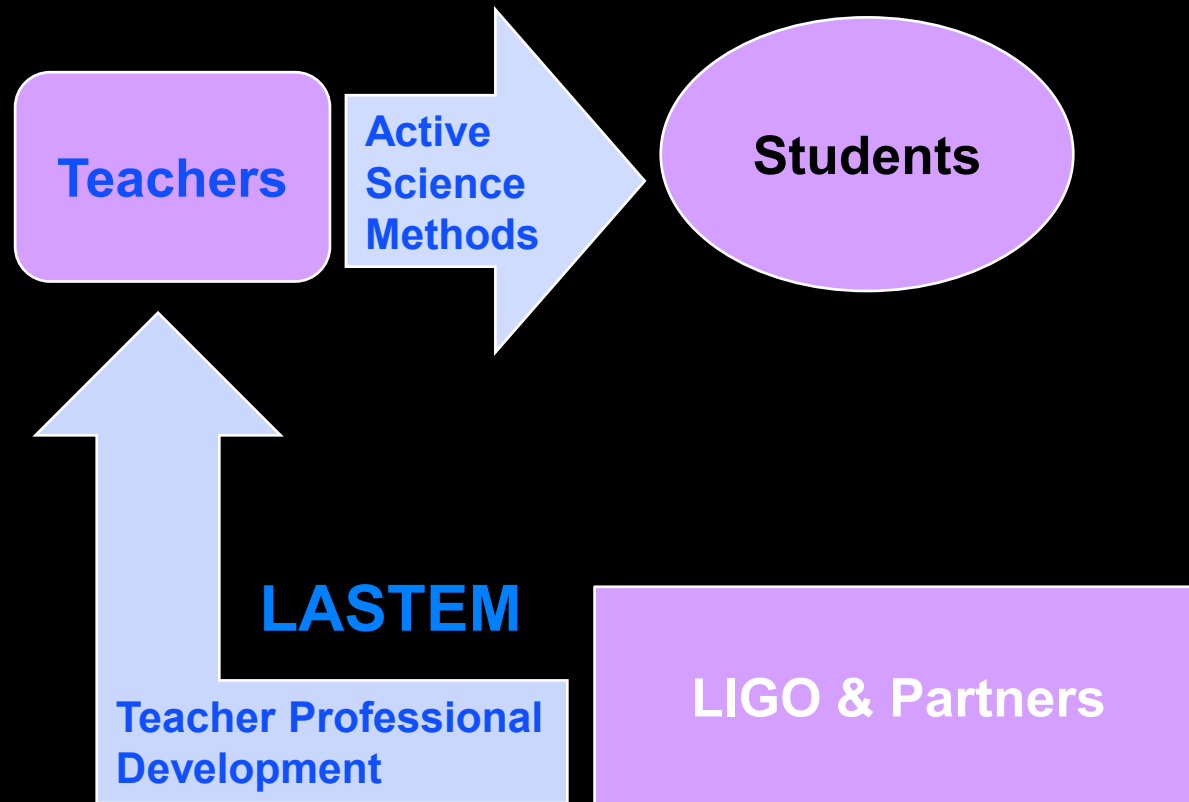
Impact Attainment Theory of Action

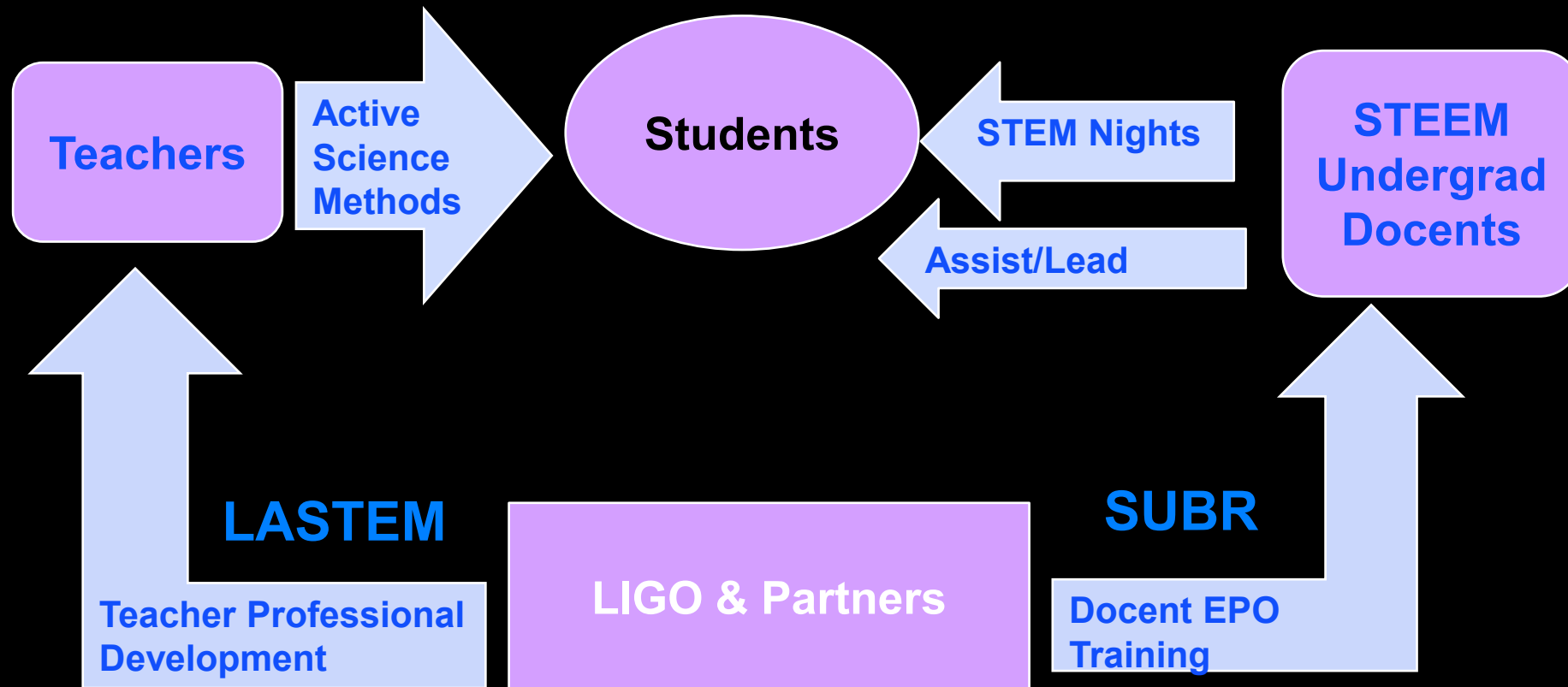


**To Impact students requires an
ecosystem of support**

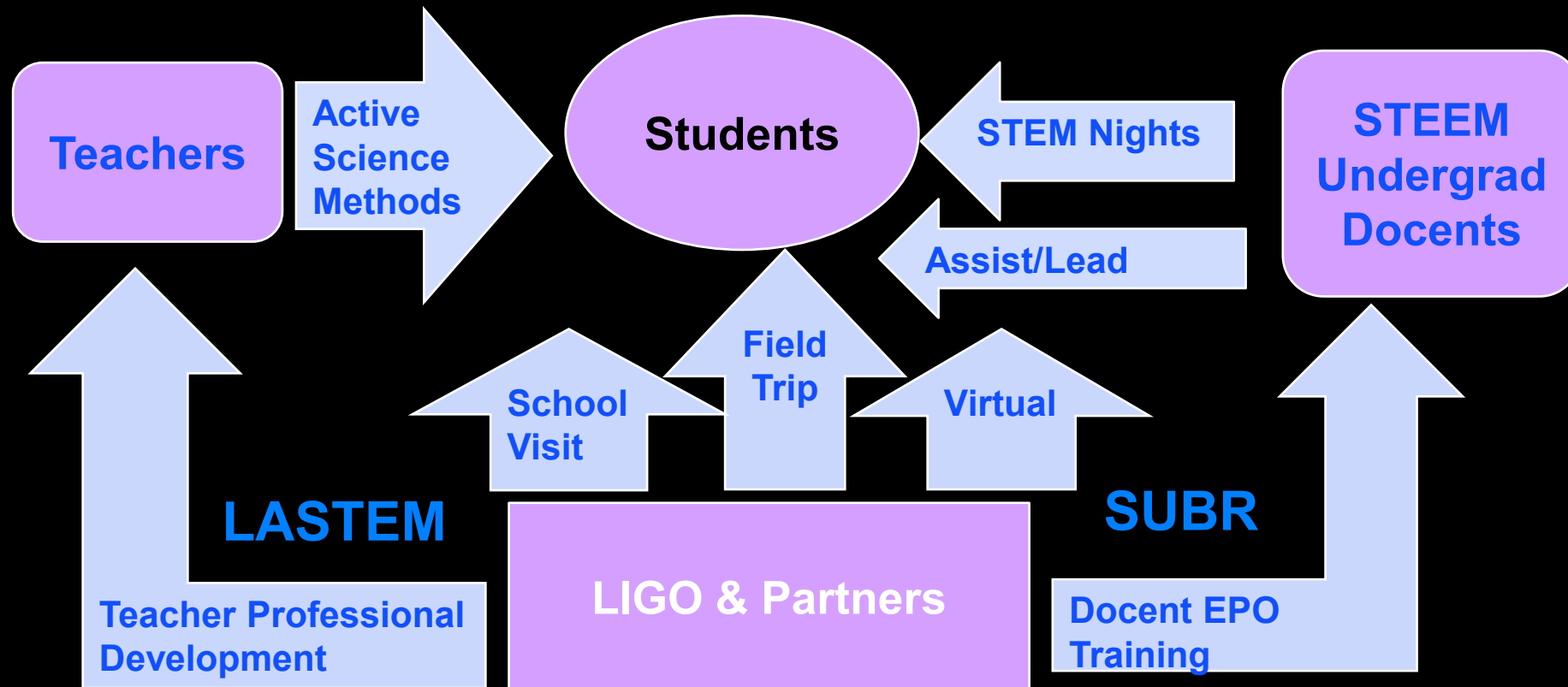


Impact Attainment Theory of Action

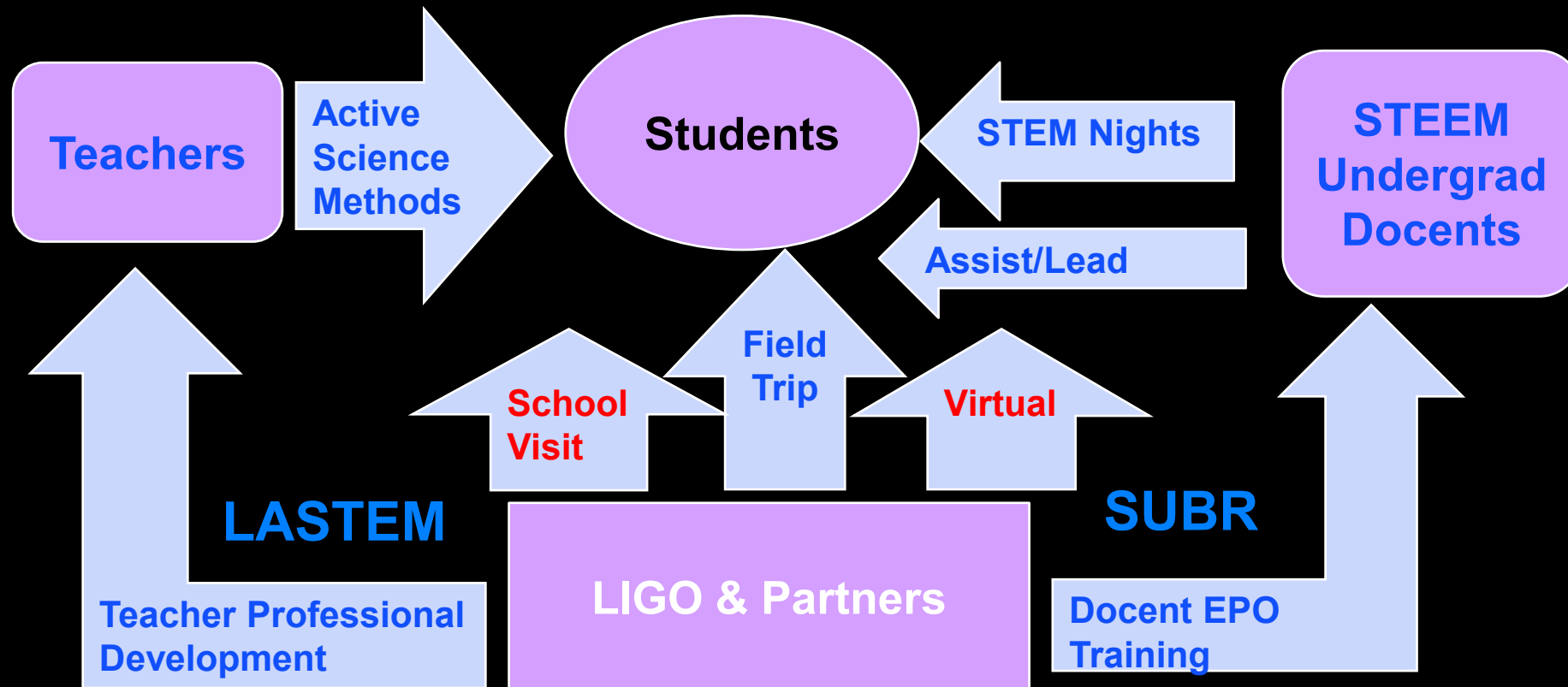




Impact Attainment Theory of Action

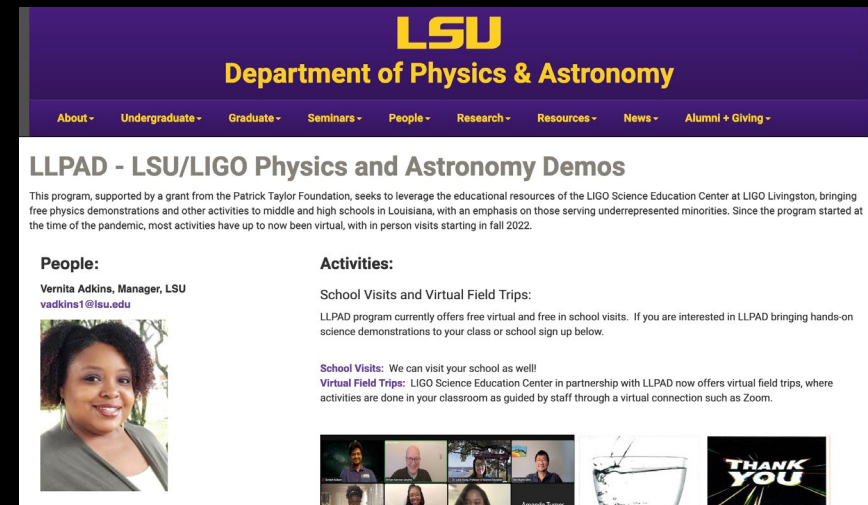


Impact Attainment Theory of Action



School Visits & Virtual Visits

- Field trip attendees
 - Increasing contact Improves STEM Outcomes
- For those who cannot attend a field trip
 - Brings LIGO's Inspiring Science to the students
- Funded by a Taylor Foundation grant to LSU
 - Funding is ending



LSU
Department of Physics & Astronomy

About - Undergraduate - Graduate - Seminars - People - Research - Resources - News - Alumni + Giving

LLPAD - LSU/LIGO Physics and Astronomy Demos



This program, supported by a grant from the Patrick Taylor Foundation, seeks to leverage the educational resources of the LIGO Science Education Center at LIGO Livingston, bringing free physics demonstrations and other activities to middle and high schools in Louisiana, with an emphasis on those serving underrepresented minorities. Since the program started at the time of the pandemic, most activities have up to now been virtual, with in person visits starting in fall 2022.

People:
Vernita Adkins, Manager, LSU
vadkins1@lsu.edu

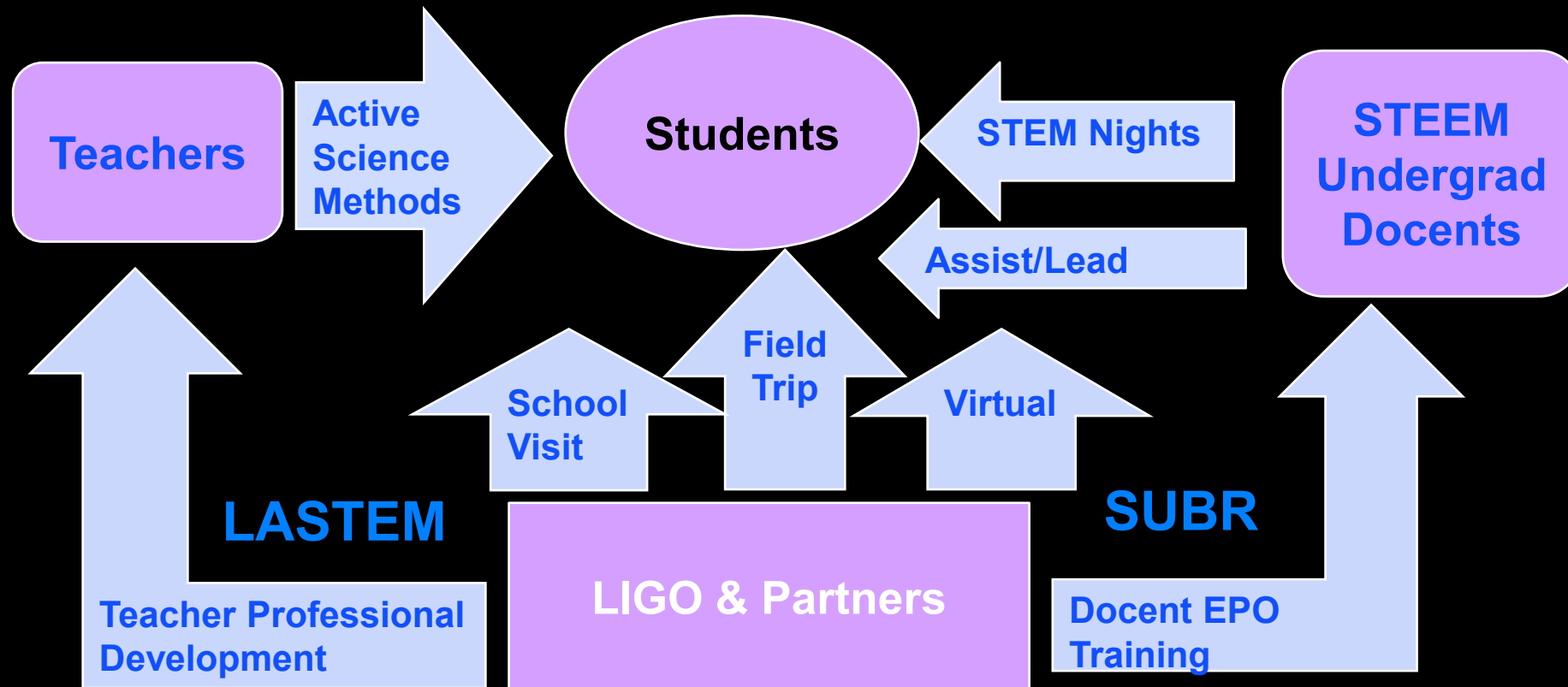


Activities:
School Visits and Virtual Field Trips:
LLPAD program currently offers free virtual and free in school visits. If you are interested in LLPAD bringing hands-on science demonstrations to your class or school sign up below.

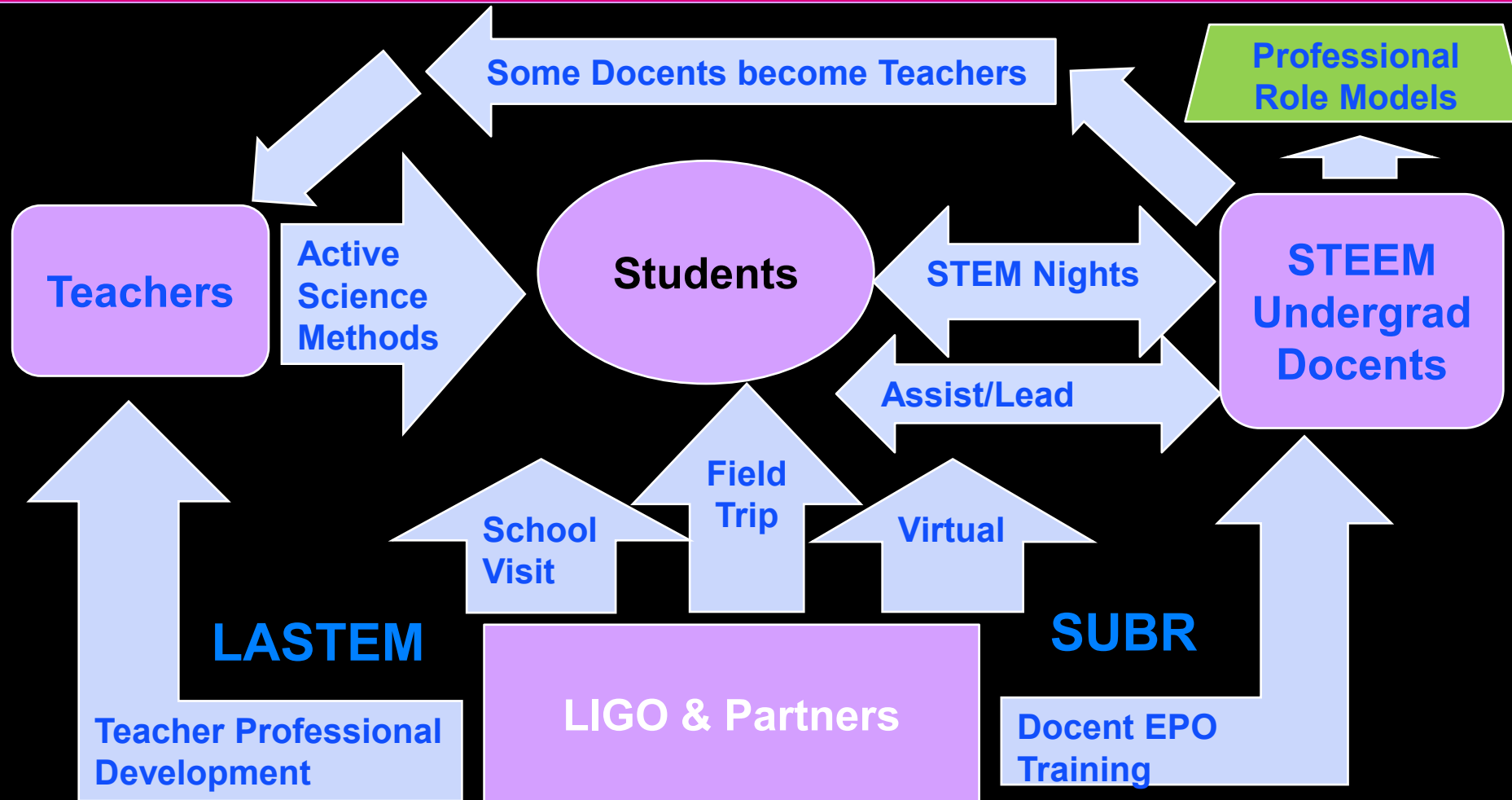
School Visits: We can visit your school as well!
Virtual Field Trips: LIGO Science Education Center in partnership with LLPAD now offers virtual field trips, where activities are done in your classroom as guided by staff through a virtual connection such as Zoom.



Impact Attainment Theory of Action



Impact Attainment Theory of Action





Results

- K-12 Student Efforts impact 8k+ students annually
 - Increasing STEM interest through real contact with science
 - Interest Impact, high numbers
- Undergraduate Efforts impact 25 students annually
 - Career impact, lower numbers
 - Impacts the way they interact with their communities

Thank you for your time & assistance

Interested in partnering?

William Katzman

wkatzman@caltech.edu

225-686-3134

Tour

- Tour after lunch
- Enter our control room
- Play with exhibits





William Katzman
wkatzman@caltech.edu
225-686-3134

VIII. Adjournment

Lunch Provided by Region 9 STEM Center

LIGO Facility Tour to Follow Lunch at 12:15 pm