



# Teacher Research Experience and Its Deep Impact on Education



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## Abstract

The NASA/IPAC Teacher Archive Research Program (NITARP) is an authentic research experience for teacher teams in collaboration with a professional astronomer with the goal to contribute original results to the astronomical community. In the NITARP 2024 Cyclops AGN team we translated the personal research experience related to active galactic nuclei into outreach efforts in the communities in which we as teacher participants are embedded. This included a planetarium setting, a community non-profit youth organization focused on STEM experiences, traditional classroom settings at the middle and high school levels, and extracurricular STEM/Research clubs.

Use of archival data, data visualization and image manipulation with tools like Finderchart in the NASA/IPAC Infrared Science Archive (IRSA) web interface, and engaging students in their own research efforts are examples of the ways in which the NITARP experience has an impact on all of its teacher participants. We will summarize the essential experience that changed our approach to teaching and learning with our students, as well as our plans for future changes to our course designs and outreach programs.

## Acknowledgements

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## Teacher NITARP Experience Perspectives

### Middle School

*"My participation in NITARP and attending conferences fascinated and inspired my students. These experiences deepened my curiosity about unfamiliar phenomena, motivating me to ignite that same curiosity in my students and help them see themselves as scientists."*

- Lenée Mason

### High School

*"My experience doing astronomical research as part of NITARP has not only increased my own content knowledge as an astronomy teacher, and given me the opportunity share that experience with several students, but also has helped me provide the opportunity to all of my students to do astronomy themselves, using actual data, instead of just hearing about what other people have been researching."*

- David Forester

### Undergraduate

*"As students explore academic and career opportunities, there is no replacement for the ability to inform their decision making with the research experience that NITARP provided. It impacts everything... how I introduce a topic, discuss the edge of what is known, and how and why we explore the Universe around us. NITARP is the most impactful PD I have experienced."*

- Ben Senson

### Informal

*"NITARP has changed how I will mentor my middle school astronomy group. This unique experience not only helped me ignite their curiosity about astronomical phenomena, it gave me the tools to help foster critical thinking and collaboration. Students are inspired to ask questions & explore concepts like Black Holes."*

- Michelle Riordan

## Student NITARP Experience Perspectives

"NITARP has given me a deeper understanding of astronomy and inspired me to continue research in this field.... NITARP provided me with an amazing set of skills I'll use later in life." - Rachel Susan

"NITARP has been an invaluable part of my journey toward becoming a research scientist.... Long, meticulous nights scanning data points have strengthened my excitement for the work ahead." - Dominico DeMatte

"I have become more passionate about the field of astronomy and space as a whole." - Daniel Cazacu

"My participation in NITARP opened my mind to a field of STEM I did not have experience in before... I have gained insights that scientific research is a complicated, lengthy process where even seemingly insignificant things must be considered." - Julia De Guzman

"Participating in real scientific research has shown me what actually goes into studies and just how much double checking is actually done to provide correct information for a study." -Scott Picksley