

Big Data: ATLAS

Impact summary

BIG DATA ATLAS

Project partners

About the project

The ATLAS detector is used by physicists to observe the results of proton-proton collisions in the Large Hadron Collider at CERN in Geneva, the largest collider of its type in the world. Big Data: ATLAS introduces to students the techniques used to analyse ATLAS data, giving them the chance to explore their own questions in particle physics.

Developed by IRIS, in collaboration with the University of Oxford and the Rutherford Appleton Laboratory, the project is designed to support students who may not have come across particle physics or computer programming before or who are keen to develop their knowledge. Young people learn analytical and coding methods. They develop critical skills in statistical analysis, Python computer programming, data presentation and interpretation of ATLAS open-source data, including how to find evidence of the Higgs boson.

Student registrations

	21/22	22/23	23/24
Number	63	280	218
Post 16	89%	81%	83%
Female	—	39%	37%

Impact on students

This project supported students to:

- develop skills in carrying out research
- learn to analyse complex information
- understand more about STEM
- understand more about working in STEM and as a science researcher
- explore new areas of STEM

Students said that they:

- found the project interesting, challenging, and fun
- appreciated the in-depth insight gained into this field of physics
- were positive about the resources and guidance provided

“I very much enjoyed the freedom to conduct research in small groups, free from a curriculum and without predetermined results.”

Year 12 male student

“It is a great opportunity to gain experience doing real research and also to gain experience working in small groups and presenting your research at conferences.”

Year 12 male student

96%

Of students rated the project good or very good

100%

Of students would recommend IRIS to another student

89%

Felt that people like them are researchers

86%

Felt that research is an interesting career

97%

Knew more about what it's like to work in STEM



66%

Were more aware of how STEM can help in the real world

75%

Felt research could be hard work but was rewarding

Through the project, students said that they:

- developed skills in research and programming
- improved their teamworking and communication skills

Students told us that the project helped them:

- increase their interest in a career involving STEM
- see that research was an interesting career
- change their future study or career plans
- open their eyes to different aspects of physics and programming

“This project has encouraged me to seek out more STEM careers and to educate myself further in these complex subjects.”
Year 11 female student

The project sought to replicate an authentic research process and the students recognised that while aspects were difficult, it gave them a real insight into doing research and facilitated skills development and knowledge acquisition.

“It can be difficult at first, when faced with a ton of new information to learn and skills to pick up, but you'll learn so many new and interesting things once you get into it, so it's well worth doing. You get a real taster into what doing academic research is like, which you don't really get anywhere else.”
Year 12 female student

Impact on teachers

Teachers described how the project provided a unique opportunity to stretch their students, to deepen their own knowledge and to help them to enrich lessons with research-based activities.

Teachers reflected that the project:

- helped students to feel like real researchers
- improved students' awareness of STEM careers
- developed a deeper understanding of the curriculum
- facilitated greater engagement and motivation

“It encouraged me to incorporate ideas and attitudes to science into my day-to-day teaching.”

Teacher, state school

91%

Agreed the project had increased their students' science capital

86%

Felt more in touch with research

76%

Felt better able to communicate the excitement of STEM

