



Attitudes

Skills

Knowledge: **New Frontiers**

The NASA-ISGC INSPIRE program employs high-altitude ballooning to advance STEM content knowledge among STEM and geography/social science pre-service teachers.

Curious: A kid explorer is curious about how a high-altitude balloon functions and collects data and seeks out the challenge of designing, constructing, launching, and retrieving an HAB capsule.

Responsible: A kid explorer understands the need to adhere to laws and regulations regarding HAB launches to ensure that future students can have the same opportunities.

Empowered: A kid explorer is curious, responsible, and adventurous and perseveres through adverse launch conditions, the risk of a lost or malfunctioning HAB, and the challenge of trekking long distances to retrieve the balloon capsule.

Observation: A kid explorer collects and interprets photos from the HAB, analyzes temperature and barometric pressure readings, and tracks the elevation and speed of the HAB using a GIS.

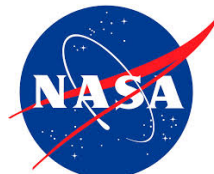
Communication: A kid explorer is a storyteller, communicating a “balloon’s eye” view of our world through images of the Iowa landscape 30,000 feet below, photos of the topside of massive thunderheads, and 85,000 foot high vistas of the curvature of the Earth where the edge of our atmosphere meets the starry blackness of space.

Collaboration: A kid explorer works in an actual NASA team such as “Structures”, “Communications”, and “Navigation and Tracking” to achieve a successful launch and recovery.

Problem Solving: A kid explorer is an informed decision-maker who is able to find and troubleshoot problems to ensure that the launch team knows where the HAB is likely to land, that the camera is wired to take a photograph each minute, and that the capsule can withstand the impact of the landing.

“Searching every day for the ‘new’ and the ‘next,’ using the latest technology and science to go places no one has ever been”, the NASA-Iowa Space Grant Consortium INSPIRE (Iowa Near Space Project Integrating Research and Education) program employs high altitude ballooning (HAB) to engage pre-service teachers. Through the use of hands-on HAB design, launch, and data analysis, undergraduate science education and geography/social science education students conduct research and develop curricular materials to promote K-12 teaching/learning in their future classrooms.

Pre-service educators who graduate from this program have the curricular materials, knowledge of HAB, ability to engage in cross-curricular team teaching, and an “off-the-shelf” ready HAB kit to lead an actual balloon launch with their schools to create a rich learning experience for their own kid explorers.



Adapted from NGS; created by Mollie Ullestad, GAI Undergraduate Research Assistant