

UNLOCKING GEOGRAPHY: GIS FOR SCHOOLS

EMPOWERING STUDENTS WITH GEOGRAPHIC INFORMATION SYSTEM

AN INITIATIVE FROM TECHNOLOGY
INNOVATION HUB (TIH)
@ IIT TIRUPATI

POSITIONING AND PRECISION TECHNOLOGIES

For Whom

School students (8th grade to 12th grade)

Duration

8/12 hrs (One / Two Days)

Module

Hands on & project-based learning

GIS IN EDUCATION

- Enhances spatial thinking skills
- Fosters critical thinking and problem-solving
- Connects real - world issues to geography

ABOUT TIH MISSION

- Prepares students for 21st century careers (Geo-Developer, urban planner, environmental scientist)
- Unlocking tomorrow's innovations in navigation and location-based services (like traveling, e-commerce and emergency response)

WHAT WE OFFER

A highly interactive and hands-on training program on Geospatial Technologies



A participation certificate from IITNiF



Selected schools will be identified as nodal centers for training more schools.



Photos & Videos testimonials from teachers and students will be shared on social media of IITNiF



Global and national recognition of school for providing opportunity for skill enhancement and professional development.



IITNiF, facilitating students and teacher's participation in forthcoming international & national seminars or conferences.



VENUE

- School's computer lab or
- Any computers-equipped facility

REQUIREMENTS

- GIS software
- Geospatial data

★ Provided by TIH Geospatial Team

ROLE OF SCHOOLS

- Designate a single school contact for coordination with the IITTNI team (overseeing both software installation and troubleshooting during workshops).

COURSE UNIQUENESS

- Designed keeping in view of the **NCERT syllabus**
- Open to all grade students with **no prerequisites.**



BENEFITS TO STUDENTS

Explore the World

- 1 GIS helps children explore and understand the world around them (by understanding maps they learn how different places/countries/cultures are connected).

Student Engagement and Motivation

- 2 GIS transforms abstract concepts into tangible, real-world applications, sparking curiosity and fostering a sense of exploration.

Improving spatial awareness

- 3
 - GIS helps to boost school children's spatial awareness through hands-on mapping activities and
 - Analyzing geographical relationships, thus enhancing overall spatial cognition.

Interdisciplinary Learning

- 4
 - ~~GIS~~ **Interdisciplinary** learning by integrating geography with various subjects;
 - Students learn to apply mathematical, scientific, and historical concepts in real-world scenarios, thus promoting a holistic understanding of interconnected disciplines.

Protecting the Environment

- 5
 - Children can become little environmental scientists using GIS
 - By looking at maps and patterns, they can study how trees grow, where animals live, and how we can care for our planet.

Playing with Maps

- 6
 - It's like playing with super cool maps!
 - Students can make their maps, mark their favourite places, and
 - Share stories about their adventures using spatial analytics.

Making Decisions

- 7
 - With GIS, students can learn how to make smart decisions;
 - They can think about where parks, schools, or new buildings should be located, improving communities.

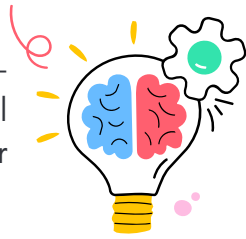
Solving Puzzles

- 8
 - It's like solving puzzles with maps! GIS allows children to figure out interesting questions, like where animals live, why some places are hot or cold, and how cities are planned.

BENEFITS FOR EDUCATORS

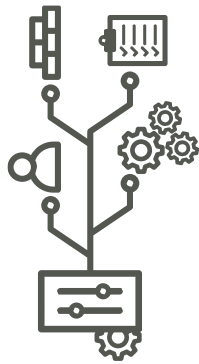
Professional skills Development

A highly interactive and hands-on program on Geospatial Technologies enhancing their skillset.



Enhanced Teaching Methods

- GIS help teachers to create dynamic and interactive lessons by integrating maps, spatial data, and multimedia present information in visually engaging way.



Real-world Relevance

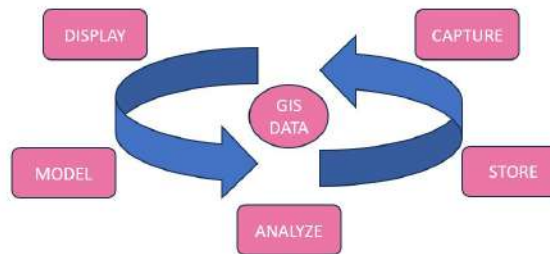
- By incorporating GIS techniques into their teaching, educators can demonstrate the real-world applications of geographical & historical knowledge.
- Also gives students a glimpse of future tech career planning to science



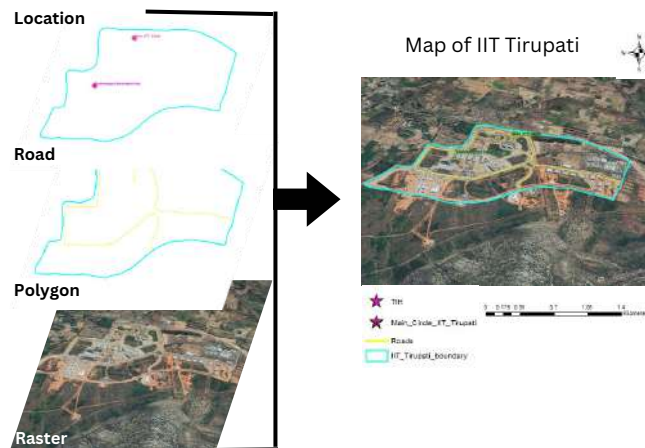
ABOUT THE TOPICS

- 1 Introduction - What is GIS?
- 2 Software options (Open Source)
- 3 Spatial Data Types and Data layers
- 4 Visualisation Principles
 - Art of making great maps
- 5 Field Project

1. Introduction - What is GIS?



3. Spatial Data Types and Data layers



5. FIELD PROJECT



Phase 1: Class work

- Students will learn concepts of GIS, data exploring QGIS interface & making a map &
- To geocode places by using mobile cameras and navigation apps.



Phase 2: Home Exercise

Students have to submit geocoded location & details of prominent places / man-made resources nearby their homes.



Phase 2: Performance Incentive

Extra efforts from students will be rewarded (with t-shirts, mugs, bags, badges & opportunity to work at IITNIF at IIT Tirupati in the summers)

APPLICATION OF GIS IN SCHOOLS

Geography Classes

- Geographic Information Systems (GIS) enhance learning by allowing students to analyze spatial data,
- create interactive maps, and understand real-world patterns.



Environmental Studies

- GIS aids students in analyzing environmental data,
- Mapping of ecosystems and
- To understand the impacts of human activities on the environment.



History

- GIS enrich the learning experience by enabling students to visually explore historical events,
- Trace the evolution of civilizations through maps, &
- Understand the geographical context of past narratives.

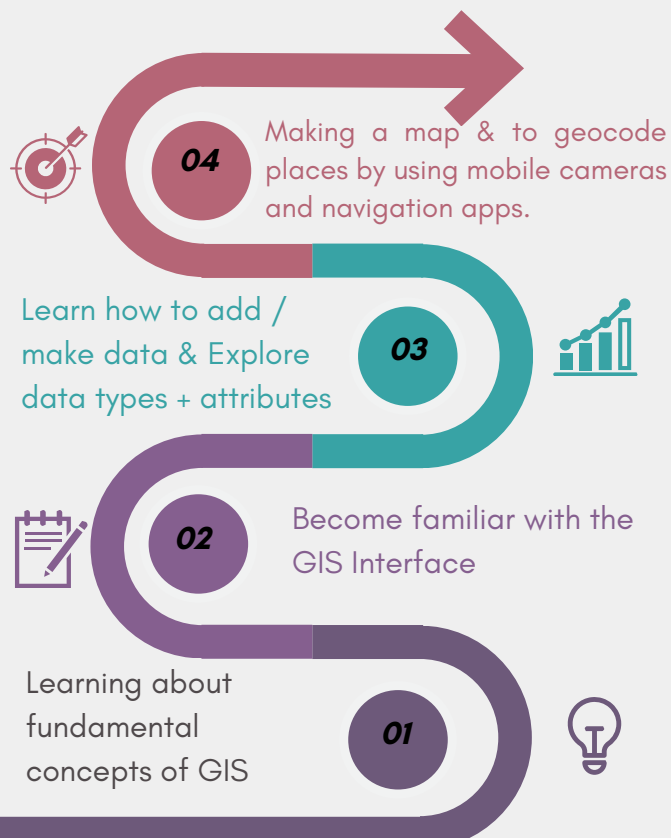


STEM Subjects

- GIS facilitates hands-on learning by enabling students to apply mathematical concepts in spatial analysis;
- To engage with real-world problem-solving in engineering,
- To utilize technology to explore scientific phenomena.



GOALS



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