



Module 0: Introduction to Innovation

- v Creativity and Innovation
- Working within a Team
- Characteristics of Innovators
- Design Thinking

Module 1: Introduction To Research

- Why Conduct A Research Project
- Exploring Science Competitions
- Scientific Research Changes The World
- Sharing Research Findings
- Where Can Research Be Conducted?

Module 2: Developing A Research Question

- Creating A Logbook
- What Makes A Good Research Question
- Research Questions Around School, In Nature And Everywhere
- Create Your Research Question
- Finding A Mentor

Module 3: Conducting A Literature Review

- What Is Scientific Literature
- What Is A Literature Review
- Literature Review Databases
- Potential Problems With Literature Reviews
- Conducting Your Literature Review
- Writing Your Hypothesis

Module 4: Research Ethics & Integrity

- Intro To Ethics And Integrity In Research
- Ethical Issues With Living Beings
- Ethical Issues With Handling Information
- Governing Bodies Of Ethics
- Ethical Scenarios

Module 5: Study Design I

- Types Of Variables
- Writing A Procedure
- Quantitative And Qualitative Studies
- Mixed Methods Study Designs
- Designing Quantitative And Qualitative Studies
- Study Design Implementation
- Student Presentations

Module 6: Study Design II

- v Types Of Qualitative And Quantitative Studies
- Observational And Survey Study Designs
- Surveys And Focus Groups
- Applying Observational, Survey And Focus Group Study Designs
- Correlation And Causation
- Correlation Study Design
- Quasi-Experimental _ Experimental Study Designs
- Applying Experimental Study Designs
- Designing Your Experiment

Module 7: Conducting Your Experiment

- Bias And Sample Sizes
- Designing Your Data Collection
- Materials Lists And Laboratory Safety
- Aseptic Technique And Sterile Workspaces
- Refining Your Procedure
- Carrying Out Your Procedure

Module 8: Data Analysis Using Descriptive Statistics

- Descriptive Statistics
- Applying Real World Data
- Analyzing Data Using Google Sheets
- Analyzing Real World Data Using Google Sheets

Module 9: Data Analysis Using Statistical Analysis

- Introduction To Statistical Analysis
- p Values
- Significance Testing, T-Tests
- Chi Square
- Linear Regression
- Analysis Of Variance Test (Anova)
- Applying The Appropriate Tests
- What Bad Statistics Can Do

Module 10: Results & Conclusions

- Constructing Graphs
- Applying Data Organizational Skills
- Interpreting Graphs
- Developing A Conclusion And Discussion
- Developing Your Conclusion And Discussion

Module 11: Writing A Scientific Paper

- Parts Of A Scientific Paper
- Writing A Scientific Paper
- Literature Review, Procedures, And Materials
- Results, Discussion And Conclusion
- References And Apa Format
- Abstracts

Module 12: Presenting Results

- Creating Your Presentation Or Demonstration
- Creating Your Speech
- Using Props And Visual Aids
- Speaking Techniques
- Practicing Your Speech
- Presenting Your Project Virtually

Module 13: Reflection

- Successes And Failures
- Future Goals
- Making A Plan To Continue This Project For Next Year's Research

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