



Data Activities Portfolio: A Research Based Approach for Infusing 21st Century Physics into the High School Classroom

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Engaging Teachers

Making 21st Century Physics Approachable

- **Connect to traditional content topics**
- **Clearly address standards**
- **Overcome fear of complexity**



Engaging Teachers

Guiding Philosophy of the Portfolio

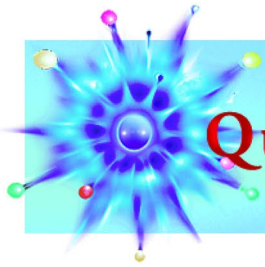
- **Public Access**
- **Searchable**
- **Guided Inquiry**
- **Data Driven**
- **Claim – Evidence – Reasoning**
- **Making Sense from Data**



Engaging Teachers

Overcoming Fear of Complexity

- **Teacher Notes**
 - **Standards**
 - **Prior Knowledges**
 - **Resources**
 - **Implementation Guide**
 - **Assessment Suggestions**
- **Student Pages**
- **Links to Data**



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Data Activities Portfolio

Activities Incorporating 21st Century Physics

- <https://quarknet.org/data-portfolio>

Data Activities Portfolio

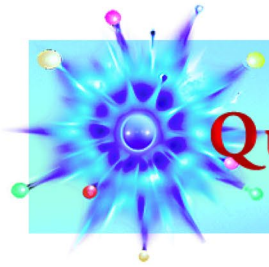
The Data Portfolio is a compendium of particle physics classroom activities organized by data strand and level of student engagement. Follow the links provided for information about using the Data Portfolio to plan your students' experience. **Level descriptions** - All activities that students apply at each level: tasks in Level 0 are simpler than those for students who start in one level and progress to more challenging tasks. These activities are aligned with the **NGSS Practices**.

Your students can follow a path through activities that lead to discovery. Each pathway provides connections between physics content and methods. Use the pull-down menu (Data Strand and Strand) to find activities related to the content you are currently covering. To learn more about sorting these activities, visit the **survey** to help us

We want your feedback on how the activities are working to improve our activities.

Data Strand	Level	Category	NGSS Practices
- Any -	- Any -	- Any - Conservation Laws Diversity & Inclusion Electricity & Magnetism Half-Life/Mean Lifetime Instrumentation Waves & Interference Kinematics Nature of Matter Quantum Mechanics Special Relativity Standard Model Skill: Coding Skill: Developing Models Skill: Graphing Skill: Histograms Skill: Uncertainty	- Any -

Apply



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Evidence of Effectiveness

Effectiveness

- **Half of the QuarkNet teachers surveyed report using DAP activities.**
- **Anecdotal reports of use of skills and strategies.**
- **Sustained virtual contact during Covid.**



Conclusion

Impacting Curriculum

- Provide access to vetted activities available on public web site.
- Reach out to existing programs & organizations to develop relationships.
 - Science teacher organization
 - State, local physics teacher groups
- Share data to support additional activity development.