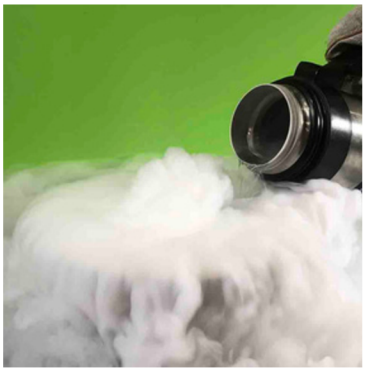
CURRICULUM RESOURCE
STATES OF MATTER

EDUCATION LEAD: BEN NEWSOME CF
UTS CHANCELLOR'S AWARD FOR EXCELLENCE
& CHURCHILL FELLOW

OVERVIEW



This resource provides a high-impact framework for teaching Chemical Sciences (States of Matter). Designed to simplify thermodynamics and phase changes, the unit bridges the gap between everyday materials and molecular behaviour, focusing on how thermal energy influences the properties of solids, liquids, and gases for Grades 3–6.

PEDAGOGICAL FRAMEWORK: VARIABLE-LED INQUIRY

While the content is highly engaging,
the underlying pedagogy is rooted in the Scientific Method.

- **Variable Isolation**
  Designed to teach students how to identify, change, and measure variables.
- **Kinetic Particle Modelling**
  Through large-scale demonstrations (including Liquid Nitrogen at $-196°C) and safe hands-on experiments, students learn how energy causes materials to expand, contract, or change state.
- **Non-Newtonian Exploration**
  Students investigate "rule-breaking" materials to analyse how force—not just temperature—affects the viscosity and state of matter.

REGULATORY COMPLIANCE & DOCUMENTATION

- Comprehensive alignment with Australian Curriculum v9.0, NSW 2024 Syllabus, Victorian F–10 v2.0, IB PYP & MYP, Cambridge International, US NGSS, The Ontario Curriculum & The New Zealand Curriculum
- Assessment Tools with formative knowledge quizzes and summative marking rubrics for student projects.

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CORE INVESTIGATIONS

- **Thermal Expansion & Contraction**

  Students learn how gases respond to temperature changes, using physical models to visualise how increased kinetic energy forces particles further apart, increasing volume.

- **Freezing Point Depression**

  By manipulating the freezing point of liquids, students variable test matter states in real-time

- **Rheology & Non-Newtonian Fluids**

  Students investigate substances that defy standard classifications,

IMPLEMENTATION & DATA PRIVACY

- **Resource Neutral**

  Evidence-based experiments are designed around safe, accessible, everyday materials to minimise departmental overhead & reduce risk.

- **Privacy Compliance**

  100% student data security. The platform requires zero student accounts, ensuring no PII (Personally Identifiable Information) is collected or stored.

RESOURCE ACCESS SUMMARY

- **Instructional Access**

  On-demand expert video guest-teaching (30-day or 12-month access).

- **Permanent Library** with all technical documentation, safety frameworks, and student worksheets retained by the school as permanent teaching assets on download

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ABOUT FIZZICS EDUCATION

Founded in 2004, Fizzics Education is a global leader in the design and delivery of high-impact science education. Our mission is to provide educators with the tools and expertise required to foster deep inquiry and scientific literacy in the primary classroom.

PROVEN GLOBAL IMPACT

- **4 Million+ Students**
  Our programs have been delivered to students across Australia, the USA, and over 40 countries via live video conferencing and in-person workshops.
- **Corporate & Government Partnerships**
  We provide STEM outreach for leading organisations, including the NRMA, Optus, the GWS Giants and many more
- **Award-Winning Pedagogy**

EXPERT LEADERSHIP: BEN NEWSOME CF

Ben Newsome CF is a qualified science teacher, 2013 Churchill Fellow, and founder of Fizzics Education. Having reached over 4 million students, his work has earned the UTS Chancellor's Award for Excellence and a spot as an ASETNSW Ambassador. Author of 'Be Amazing!' and host of the FizzicsEd Podcast,

Ben serves on international boards such as Educating for Leadership (Alaska) and as a board advisor to the Center for Interactive Learning & Collaboration to advance global STEM learning.