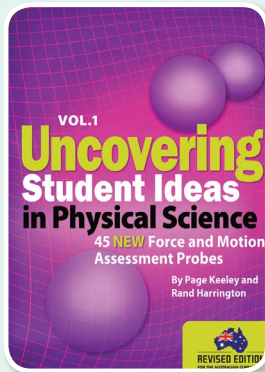


# Uncovering Student Ideas

By Page Keely

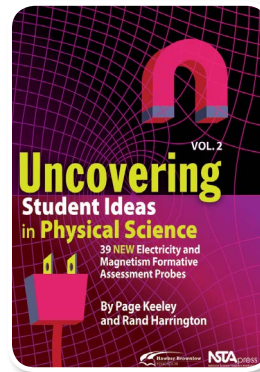
The Uncovering Student Ideas in Science series will help teachers to uncover students' preconceptions of fundamental science concepts. Each volume contains formative assessment probes, which have been designed to address specific areas of student science learning. The assessment probes are accompanied by detailed teacher materials that review science content, summarise relevant research and suggest instructional approaches for primary, middle years and secondary school students.



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The 45 assessment probes in *Uncovering Student Ideas in Physical Science* enable teachers to find out what students really think about key ideas in force and motion. This book includes Teacher Notes, related concepts, explanations for the teacher of the force and motion ideas being taught, related ideas in the Australian Curriculum: Science and Mathematics, research on typical student misconceptions regarding force and motion, and suggestions for instruction and assessment. The related ideas in the Australian Curriculum: Science and Mathematics, match the concepts in each activity with corresponding content descriptions in the Australian Curriculum from multiple year levels.

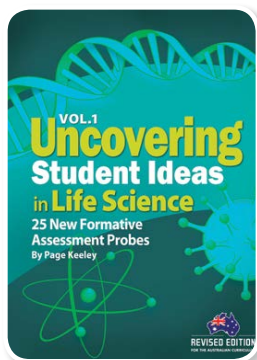
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If you and your students can't get enough of a good thing, volume two of *Uncovering Student Ideas in Physical Science* is just what you need. It offers 39 new formative assessment probes, this time with a focus on electric charge, electric current, and magnets and electromagnetism. It can help you do everything from demystify electromagnetic fields to explain the real reason balloons stick to the wall after you rub them on your hair. Providing a collection of engaging questions (or formative assessment probes), offers field-tested teacher materials that provide 'best answers' designed to reveal misconceptions that students commonly hold and is easy to use by time-starved teachers.

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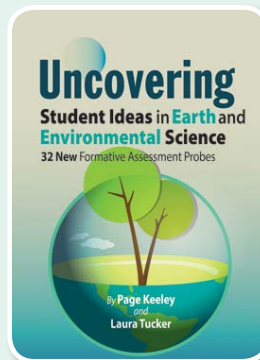


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In this volume, Keeley addresses the topics of life and its diversity; structure and function; life processes and needs of living things; ecosystems and change; reproduction, life cycles and heredity; and human biology. Using the probes as diagnostic tools for identifying and analysing students' preconceptions, teachers can move students from where they are in their current thinking to where they need to be to achieve scientific understanding. Each probe is supported by extensive Teacher Notes, which provide

background information on the purpose of the probes, related concepts, explanations of the life science ideas being taught and related ideas in the Australian Curriculum: Science.

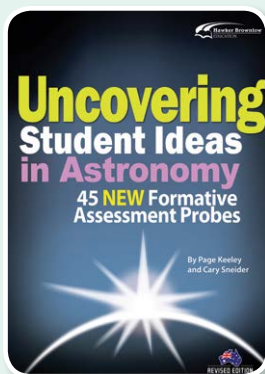
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This book gives you 32 engaging new questions that can reveal what your students already know - or think they know - about core Earth and environmental science concepts. The probes are organised into four sections: land and water; water cycle, weather, and climate; Earth history, weathering and erosion, and plate tectonics; and natural resources, pollution, and human impact. Best of all, the probes are intrinsically interesting. They're full of material to stimulate your students' intellectual curiosity, even as they transform your fundamental methods of teaching and learning.

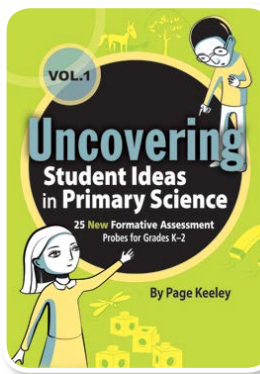
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What do your students know - or think - about what causes night and day, why days are shorter in winter and how to tell a planet from a star? Find out with *Uncovering Student Ideas in Astronomy*. The book is organised into five sections: the Nature of Planet Earth; the Sun-Earth System; Modelling the Moon; Dynamic Solar System; and Stars, Galaxies and the Universe. The 45 assessment probes provide situations that will pique your students' interest while helping you understand how your students think about key ideas related to the universe and how it operates. The Teacher Notes provided for each probe include the probe's purpose, related concepts, a scientific explanation and advice on administration.

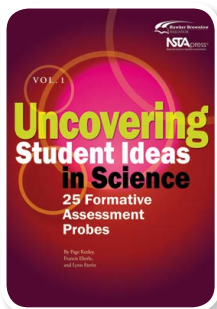
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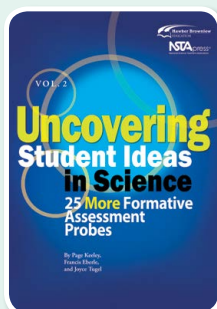
### UNCOVERING STUDENT IDEAS IN SCIENCE, VOLUME 1: 25 Formative Assessment Probes

Page Keely, Joyce Tugel • 9781760560669

Uncovering Student Ideas in Science is loaded with classroom-friendly features to pinpoint what your students know (or think they know) so you can adjust your teaching accordingly. The 25 probes will determine your students' thinking on 44 core science topics, grouped by light, sound, matter, gravity, heat and temperature, life science, and Earth and space science. Each probe - field-tested across multiple year levels - is proven effective for

helping your students recover from erroneous ideas about science. The accompanying teacher materials explain science content, give suggested connections to the Australian Curriculum: Science, present developmental considerations, summarise relevant research on learning and suggest instructional approaches from primary to high school.

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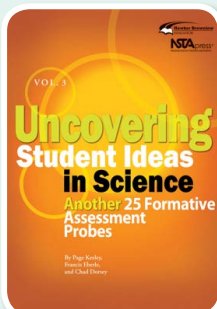
### UNCOVERING STUDENT IDEAS IN SCIENCE, VOLUME 2: 25 More Formative Assessment Probes

Page Keely, Francis Eberle, Joyce Tugel • 9781760560676

The popular features from Volume 1 are all here. The field-tested probes are short, easy to administer, and ready to reproduce. Teacher materials explain science content and suggest year level appropriate ways to present information. But Volume 2 covers more life science and Earth and space science probes. New topics include forms of matter, changes in matter, living things and life processes, rocks and landforms, the day/night cycle, and objects in the night

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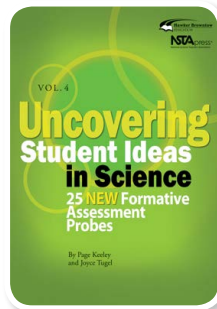
### Uncovering Student Ideas in Science, Volume 3: Another 25 Formative Assessment Probes

Page Keely, Chad Dorsey, Francis Eberle, • 9781760560683

This third volume in our best-selling series contains 25 all-new "probes" to uncover students' misconceptions in science and offers guidance on how teachers can use the probes for their own learning. Since publication of Volume 1 of the series, thousands of teachers have been using these innovative classroom tools to improve student learning in science. Following in the footsteps of the blockbusters Volumes 1 and 2, this book provides short, easy-to-administer probes that determine what scientific misunderstandings your students

may bring into your classroom without even knowing it. Volume 3 offers five life science probes, seven Earth and space science probes, ten physical science probes, and three nature of science probes. This volume is an invaluable resource for classroom teachers, preservice teachers, professional developers, and college science and preservice faculty.

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### Uncovering Student Ideas in Science, Volume 4: 25 New Formative Assessment Probes

Page Keely, Joyce Tugel • 9781760560690

Wouldn't it be helpful to know what your students' ideas are about a science concept before launching into a new lesson or unit? Uncovering Student Ideas in Science, Volume 4, offers 25 more formative assessment probes to help reveal students' preconceptions of fundamental concepts in science, bringing the total to 100 probes for the popular series by author Page Keeley. Teachers of Years F-12 will find short probes with year-level band specifics that provide easy-to-follow suggestions for addressing students' ideas by promoting learning through conceptual-change

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