Uncovering Student Ideas In Science

An accessible, practical, step-by-step how-to guide that supplements Getting Things Done by providing the details, the how-to's, and the practices to apply GTD more fully and easily in daily life The incredible popularity of Getting Things Done revealed people's need to take control of their own productivity with a system that reduces the stress of staying on top of it all. Around the world hundreds of certified trainers and coaches are engaged full time in teaching the process, supported by a grassroots movement of Meetup groups, LinkedIn groups, Facebook groups, podcasts, blogs and dozens of apps based on it. While Getting Things Done remains the definitive way to gain perspective over work and create the mental space for creativity and mindfulness, The Getting Things Done Workbook enhances the original by providing an accessible guide to the GTD methodology in workbook form. The workbook divides the process into small, manageable segments to allow for easier learning and doing. Each chapter identifies a challenge the reader may be facing--such as being overwhelmed by too many to-do lists, a messy desk, or email overload--and explains the GTD concept to address. The lessons can be learned and implemented in almost any order, and whichever is adopted will provide immediate benefits. This handy instructional manual will give both seasoned GTD users and newcomers alike clear action steps to take to reach a place of sustained efficiency.

Teachers of Earth and environmental sciences in grades 8OCo12 will welcome this activity book centered on six OC data puzzlesOCO that foster critical-thinking skills in students and support science and math standards. Earth Science Puzzles presents professionally gathered Earth science dataOCoincluding graphs, maps, tables, images, and narrativesOCoand asks students to step into scientistsOCO shoes to use temporal, spatial, quantitative, and concept-based reasoning to draw inferences from the data."

"25 new formative assessment probes for grades K-2. What ideas do young children bring to their science learning, and how does their thinking change as the engage in "science talk?" Find out using the 25 field-tested probes in the newest volume of Page Keeley's best selling "Uncovering Student Ideas in Science Series," the first targeted to grades K-2." cover verso.

How do you actually find meaning in the workplace? How do you find work that makes your heart sing, creates impact, and pays your rent? After realizing that his well-paying, prestigious job was actually making him miserable, Adam "Smiley" Poswolsky started asking these big questions. The Quarter-Life Breakthrough provides fresh, honest, counterintuitive, and inspiring career advice for anyone stuck in a quarter-life crisis (or third-life crisis), trying to figure out what to do with your life. Smiley shares the stories of many twenty- and thirty-somethings who are discovering how to work with purpose (and still pay the bills). Brimming with practical exercises and advice, this book is essential reading for millennial career changers and anyone passionate about getting unstuck, pursuing work that matters, and changing the world.

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 grade-appropriate ways to present information. But Volume 2 covers more life science and Earth and space science probes. Volume 2 also suggests ways to embed the probes throughout your instruction, not just when starting a unit or topic.

"Children are continually developing ideas and explanations about their natural world. … Some of these ideas are consistent with the science children are taught; others differ significantly from scientific explanations. Many of these ideas will follow students into adulthood if they remain hidden from the teacher and unresolved. The challenge for teachers is to find ways to elicit these ideas and then use appropriate strategies to move students’ learning forward.” —Page Keeley, author of the bestselling NSTA Press series Uncovering Student Ideas in Science You don’t have to become a mind reader to understand the ideas young students bring to science class. This collection will help you draw out and then recognize what students know—or think they know—about the natural world. What Are They Thinking? is a compendium of 30 “Formative Assessment Probes” columns from NSTA’s elementary journal Science and Children. Each chapter provides: • A sample formative assessment probe: a set of interesting questions that root out commonly held, often-mistaken ideas. Geared to elementary students, probe topics range from why you can see the Moon in the daytime to where water goes when it evaporates to what is or isn’t a rock. Your students’ answers to each probe will help you take a step back and figure out how to guide them from where they are conceptually to where they need to be. • Accompanying teacher notes: easy-to-grasp explanations and advice that tell you how to encourage evidence-based discussion and then monitor students’ understanding. • A bonus feature: a set of study group questions written especially for this compendium by award-winning author Page Keeley. So forget about acquiring psychic powers. Instead, turn to What Are They Thinking? to transform both your teaching and your students’ learning about science.

Effective science teaching requires creativity, imagination, and innovation. In light of concerns about American science literacy, scientists and educators have struggled to teach this discipline more effectively. Science Teaching Reconsidered provides undergraduate science educators with a path to understanding students, accommodating their individual differences, and helping them grasp the methods--and the wonder--of science. What impact does teaching style have? How do I plan a course curriculum? How do I make lectures, classes, and laboratories more effective? How can I tell what students are thinking? Why don't they understand? This handbook provides productive approaches to these and other questions. Written by scientists who are also educators, the handbook offers suggestions for having a greater impact in the classroom and provides resources for further research.

How do you bring research findings into the classroom and how do you find the time to research the research? In this valuable resource, the authors have examined decades of research findings to distill the results into nine categories of teaching strategies that have positive effects on student learning.

Deepen scientific understanding with formative assessment! Only by really knowing what your students are thinking can you design learning opportunities that deepen content mastery and meet their individual needs. In this highly engaging resource, internationally respected expert Page Keeley shares 50 new techniques to pinpoint student understanding before, during, and after instruction. In addition to promoting best practices in the classroom, the techniques shared here support learning and link instruction to the Next Generation Science Standards. These flexible assessments can be used with any science curriculum, along with: Practical strategies for use throughout the instruction cycle Considerations for implementation and suggestions for modification An explanation of how each technique promotes learning

Uncovering Student Ideas in Science, Volume 4, offers 25 more formative assessment probes to help reveal students' preconceptions of fundamental concepts in science.

The Curriculum Topic Study (CTS) process, funded by the US National Science Foundation, helps teachers improve their practice by linking standards and research to content, curriculum, instruction, and assessment. Key to the core book Science Curriculum Topic Study, this resource helps science professional development leaders and teacher educators understand the CTS approach and how to design, lead, and

apply CTS in a variety of settings that support teachers as learners. The authors provide everything needed to facililtate the CTS process, including: a solid foundation in the CTS framework; multiple designs for half-day and full-day workshops, professional learning communities, and one-on-one instructional coaching; facilitation, group processing, and materials management strategies; and a CD-ROM with handouts, PowerPoint slides, and templates. By bringing CTS into schools and other professional development settings, science leaders can enhance their teachers' knowlege of content, improve teaching practices, and have a positive impact on student learning.

What do your students know or think they know about what causes night and day, whether the Moon orbits the Earth, and why the Sun keeps glowing? Find out with this book on astronomy, the latest in NSTA s popular Uncovering Student Ideas in Science series. The 45 astronomy probes provide situations that will pique your students interest while helping you evaluate their understanding (or misunderstanding) of how the universe operates. The book is organised into four broad sections: the Earth and gravity; the Earth, Sun, and Moon system; the solar system and gravity in space; and stars, galaxies, and the universe. As the authors note, it s not always easy to help students untangle mistaken ideas. Using this powerful set of tools to identify students preconceptions is an excellent first step to helping your students achieve scientific understanding.

Here’s the middle-grades math resource you’ve been waiting for! Bestselling authors Cheryl Tobey and Carolyn Arline are back with 20 entirely new assessment probes that pinpoint subconcepts within the new Common Core Standards for Mathematics to promote deep learning and expert math instruction. Learn to ask the right questions to uncover common student misconceptions. Get practical instructional ideas that build new and accurate skills--while learning is already underway. It’s all here in this detailed and grade-level specific guide. Organized by strand, the probes will enable you to: Quickly and objectively evaluate common misconceptions around fractions and decimals, linear equations, ratios and percents, statistics, and more Systematically address conceptual misunderstandings and procedural mistakes--before they become long-term problems Help students better understand areas of difficulty Plan targeted instruction that builds on students’ current understandings while addressing areas of struggle Master the essential CCSM mathematical processes and proficiencies for Grades 6-8. You’ll find sample student responses, extensive Teacher Notes, and research-based tips and resources. Eliminate the guesswork and join thousands of busy middle-grades teachers who’ve used these easy-to-implement tools to foster solid math proficiency!

Provides 32 detailed, interdisciplinary environmental science lessons with complete directions for use, including summary, introduction, materials needed, preparation and step-by-step teaching directions plus worksheets and background sheets. Organized into six topical units covering Land Use Issues ... Wildlife Issues ... Water Issues ... Atmospheric Issues ... Energy Issues ... Human Issues.

Appropriate for all grade levels, these 25 field-tested, easy-to-use mathematics assessment probes help teachers modify instruction by determining students' understanding of core mathematical concepts.

How do tiny bugs get into oatmeal? What makes children look like--or different from--their parents? Where do rotten apples go after they fall off the tree? By presenting everyday mysteries like these, this book will motivate your students to carry out hands-on science investigations and actually care about the results. These 20 open-ended mysteries focus exclusively on biological science, including botany, human physiology, zoology, and health. The stories come with lists of science concepts to explore, grade-appropriate strategies for using them, and explanations of how the lessons align with national standards. They also relieve you of the tiring work of designing inquiry lessons from scratch.

Using probes as diagnostic tools that identify and analyze students’ preconceptions, teachers can easily move students from where they are in their current thinking to where they need to be to achieve scientific understanding.

Author Page Keeley continues to provide KOCo12 teachers with her highly usable and popular formula for uncovering and addressing the preconceptions that students bring to the classroomOCothe formative assessment probeOCoin this first book devoted exclusively to life science in her Uncovering Student Ideas in Science series. 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."

Formative assessment informs the design of learning opportunities that take students from their existing ideas of science to the scientific ideas and practices that support conceptual understanding. Science Formative Assessment shows K-12 educators how to weave formative assessment into daily instruction. Discover 75 assessment techniques linked to the Next Generation Science Standards and give classroom practices a boost with: Descriptions of how each technique promotes learning Charts linking core concepts at each grade level to scientific practices Implementation guidance, such as required materials and student grouping Modifications for different learning styles Ideas for adapting techniques to other content areas

This is a must-have book if you're going to tackle the challenging concepts of force and motion in your classroom. --

" ... Provides essential guidance for everyone from teachers to school administrators to district and state science coordinators. As practical as it is timely, this book includes an introduction to the NGSS ; examples of the standards translated to classroom instruction in elementary, middle, and high school ; and assistance in adapting current units of instruction to align with the standards"--Page 4 of cover.

Use assessment to inform instruction and learning in the science classroom! Science education expert Page Keeley shares 75 specific techniques that help K–12 science teachers determine students’ understanding of key concepts and design learning opportunities that will deepen students’ mastery of content and standards. These flexible assessments can be used with any science curriculum, and the author describes: How each technique promotes student learning Considerations for design and implementation, such as required materials, timing, modeling the technique, and grouping students Modifications for different types of students or purposes Ways the techniques can be used in other content areas

Winner of the Distinguished Achievement Award from Association of Educational Publishers! Author Page Keeley continues to provide K–12 teachers with her highly usable and popular formula for uncovering and addressing the preconceptions that students bring to the classroom—the formative assessment probe—in this first book devoted exclusively to life science in her Uncovering Student Ideas in Science series. 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 that identify and

analyze students' preconceptions, teachers can easily move students from where they are in their current thinking to where they need to be to achieve scientific understanding. At the same time, use of the probes deepens the teacher's understanding of the subject matter, suggests instructional implications, and expands assessment literacy. Using the student-learning data gained through the probes to inform teaching and learning is what makes the probes formative. 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, related ideas in the national science standards, research on typical student misconceptions in life science, and suggestions for instruction and assessment.

These books helps pinpoint what students know so you can monitor their learning and adjust your teaching accordingly. Loaded with classroom friendly features that can be used immediately, each book is comprised of 25 probes/chapters with brief, easily administered activities designed to 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.

Get to the core of your students' understanding of math Your wait is over: finally, easy-to-implement diagnostic tools to help you quickly and reliably identify your students' understanding of Common Core math concepts, then determine next steps to accelerate instruction. Completely aligned with the Common Core mathematics standards, Cheryl Tobey and Emily Fagan's 20 formative assessment probes will enable you to: Determine each child's prior knowledge of basic math and numeracy Identify common student misconceptions before they become long-term problems Make sound instructional decisions, targeted at specific concepts and responsive to specific needs

This comprehensive professional development course for grades 6–8 science teachers provides all the necessary ingredients for building a scientific way of thinking in teachers and students, focusing on science content, inquiry, and literacy. Teachers who participate in this course learn to facilitate hands-on science lessons, support evidence-based discussions, and develop students' academic language and reading and writing skills in science, along with the habits of mind necessary for sense making and scientific reasoning. Force and Motion for Teachers of Grades 6–8consists of five core sessions: Session 1: Motion Session 2: Change in Motion Session 3: Acceleration and Force Session 4: Force Session 5: Acceleration and Mass The materials include everything needed to effectively lead this course with ease: Facilitator Guide with extensive support materials and detailed procedures that allow staff developers to successfully lead a course Teacher Book with teaching, science, and literacy investigations, along with a follow-up component,Looking at Student Work™, designed to support ongoing professional learning communities CD with black line masters of all handouts and charts to support group discussion and sense making, course participation certificates, student work samples, and other materials that can be reproduced for use with teachers

Discussing standards, research, and more, these 30 probes help secondary teachers assess students' grasp of core mathematics concepts and modify their instruction to improve student achievement.

2014 Winner of the Distinguished Achievement Award from PreK-12 Learning Group, Association of American Publishers! What ideas do young children bring to their science learning, and how does their thinking change as they engage in "science talk"? Find out using the 25 field-tested probes in the newest volume of Page Keeley's bestselling Uncovering Student Ideas in Science series, the first targeted to grades K–2. This teacher-friendly book is: • Tailored to your needs. The content is geared specifically for the primary grades, with an emphasis on simple vocabulary as well as drawing and speaking (instead of writing). The format of the student pages uses minimal text and includes visual representations of familiar objects, phenomena, or ideas. • Focused on making your lessons more effective. The assessment probes engage youngsters and encourage "science talk" while letting you identify students' preconceptions before beginning a lesson or monitor their progress as they develop new scientific explanations. • Applicable to a range of science concepts. This volume offers 8 life science probes, 11 physical science probes, and 6 Earth and space science probes that target K–2 disciplinary core ideas. • Ready to use. The book provides grade-appropriate reproducible pages for your students and detailed teacher notes for you, including clear and concise explanations, relevant research, suggestions for instruction, and connections to national standards. Uncovering Student Ideas in Primary Science is an invaluable resource for classroom and preservice teachers and professional development providers. This age-appropriate book will help you teach more effectively by starting with students' ideas and adapting instruction to support conceptual change.