

Peter Sullivan Open Ended Questions

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KLEIN MICHAEL

Teaching with Tasks for Effective Mathematics Learning

John Wiley & Sons

Singapore Math creates a deep understanding of each key math concept, includes an introduction explaining the Singapore Math method, is a direct complement to the current textbooks used in Singapore, and includes step-by-step solutions in the answer key. Singapore Math, for students in grades 2 to 5, provides math practice while developing analytical and problem-solving skills. This series is correlated to Singapore Math textbooks and creates a deep understanding of each key math concept. Learning objectives are provided to identify what students should know after completing each unit, and assessments are included to ensure that learners obtain a thorough understanding of mathematical concepts. Perfect as a supplement to classroom work, these workbooks will boost confidence in problem-solving and critical-thinking skills!

Geometric Topology: Localization, Periodicity and Galois Symmetry Springer Science & Business Media

"Good Questions" - or open-ended questions - promote students' mathematical thinking, understanding, and proficiency. By asking careful, purposeful questions, teachers create dynamic learning environments, help students make sense of math, and unravel misconceptions. This valuable book includes a wide variety of good questions for classroom use and offers teachers tips on how to create open-ended questions of their own.

The Mediator's Toolkit OUP Oxford

Teachers recognise the importance of asking questions which promote higher level thinking and a variety of thinking strategies. "Open-ended Maths Activities" discusses a type of open-ended, problem-solving question called a 'good' question. Because these questions enhance learning, teaching and assessment they are a useful addition to a teacher's strategies. Part One sets out the features of 'good' questions, gives practical advice on how to create your own 'good' questions and shows you how to use them in the classroom. Part Two contains a selection of 'good' questions. They are clearly set out in three sections for each mathematical subject: upper, middle and junior.

More Good Questions Acer Press

Challenging Mathematical Tasks supports the idea that students learn best when they work on problems that they do not yet know how to solve. Peter Sullivan's research shows that many students do not fear challenges in mathematics, but welcome them. And rather than having teachers instruct them, these students prefer to work out solutions for themselves. Challenging Mathematical

Tasks: includes activities that allow for sustained thinking, decision-making and risk-taking by the students. Features a 'Learning Focus', 'Key Mathematical Language', 'Pedagogical Considerations', 'Enabling and Extending Prompts' for each task, plus 'Supplementary Tasks' and 'Possible Solutions' is written by a well-established expert in the field of teaching and learning mathematics. Follows a set structure to help students approach and work through the tasks. For a preview, see the Sample Pages tab.

Five Practices for Orchestrating Productive Mathematics Discussions University of Chicago Press

This book will teach you a new way to communicate which gets to the heart of things! By asking Clean Language questions to explore the metaphors which underpin a person's thinking, you can help people to change their lives in a way that intrinsically respects diversity and supports empowerment. Both you and they will gain profound new insights into what makes them tick. The approach was originally used to help clients to resolve deep trauma. It is now being used to get to the truth and to solve complex problems by some of the sharpest and most innovative people in the world - coaches, business people, educators, health professionals and many others.

Values and Valuing in Mathematics Education Dorling Kindersley Ltd

In this "must-read" guide (Lonnie Ali), four leading doctors and advocates offer a bold action plan to prevent, care for, and treat Parkinson's disease - one of the great health challenges of our time. Brain diseases are now the world's leading source of disability. The fastest growing of these is Parkinson's: the number of impacted patients has doubled to more than six million over the last twenty-five years and is projected to double again by 2040. Harmful pesticides that increase the risk of Parkinson's continue to proliferate, many people remain undiagnosed and untreated, research funding stagnates, and the most effective treatment is now a half century old. In *Ending Parkinson's Disease*, four top experts provide a plan to help prevent Parkinson's, improve care and treatment, and end the silence associated with this devastating disease.

Super Simple Maths Routledge

Open-Ended Maths Activities discusses the features of "good" mathematical questions. It provides practical advice on how teachers can create their own open-ended and problem-solving questions and use them effectively in the classroom.

Ending Parkinson's Disease Springer

Algebraic topology is a basic part of modern mathematics, and some knowledge of this area is indispensable for any advanced work relating to geometry, including topology itself, differential geometry, algebraic geometry, and Lie groups. This book provides a detailed treatment of algebraic topology both for teachers of

the subject and for advanced graduate students in mathematics either specializing in this area or continuing on to other fields. J. Peter May's approach reflects the enormous internal developments within algebraic topology over the past several decades, most of which are largely unknown to mathematicians in other fields. But he also retains the classical presentations of various topics where appropriate. Most chapters end with problems that further explore and refine the concepts presented. The final four chapters provide sketches of substantial areas of algebraic topology that are normally omitted from introductory texts, and the book concludes with a list of suggested readings for those interested in delving further into the field.

The Good Life Method Springer Science & Business Media
 Gottlob Frege (1848-1925) was unquestionably one of the most important philosophers of all time. He trained as a mathematician, and his work in philosophy started as an attempt to provide an explanation of the truths of arithmetic, but in the course of this attempt he not only founded modern logic but also had to address fundamental questions in the philosophy of language and philosophical logic. Frege is generally seen (along with Russell and Wittgenstein) as one of the fathers of the analytic method, which dominated philosophy in English-speaking countries for most of the twentieth century. His work is studied today not just for its historical importance but also because many of his ideas are still seen as relevant to current debates in the philosophies of logic, language, mathematics and the mind. The Cambridge Companion to Frege provides a route into this lively area of research.

Open-Ended Maths Activities Springer Science & Business Media

Most investment today is conducted by a relatively small number of institutional investors - pension funds and investment managers - who manage the pensions and saving funds of millions of ordinary people. The manner in which these institutional investors invest and discharge their responsibilities as the owners of companies is, therefore, of critical importance to society as a whole. In recent years, some of the biggest institutional investors have actively encouraged companies to improve their management of social, ethical and environmental issues. A number have also sought to explicitly analyse companies' performance on these issues and to incorporate this analysis into investment decision-making. These activities have contributed to important changes: a number of companies have committed to stabilising or reducing greenhouse gas emissions from their activities and operations, labour conditions in many retail supply chains have improved significantly, and many companies have significantly improved their governance of corporate responsibility issues. However, to date, there has been

little systematic analysis of fundamental questions such as: Do responsible investment strategies systematically result in improvements in the social, ethical and environmental performance of companies? To what extent is it in investors' interest to encourage higher standards of corporate responsibility? Do responsible investment strategies enhance financial performance for investors? In this ground-breaking collection, Rory Sullivan and Craig Mackenzie have brought together some of the leading practitioners and commentators in the field of responsible investment to explore these questions. The contributors to this book present their views on the practicalities of implementing responsible investment strategies, the outcomes that have been achieved, the practical issues and barriers faced in implementing such strategies, and the challenges to be faced if responsible investment is to become a mainstream investment approach. The results are both unique and surprising. This book will be mandatory reading for all those involved in the field of social and environmentally responsible investment, corporate governance and corporate social responsibility whether they be academics, researchers or practitioners.

[Too Much Lip Math Solutions](#)

Describes five practices for productive mathematics discussions, including anticipating, monitoring, selecting, sequencing, and connecting.

[Teaching Mathematics Springer](#)

A dark and funny new novel from the multi-award-winning author of Mullumbimby. Too much lip, her old problem from way back. And the older she got, the harder it seemed to get to swallow her opinions. The avalanche of bullshit in the world would drown her if she let it; the least she could do was raise her voice in anger. Wise-cracking Kerry Salter has spent a lifetime avoiding two things - her hometown and prison. But now her Pop is dying and she's an inch away from the lockup, so she heads south on a stolen Harley. Kerry plans to spend twenty-four hours, tops, over the border. She quickly discovers, though, that Bundjalung country has a funny way of grabbing on to people. Old family wounds open as the Salters fight to stop the development of their beloved river. And the unexpected arrival on the scene of a good-looking dugai fella intent on loving her up only adds more trouble - but then trouble is Kerry's middle name. Gritty and darkly hilarious, Too Much Lip offers redemption and forgiveness where none seems possible.

[A Concise Course in Algebraic Topology](#) Univ. of Queensland Press
The seminal 'MIT notes' of Dennis Sullivan were issued in June 1970 and were widely circulated at the time. The notes had a - jor influence on the development of both algebraic and geometric topology, pioneering the localization and completion of spaces in homotopy theory, including p-local, pro-finite and rational homotopy theory, leading to the solution of the Adams conjecture on the relationship between vector bundles and spherical fibrations, the formulation of the 'Sullivan conjecture' on the contractibility of the space of maps from the classifying space of a finite group to a finite dimensional CW complex, the action of the Galois group over \mathbb{Q} of the algebraic closure of \mathbb{Q} on smooth manifold structures in pro-finite homotopy theory, the K-theory orientation of PL manifolds and bundles. Some of this material has been already published by Sullivan himself: in an article in the Proceedings of the 1970 Nice ICM, and in the 1974 Annals of Mathematics papers Genetics of homotopy theory and the Adams conjecture and The transversality character- istic class and linking cycles in surgery theory. Many of the ideas originating in the notes have been the starting point of subsequent developments. However, the text itself retains a

unique flavour of its time, and of the range of Sullivan's ideas.

[Tasks in Primary Mathematics Teacher Education](#) Teachers College Press

Tasks in Primary Mathematics Teacher Education is intended to advance relevant research and innovative international practices in the preparation and professional development of mathematics teachers. Emerging from discussion at the ICMI study on teacher professional development, this volume, focused on primary and elementary teachers, culls a richness that can only be found by gathering wisdom from varied experiences around the world. The choice of tasks, and the associated pedagogies, is a key aspect of teaching and learning mathematics. Arguing that what students learn is largely defined by the tasks they are given, several major themes are presented. One such major strand, the form, function and focus of tasks, is discussed throughout several chapters, offering analysis, discussion of implementation, and exemplars of a broader category of illustrative techniques for developing critical understanding.

[Singapore Math, Grade 5 Math Solutions](#)

Leading Improvements in Mathematics Teaching and Learning provides a framework for a set of high-impact strategies that individually and together can be the focus of teacher professional learning, school improvement and student numeracy achievement.

[Open-Ended Maths Activities Springer](#)

The debate over whether class size matters for teaching and learning is one of the most enduring, and aggressive, in education research. Teachers often insist that small classes benefit their work. But many experts argue that evidence from research shows class size has little impact on pupil outcomes, so does not matter, and this dominant view has informed policymaking internationally. Here, the lead researchers on the world's biggest study into class size effects present a counter-argument. Through detailed analysis of the complex relations involved in the classroom they reveal the mechanisms that support teachers' experience, and conclude that class size matters very much indeed. Drawing on 20 years of systematic classroom observations, surveys of practitioners, detailed case studies and extensive reviews of research, Peter Blatchford and Anthony Russell contend that common ways of researching the impact of class size are limited and sometimes misguided. While class size may have no direct effect on pupil outcomes, it has, they say, significant force through interconnections with classroom processes. In describing these connections, the book opens up the everyday world of the classroom and shows that the influence of class size is everywhere. It impacts on teaching, grouping practices and classroom management, the quality of peer relations, tasks given to pupils, and on the time teachers have for marking, assessments and understanding the strengths and challenges for individual pupils. From their analysis, the authors develop a new social pedagogical model of how class size influences work, and identify policy conclusions and implications for teachers and schools.

[Good Questions for Math Teaching: Why Ask Them and What to Ask, Grades K-5, Second Edition](#) Crown House Publishing

This book is the result of a 25-year-old project and comprises a collection of more than 500 attractive open problems in the field. The largely self-contained chapters provide a broad overview of discrete geometry, along with historical details and the most important partial results related to these problems. This book is intended as a source book for both professional mathematicians and graduate students who love beautiful mathematical questions, are willing to spend sleepless nights thinking about them, and who would like to get involved in mathematical

research.

[Research Methodology](#) Penguin

We know that Differentiated Instruction (DI) helps all students to learn. Yet DI challenges teachers, and nowhere more than in mathematics. In this new book, written specifically for secondary mathematics teachers, the authors cut through the difficulties with two powerful and universal strategies that teachers can use across all math content: Open Questions and Parallel Tasks. Showing teachers how to get started and become expert with these strategies, this book also demonstrates how to use more inclusive learning conversations to promote broader student participation. Strategies and examples are organized around Big Ideas within the National Council of Teachers of Mathematics (NCTM) content strands. With particular emphasis on Algebra, chapters also address Number and Operations, Geometry, Measurement, and Data Analysis and Probability, with examples included for Pre-Calculus. To help teachers differentiate math instruction with less difficulty and greater success, this resource: Underscores the rationale for differentiating secondary math instruction. Provides specific examples for secondary math content. Describes two easy-to-implement strategies designed to overcome the most common DI problems that teachers encounter. Offers almost 300 questions and tasks that teachers and coaches can adopt immediately, adapt, or use as models to create their own, along with scaffolding and consolidating questions. Includes Teaching Tips sidebars and an organizing template at the end of each chapter to help teachers build new tasks and open questions. Shows how to create a more inclusive classroom learning community with mathematical talk that engages participants from all levels. PROFESSIONAL DEVELOPMENT: Visit Marian Small's website onetwoinfinity.ca for in-person and online professional development.

[Open Problems in Mathematics Springer](#)

Open-ended questions, coined 'good questions' by the authors, can prompt children to think creatively and critically. This useful book helps teachers define 'good questions' and offers teachers tips on how to create their own good questions, and presents a wide variety of sample questions that span 16 mathematical topics, including number, measurement, geometry, probability, and data.

[Rethinking Class Size: The complex story of impact on teaching and learning](#) Public Affairs

The goal in putting together this unique compilation was to present the current status of the solutions to some of the most essential open problems in pure and applied mathematics. Emphasis is also given to problems in interdisciplinary research for which mathematics plays a key role. This volume comprises highly selected contributions by some of the most eminent mathematicians in the international mathematical community on longstanding problems in very active domains of mathematical research. A joint preface by the two volume editors is followed by a personal farewell to John F. Nash, Jr. written by Michael Th. Rassias. An introduction by Mikhail Gromov highlights some of Nash's legendary mathematical achievements. The treatment in this book includes open problems in the following fields: algebraic geometry, number theory, analysis, discrete mathematics, PDEs, differential geometry, topology, K-theory, game theory, fluid mechanics, dynamical systems and ergodic theory, cryptography, theoretical computer science, and more. Extensive discussions surrounding the progress made for each problem are designed to reach a wide community of readers, from graduate students and established research mathematicians to physicists, computer scientists, economists, and research scientists who are looking to develop essential and modern new methods and theories to solve a variety of open problems.