

Mind The Gap Maths Literacy Grade 12documents2

Study & Master Mathematical Literacy Grade 10 has been especially developed by an experienced author team according to the Curriculum and Assessment Policy Statement (CAPS). This new and easy-to-use course helps learners to master essential content and skills in Mathematical Literacy. The Teacher's File includes: * a weekly teaching schedule, divided into the four terms to guide the teacher on what to teach * extra project templates for teachers to choose from * solutions to all the activities in the Learner's Book.

First released in the Spring of 1999, *How People Learn* has been expanded to show how the theories and insights from the original book can translate into actions and practice, now making a real connection between classroom activities and learning behavior. This edition includes far-reaching suggestions for research that could increase the impact that classroom teaching has on actual learning. Like the original edition, this book offers exciting new research about the mind and the brain that provides answers to a number of compelling questions. When do infants begin to learn? How do experts learn and how is this different from non-experts? What can teachers and schools do-with curricula, classroom settings, and teaching methods--to help children learn most effectively? New evidence from many branches of science has significantly added to our understanding of what it means to know, from the neural processes that occur during learning to the influence of culture on what people see and absorb. *How People Learn* examines these findings and their implications for what we teach, how we teach it, and how we assess what our children learn. The book uses exemplary teaching to illustrate how approaches based on what we now know result in in-depth learning. This new knowledge calls into question concepts and practices firmly entrenched in our current education system. Topics include: How learning actually changes the physical structure of the brain. How existing knowledge affects what people notice and how they learn. What the thought processes of experts tell us about how to teach. The amazing learning potential of infants. The relationship of classroom learning and everyday settings of community and workplace. Learning needs and opportunities for teachers. A realistic look at the role of technology in education.

Report Card 9 *The Children Left Behind* presents a first overview of inequalities in child well-being for 24 Member States of the Organisation for Economic Cooperation and Development. The Report Card focuses on the relative gap between children in the bottom of the distribution with those occupying the median. Three dimensions of well-being are examined: material, education, and health. In each case, the questions asked are: how far behind children are being allowed to fall, and why some countries are doing so much better at protecting their most vulnerable children.

This book presents the conceptual framework underlying the fifth cycle of PISA, which covers reading, science and this year's focus: mathematical literacy, along with problem solving and financial literacy.

This text explores the phenomenon of religious bullying as it manifests in two North American contexts and theorizes religious literacy as a viable school-based intervention to promote understanding of religious and non-religious difference. Using substantive, qualitative data from schools and communities in California and Quebec, *Teaching Religious Literacy to Combat Religious Bullying* examines the impact of mandatory religious literacy courses delivered in secondary schools and identifies curricula, teacher attitudes, training, and administrative support as key determinants of course impact. Drawing on Bronfenbrenner's social-ecological framework, the text then illustrates how the environmental factors both in and outside of the school considerably influence teacher and student attitudes to religious and non-religious traditions. Practical recommendations are made to combat overarching societal trends and religious discrimination within the classroom, and context is cited as key to an effective discussion on religious literacy more broadly. This text will benefit researchers, academics, and educators with an interest in religious literacy, religious education, the sociology of education, and those looking at the field of bullying and truancy more widely. Those interested in intersectionality, marginalized communities, secularism, and educational policy will also benefit from the volume.

Many teachers in regular classrooms feel unprepared to teach students with learning disabilities. Fortunately, brain research has confirmed that strategies benefiting learners with special challenges are suited for engaging and stimulating all learners. In this book, neurologist and classroom teacher Judy Willis explains that we can best help students by putting in place strategies, accommodations, and interventions that provide developmentally and academically appropriate challenges to suit the needs, gifts, and goals of each student. *Brain-Friendly Strategies for the Inclusion Classroom* will help teachers * Understand how the brain learns and the technologies that reveal this process. * Implement strategies that are compatible with students' individual learning styles and honor their multiple intelligences. * Improve the focus of students with attention disorders and help them gain the confidence and skills they need to develop goal-oriented behaviors. * Create an enriching learning environment by incorporating student-centered activities, discovery and hands-on learning experiences, cross-curricular learning, and multisensory lessons. * Implement strategic review, study, and test preparation strategies that will allow students to retain information and connect it with future learning. * Build safe, supportive classroom communities and raise class awareness and empathy for students with learning disabilities. It's time for teachers to lower the barriers, not the bar. Using strategies that align with research on how people's brains function, teachers can engage all students as individuals and help them reach their maximum potential with joy and confidence.

Learning to read is arguably the single most important educational challenge a child faces in the first years of schooling, setting a child up for future academic success and opportunities. However, it is estimated that one in six children experience literacy difficulties. This is the go-to book for psychologists, educationalists and other professionals wanting a deeper understanding of current thinking around dyslexia, reading comprehension difficulties, and related SpLDs. Drawing on six fictional case studies to illustrate her points, and using examples of good practice throughout, Valerie Muter unpacks the latest psychological theories and research on literacy disorders. She discusses the interconnections between underlying cognitive problems and learning and educational and behavioural issues, as well as the common co-occurrence of these conditions. This authoritative book also provides accessible guidance on making assessments and tailoring interventions within the home or school. Written by a lead thinker in the field, this is an essential evidence-based guide for those working with children with literacy difficulties and supporting them to achieve their full potential.

Engage students in mathematics using growth mindset techniques The most challenging parts of teaching mathematics are engaging students and helping them understand the connections

between mathematics concepts. In this volume, you'll find a collection of low floor, high ceiling tasks that will help you do just that, by looking at the big ideas at the first-grade level through visualization, play, and investigation. During their work with tens of thousands of teachers, authors Jo Boaler, Jen Munson, and Cathy Williams heard the same message—that they want to incorporate more brain science into their math instruction, but they need guidance in the techniques that work best to get across the concepts they needed to teach. So the authors designed Mindset Mathematics around the principle of active student engagement, with tasks that reflect the latest brain science on learning. Open, creative, and visual math tasks have been shown to improve student test scores, and more importantly change their relationship with mathematics and start believing in their own potential. The tasks in Mindset Mathematics reflect the lessons from brain science that: There is no such thing as a math person - anyone can learn mathematics to high levels. Mistakes, struggle and challenge are the most important times for brain growth. Speed is unimportant in mathematics. Mathematics is a visual and beautiful subject, and our brains want to think visually about mathematics. With engaging questions, open-ended tasks, and four-color visuals that will help kids get excited about mathematics, Mindset Mathematics is organized around nine big ideas which emphasize the connections within the Common Core State Standards (CCSS) and can be used with any current curriculum.

The Culturally Responsive Instruction Observation Protocol (CRIOP) is a framework for implementing culturally relevant literacy instruction and classroom observation. Drawing on research and theory reflecting a range of perspectives ? multicultural instruction, literacy theory, equity pedagogy, language and discourse models, sheltered instruction, critical pedagogy ? it provides a means for assessing the many variables of classroom literacy instruction and for guiding practitioners in their development as multicultural educators. Literacy for All Students Discusses issues in multicultural literacy instruction within the context of various essential instructional components (such as assessment, curriculum, parent collaboration) Provides a protocol for observing features of literacy instruction for culturally and linguistically diverse students Presents vignettes from real classrooms, written by elementary and middle school teachers, showing their victories and struggles as they attempt to implement a pedagogy that is culturally responsive within a climate of high stakes testing A highly effective instrument for assessing culturally responsive literacy instruction in schools, the CRIOP serves as a model for realizing a literacy that is both relevant and transformative.

Our pupils' success will be defined by their ability to read fluently and skilfully. But despite universal acceptance of reading's vital importance, the reading gap in our classroom remains, and it is linked to an array of factors, such as parental wealth, education and book ownership, as well as classroom practice. To close this gap, we need to ensure that every teacher has the knowledge and skill to teach reading with confidence. In *Closing the Reading Gap*, Alex Quigley explores the intriguing history and science of reading, synthesising the debates and presenting a wealth of usable evidence about how children develop most efficiently as successful readers. Offering practical strategies for teachers at every phase of their teaching career, as well as tackling issues such as dyslexia and the role of technology, the book helps teachers to be an expert in how pupils 'learn to read' as well as how they 'read to learn' and explores how reading is vital for unlocking a challenging academic curriculum for every student. With a focus on nurturing pupils' will and skill to read for pleasure and purpose, this essential volume provides practical solutions to help all teachers create a rich reading culture that will enable every student to thrive in school and far beyond the school gates.

This book, "Education Systems Around the World", is a collection of reviewed and relevant research chapters that offer a comprehensive overview of recent developments in the field of social sciences and humanities. The book comprises single chapters authored by various researchers and edited by an expert active in the field of social studies and humanities. All chapters are unique but are united under a common research study topic. This publication aims to provide a thorough overview of the latest research efforts by international authors on social studies and humanities, and open new possible research paths for further novel developments.

Study & Master Mathematical Literacy was developed with the help of practising teachers, and covers all the requirements of the National Curriculum Statement for Mathematical Literacy. Learner's Book: module openers, which clearly explain the outcomes key skills boxes, detailing the skills necessary to perform certain mathematical functions language skills activities, to assist in mastering the language of Mathematical Literacy assessment activities module reviews, which provide extra practice projects, which deal with issues related to the real world, and move learners beyond the confines of the classroom Teacher's Guide: an overview of the RNCS an introduction to outcomes-based education a detailed look at the Learning Outcomes and Assessment Standards for Mathematical Literacy, and how much time to allocate to each during the year information on managing assessment solutions to all the activities/exercises in the Learner's Book photocopiable assessment

Despite long-term and ongoing efforts to close the achievement gap between disadvantaged and advantaged students, low-income students continue to perform at considerably lower levels than their higher-income peers in reading and mathematics. Research has shown that students' skills and knowledge often deteriorate during the summer months, with low-income students facing the largest losses. Instruction during the summer has the potential to stop these losses and propel students toward higher achievement. A review of the literature on summer learning loss and summer learning programs, coupled with data from ongoing programs offered by districts and private providers across the United States, demonstrates the potential of summer programs to improve achievement as well as the challenges in creating and maintaining such programs. School districts and summer programming providers can benefit from the existing research and lessons learned by other programs in terms of developing strategies to maximize program effectiveness and quality, student participation, and strategic partnerships and funding. Recommendations for providers and policymakers address ways to mitigate barriers by capitalizing on a range of funding sources, engaging in long-term planning to ensure adequate attendance and hiring, and demonstrating positive student outcomes.

See a gap in understanding? Mine it to move your students forward. How good are you at exploiting students' mathematical mistakes? In this remarkable book, the authors remind us that student mistakes are not random, and when we take the time to "mine the gap," we can dispel misunderstandings before they take root. Included are 180 downloadable high-quality tasks, aligned to the standards and big ideas of grades 6–8 mathematics. Each task includes sample student work, commentary on strengths and gaps, and next instructional steps. Whether you use this bank of tasks for instruction or assessment, you will love how it helps you easily identify students' thinking and then follow up with instruction that brings clear, complete understanding. A series of Ofsted inspections on Army Apprenticeships conducted in 2013 rated the overall effectiveness as good. This was an improvement over the last inspection in 2009, rated as satisfactory (now called

'requires improvement'). Some 28 per cent of Army recruits were less than 18 years of age. Further information is needed on why the Army is so dependent on recruiting personnel under the age of 18 years compared to the other two Services, and whether steps are being taken to reduce this dependency. Of those recruited in 2012, 3.5 per cent of the Army were rated at entry level 2 for literacy (that of a 7 to 8 year old) and 39 per cent had a literacy level of an eleven year old. If as the MoD states, it has to recruit personnel at whatever level of attainment is available, then it should boost remedial action when recruitment entry standards are particularly low. In light of changes brought about by Future Force 2020, it may be that recruiting personnel with higher levels of attainment would better meet the future needs of the Armed Forces. Whilst the Committee recognises that some recruits may not be eager to take further academic exams, the MoD should encourage more recruits to undertake English and Maths GCSEs which would stand them in good stead for future employment. The MoD has carried out some useful pilot projects with paramedic training and should identify more potential projects to ensure that vital skills paid for by the MoD are not lost to the country

The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

In *Teaching with Poverty in Mind: What Being Poor Does to Kids' Brains and What Schools Can Do About It*, veteran educator and brain expert Eric Jensen takes an unflinching look at how poverty hurts children, families, and communities across the United States and demonstrates how schools can improve the academic achievement and life readiness of economically disadvantaged students. Jensen argues that although chronic exposure to poverty can result in detrimental changes to the brain, the brain's very ability to adapt from experience means that poor children can also experience emotional, social, and academic success. A brain that is susceptible to adverse environmental effects is equally susceptible to the positive effects of rich, balanced learning environments and caring relationships that build students' resilience, self-esteem, and character. Drawing from research, experience, and real school success stories, *Teaching with Poverty in Mind* reveals * What poverty is and how it affects students in school; * What drives change both at the macro level (within schools and districts) and at the micro level (inside a student's brain); * Effective strategies from those who have succeeded and ways to replicate those best practices at your own school; and * How to engage the resources necessary to make change happen. Too often, we talk about change while maintaining a culture of excuses. We can do better. Although no magic bullet can offset the grave challenges faced daily by disadvantaged children, this timely resource shines a spotlight on what matters most, providing an inspiring and practical guide for enriching the minds and lives of all your students.

This book provides a basis for designing frameworks and for identifying indicators, existing data sources and areas needing further research related to the use of technology in education.

Students learning math are expected to do more than just solve problems; they must also be able to demonstrate their thinking and share their ideas, both orally and in writing. As many classroom teachers have discovered, these can be challenging tasks for students. The good news is, mathematical communication can be taught and mastered. In *Teaching Students to Communicate Mathematically*, Laney Sammons provides practical assistance for K–8 classroom teachers. Drawing on her vast knowledge and experience as a classroom teacher, she covers the basics of effective mathematical communication and offers specific strategies for teaching students how to speak and write about math. Sammons also presents useful suggestions for helping students incorporate correct vocabulary and appropriate representations when presenting their mathematical ideas. This must-have resource will help you help your students improve their understanding of and their skill and confidence in mathematical communication.

Longlisted for the National Book Award New York Times Bestseller A former Wall Street quant sounds an alarm on the mathematical models that pervade modern life -- and threaten to rip apart our social fabric We live in the age of the algorithm. Increasingly, the decisions that affect our lives--where we go to school, whether we get a car loan, how much we pay for health insurance--are being made not by humans, but by mathematical models. In theory, this should lead to greater fairness: Everyone is judged according to the same rules, and bias is eliminated. But as Cathy O'Neil reveals in this urgent and necessary book, the opposite is true. The models being used today are opaque, unregulated, and uncontestable, even when they're wrong. Most troubling, they reinforce discrimination: If a poor student can't get a loan because a lending model deems him too risky (by virtue of his zip code), he's then cut off from the kind of education that could pull him out of poverty, and a vicious spiral ensues. Models are propping up the lucky and punishing the downtrodden, creating a "toxic cocktail for democracy." Welcome to the dark side of Big Data. Tracing the arc of a person's life, O'Neil exposes the black box models that shape our future, both as individuals and as a society. These "weapons of math destruction" score teachers and students, sort resumes, grant (or deny) loans, evaluate workers, target voters, set parole, and monitor our health. O'Neil calls on modelers to take more responsibility for their algorithms and on policy makers to regulate their use. But in the end, it's up to us to become more savvy about the models that govern our lives. This important book empowers us to ask the tough questions, uncover the truth, and demand change. -- Longlist for National Book Award (Non-Fiction) -- Goodreads, semi-finalist for the 2016 Goodreads Choice Awards (Science and Technology) -- Kirkus, Best Books of 2016 -- New York Times, 100 Notable Books of 2016 (Non-Fiction) -- The Guardian, Best Books of 2016 -- WBUR's "On Point," Best Books of 2016: Staff Picks -- Boston Globe, Best Books of 2016, Non-Fiction

As teachers grapple with the challenge of a new, bigger and more challenging school curriculum, at every key stage and phase, success can feel beyond our reach. But what if there were 50,000 small solutions to help us bridge that gap? In *Closing the Vocabulary Gap*, Alex Quigley explores the increased demands of an academic curriculum and how closing the vocabulary gap between our 'word poor' and 'word rich' students could prove the vital difference between school failure and success. This must-read book presents the case for teacher-led efforts to develop students' vocabulary and provides practical solutions for teachers across the curriculum, incorporating easy-to-use tools, resources and classroom activities. Grounded in the very best available evidence into reading development and vocabulary acquisition, *Closing the Vocabulary Gap* sets out to: help teachers understand the vital role of vocabulary in all learning; share what every teacher needs to know about reading (but was afraid to ask); unveil the intriguing history of words and exactly how they work; reveal the elusive secrets to achieve spelling success; provide strategies for vocabulary development for all teachers of every subject and phase. With engaging anecdotes from the author's extensive personal teaching experience woven throughout, as well as accessible summaries of relevant research, Alex Quigley has written an invaluable resource suitable for classroom teachers across all phases, literacy leaders and senior leadership teams who wish to close the vocabulary gap.

Too often, students who fail a grade or a course receive remediation that ends up widening rather than closing achievement gaps. According to veteran classroom teacher and educational consultant Suzy Pepper Rollins, the true answer to supporting struggling students lies in acceleration. In *Learning in the Fast Lane*, she lays out a plan of action that teachers can use to

immediately move underperforming students in the right direction and differentiate instruction for all learners—even those who excel academically. This essential guide identifies eight high-impact, research-based instructional approaches that will help you

- * Make standards and learning goals explicit to students.
- * Increase students' vocabulary—a key to their academic success.
- * Build students' motivation and self-efficacy so that they become active, optimistic participants in class.
- * Provide rich, timely feedback that enables students to improve when it counts.
- * Address skill and knowledge gaps within the context of new learning.

Students deserve no less than the most effective strategies available. These hands-on, ready-to-implement practices will enable you to provide all students with compelling, rigorous, and engaging learning experiences.

In this revolutionary book, a renowned computer scientist explains the importance of teaching children the basics of computing and how it can prepare them to succeed in the ever-evolving tech world. Computers have completely changed the way we teach children. We have Mindstorms to thank for that. In this book, pioneering computer scientist Seymour Papert uses the invention of LOGO, the first child-friendly programming language, to make the case for the value of teaching children with computers. Papert argues that children are more than capable of mastering computers, and that teaching computational processes like de-bugging in the classroom can change the way we learn everything else. He also shows that schools saturated with technology can actually improve socialization and interaction among students and between students and teachers. Technology changes every day, but the basic ways that computers can help us learn remain. For thousands of teachers and parents who have sought creative ways to help children learn with computers, Mindstorms is their bible.

Being an effective math educator is one part based on the quality of the tasks we give, one part how we diagnose what we see, and one part what we do with what we find. Yet with so many students and big concepts to cover, it can be hard to slow down enough to look for those moments when students' responses tell us what we need to know about next best steps. In this remarkable book, John SanGiovanni helps us value our students' misconceptions and incomplete understandings as much as their correct ones—because it's the gap in their understanding today that holds the secrets to planning tomorrow's best teaching. SanGiovanni lays out 180 high-quality tasks aligned to the standards and big ideas of Grades 3-5 mathematics, including addition and subtraction of multi-digit whole numbers, multiplication and division of single and multi-digit whole numbers, foundational fraction concepts, foundational decimal concepts, and operations with fractions and decimals. The tasks are all downloadable so you can use or modify them for instruction and assessment. Each big idea offers a starting task followed by: what makes it a high-quality task what you might anticipate before students work with the task 4 student examples of the completed task showcasing a distinct "gap" commentary on what precisely counts for mathematical understanding and the next instructional steps commentary on the misconception or incomplete understanding so you learn why the student veered off course three additional tasks aligned to the mathematics topic and ideas about what students might do with these additional tasks. It's time to break our habit of rushing into re-teaching for correctness and instead get curious about the space between right and wrong answers. Mine the Gap for Mathematical Understanding is a book you will return to again and again to get better at selecting tasks that will uncover students' reasoning—better at discerning the quality and clarity of students' understanding—and better at planning teaching based on the gaps you see.

Children are already learning at birth, and they develop and learn at a rapid pace in their early years. This provides a critical foundation for lifelong progress, and the adults who provide for the care and the education of young children bear a great responsibility for their health, development, and learning. Despite the fact that they share the same objective - to nurture young children and secure their future success - the various practitioners who contribute to the care and the education of children from birth through age 8 are not acknowledged as a workforce unified by the common knowledge and competencies needed to do their jobs well. Transforming the Workforce for Children Birth Through Age 8 explores the science of child development, particularly looking at implications for the professionals who work with children. This report examines the current capacities and practices of the workforce, the settings in which they work, the policies and infrastructure that set qualifications and provide professional learning, and the government agencies and other funders who support and oversee these systems. This book then makes recommendations to improve the quality of professional practice and the practice environment for care and education professionals. These detailed recommendations create a blueprint for action that builds on a unifying foundation of child development and early learning, shared knowledge and competencies for care and education professionals, and principles for effective professional learning. Young children thrive and learn best when they have secure, positive relationships with adults who are knowledgeable about how to support their development and learning and are responsive to their individual progress. Transforming the Workforce for Children Birth Through Age 8 offers guidance on system changes to improve the quality of professional practice, specific actions to improve professional learning systems and workforce development, and research to continue to build the knowledge base in ways that will directly advance and inform future actions. The recommendations of this book provide an opportunity to improve the quality of the care and the education that children receive, and ultimately improve outcomes for children.

This book presents all the publicly available questions from the PISA surveys. Some of these questions were used in the PISA 2000, 2003 and 2006 surveys and others were used in developing and trying out the assessment.

The Confident Teacher offers a practical, step-by-step guide to developing the habits, characteristics and pedagogy that will enable you to do the best job possible. It unveils the tacit knowledge of great teachers and combines it with respected research and popular psychology. Covering topics such as organisation, using your body language effectively, combatting stress, managing student behaviour, questioning and feedback, and developing confident students, it shows how you can build the confidence and skill to flourish in the classroom. This book will be an essential resource for all qualified and trainee teachers wanting to reach their full potential in this challenging but rewarding profession.

Visit the author's own website here! Children's Mathematics Network 'In Case Study 5 (a grassroots 'Children's Mathematics Network group') the initiative supported the participants in their professional change by giving them a space for the detailed and joint consideration of children's mathematical thinking. Another significant feature of this initiative is its focus on careful consideration and analysis of children's mathematics, and the ways in which professionals can support and encourage the children's mathematical thinking and reasoning... The standard of the mathematical understanding, thinking and reasoning that the displays revealed was far higher than the specified curriculum objectives for children of this age...' - Researching Effective CPD in Mathematics Education (RECME) project: (NCETM, 2009) 'The review also plays great score by play-based learning of a mathematical nature, and makes specific recommendations

regarding early mark-making as a precursor to abstract mathematical symbolism'. Section 115 features children's mathematical graphics and emphasises: 'The role of mark-making in children's cognitive development is set out in the taxonomy (Carruthers and Worthington, 2006)'. The report recommends that 'local authorities, leaders, managers and head teachers should provide a culture with a significant focus on mathematical mark-making' and 'a learning environment that encourages children to choose to use their own mathematical graphics to support their mathematical thinking and processes' - The Williams Maths Review: (DCSF, 2008) `At the very heart of the success of the book is the authors' ability to see mathematics through young children's eyes by listening to and reflecting on the constant efforts made by children to make sense of their world. This is a liberating book which proposes that the teaching of mathematics could and should be a highly creative and enjoyable process' - Branwen Llewelyn Jones, Early Years Consultant at PACE Ltd / TACTYC 'Ground breaking... To single out any one chapter would be unfair because there is something thought-provoking and inspirational throughout. If you want to expand your understanding upwards and outwards then get a copy soon' - Times Educational Supplement 'I first read Children's Mathematics, Making Marks, Making Meaning a couple of years ago and it had an immediate impact on my own thinking and teaching, and the work I do with trainee teachers. I'm sure you will find it compelling reading too. I think it has the potential to change, in a fundamental way, how we think about early mathematical development' - Lynne McClure, Editor, Math Co-ordinator's File, Mathematics Association 'In their exceptionally readable and informative book, Children's Mathematics, Making Marks, Making Meaning Carruthers and Worthington (2006) draw attention to one of the main goals of early years teaching, that is, to help children make links between the mathematics they have already encountered (and continue to engage with) at home and the more abstract mathematics of the school. These authors suggest that by encouraging children to represent mathematical ideas in their own ways and, crucially, by talking to the pupils about the marks they have made, we are given a "window" onto their thinking that may otherwise be inaccessible' - Liz Pumphrey, NRICH This book draws on the authors' many years of teaching children aged three to eight years and also on their extensive research with children in the home, nursery and school. The authors explain the development and range of young children's mathematical marks and visual representations, showing how children make mental connections between their own early marks and subsequent abstract mathematical symbolism, and go on to develop their own written methods. Combining theory and practice, this acclaimed book demonstrates how children's own mathematical graphics are highly creative and show deep levels of thinking. The authors show how this is the key to success in school mathematics and to higher levels of achievement. The authors are winners of TACTYC's (2003) Jenefer Joseph Award for the Creative Arts (3 - 8) - awarded for their innovative work with children on mathematical graphics.

'Splendid and necessary' - Henry Marsh, author of Do No Harm, New Statesman There are dramatic differences in health between countries and within countries. But this is not a simple matter of rich and poor. A poor man in Glasgow is rich compared to the average Indian, but the Glaswegian's life expectancy is 8 years shorter. The Indian is dying of infectious disease linked to his poverty; the Glaswegian of violent death, suicide, heart disease linked to a rich country's version of disadvantage. In all countries, people at relative social disadvantage suffer health disadvantage, dramatically so. Within countries, the higher the social status of individuals the better is their health. These health inequalities defy usual explanations. Conventional approaches to improving health have emphasised access to technical solutions – improved medical care, sanitation, and control of disease vectors; or behaviours – smoking, drinking – obesity, linked to diabetes, heart disease and cancer. These approaches only go so far. Creating the conditions for people to lead flourishing lives, and thus empowering individuals and communities, is key to reduction of health inequalities. In addition to the scale of material success, your position in the social hierarchy also directly affects your health, the higher you are on the social scale, the longer you will live and the better your health will be. As people change rank, so their health risk changes. What makes these health inequalities unjust is that evidence from round the world shows we know what to do to make them smaller. This new evidence is compelling. It has the potential to change radically the way we think about health, and indeed society.

An engineering professor who started out doing poorly in mathematical and technical subjects in school offers tools, tips and techniques to learning the creative and analytical thought processes that will lead to achievement in math and science. Original.

Learn how to work more effectively with K–5 parents to increase student achievement in math and literacy. Research shows that parent involvement in schools leads to higher test scores and more engaged and enthusiastic students, but it isn't always easy for teachers to bridge the gap between the home and the school. This insightful book provides helpful, research-based strategies to foster meaningful home–school partnerships and overcome the challenges teachers often face when trying to build relationships with parents. You'll learn new ways to: Promote parent involvement at home and school; Share specific math and literacy strategies with parents to reinforce children's learning; Plan and organize effective parent conferences that foster true dialogue about a child's education; Communicate with parents about what you're teaching and how you're teaching it, so they can actively contribute to their child's learning at home; Develop family nights and workshops to get parents involved in learning at school; Recommend games, activities, and projects that parents can use at home to help their children practice math and literacy skills; And much more! Each chapter is full of practical tools such as Common Core-aligned strategies, useful resources for parents, and sample parent letters that you can use to increase and improve your home–school communications. Bonus: Additional parent letters on a variety of topics are available on our website, www.routledge.com/9781138998698, to help you keep parents connected throughout the year.

Being an effective math educator is one part based on the quality of the tasks we give, one part how we diagnose what we see, and one part what we do with what we find. Yet with so many students and big concepts to cover, it can be hard to slow down enough to look for those moments when students' responses tell us what we need to know about next best steps. In this remarkable book, John SanGiovanni helps us value our young learners' misconceptions and incomplete understandings as much as their correct ones—because it's the gap in their understanding today that holds the secrets to planning tomorrow's best teaching. SanGiovanni lays out 160 high-quality tasks aligned to the standards and big ideas of grades K-2 mathematics, including counting and representing numbers, number relationships and comparison, addition and subtraction within 100 and 1000, money and time, and multiplication and division. The tasks are all downloadable so you can use or modify them for instruction and assessment. Each big idea offers a starting task followed by: what makes it a high-quality task what you might anticipate before students work with the task 4 student examples of the completed task showcasing a distinct "gap" commentary on what precisely counts for mathematical understanding and the next instructional steps commentary on the misconception or incomplete understanding so you learn why the student veered off course three additional tasks aligned to the mathematics topic and ideas about what students might do with these additional tasks. It's time to break our habit of rushing into re-teaching for correctness and instead get curious about the space between right and wrong answers. Mine the Gap for Mathematical Understanding is a book you will return to again and again to get better at selecting tasks that will uncover students' reasoning—better at discerning the quality and clarity of students' understanding—and better at planning teaching based on the gaps you see.

On publication in 2009 John Hattie's Visible Learning presented the biggest ever collection of research into what actually work in schools to improve children's learning. Not what was fashionable, not what

political and educational vested interests wanted to champion, but what actually produced the best results in terms of improving learning and educational outcomes. It became an instant bestseller and was described by the TES as revealing education's 'holy grail'. Now in this latest book, John Hattie has joined forces with cognitive psychologist Greg Yates to build on the original data and legacy of the Visible Learning project, showing how it's underlying ideas and the cutting edge of cognitive science can form a powerful and complimentary framework for shaping learning in the classroom and beyond. Visible Learning and the Science of How We Learn explains the major principles and strategies of learning, outlining why it can be so hard sometimes, and yet easy on other occasions. Aimed at teachers and students, it is written in an accessible and engaging style and can be read cover to cover, or used on a chapter-by-chapter basis for essay writing or staff development. The book is structured in three parts – 'learning within classrooms', 'learning foundations', which explains the cognitive building blocks of knowledge acquisition and 'know thyself' which explores, confidence and self-knowledge. It also features extensive interactive appendices containing study guide questions to encourage critical thinking, annotated bibliographic entries with recommendations for further reading, links to relevant websites and YouTube clips. Throughout, the authors draw upon the latest international research into how the learning process works and how to maximise impact on students, covering such topics as: teacher personality; expertise and teacher-student relationships; how knowledge is stored and the impact of cognitive load; thinking fast and thinking slow; the psychology of self-control; the role of conversation at school and at home; invisible gorillas and the IKEA effect; digital native theory; myths and fallacies about how people learn. This fascinating book is aimed at any student, teacher or parent requiring an up-to-date commentary on how research into human learning processes can inform our teaching and what goes on in our schools. It takes a broad sweep through findings stemming mainly from social and cognitive psychology and presents them in a useable format for students and teachers at all levels, from preschool to tertiary training institutes.

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