

A Guide To Developing Mathematics Skills In The Adult

Developing number concepts (grades prep-2)
:DS21882.

Reflecting the World: A Guide to Incorporating Equity in Mathematics Teacher Education is a guide for mathematics teacher educators interested in incorporating equity concerns into their teaching. The book draws on the authors' research and experience integrating issues of equity, diversity, and social justice into their work as mathematics teacher educators of preservice and inservice preK-9 teachers. Reflecting the World includes both a framework for integrating issues of equity into mathematics teacher education courses and professional development and example lessons. The lessons are organized by content area and include guidance for using them effectively. Elementary and middle grades pre-service teachers are often uncomfortable with mathematics, uncertain about their ability to teach it, and unsure of how it connects to the real world. For many preservice teachers a focus on the real world—and in particular on issues of equity, diversity, and social justice—is more engaging than their past experiences with mathematics and can help lessen their mathematical anxieties. Reflecting the World will assist teacher educators in designing and teaching mathematics content and

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methods courses in ways that support future teachers to see the relevance of mathematics to our world and in becoming critical, questioning citizens in an increasingly mathematical world. The book provides a set of tools for helping future teachers connect mathematics to the lives, interests, and political realities of an increasingly diverse student body, and in doing so it provides a meaningful answer to the question, “when will I ever use this?”

Build student success in math with the only comprehensive parent and teacher guide for developing math talent among advanced learners. The authors, nationally recognized math education experts, offer a focused look at educating gifted and talented students for success in math. More than just a guidebook for educators and parents, this book offers a comprehensive approach to mathematics education for gifted students of elementary or middle school age. The authors provide concrete suggestions for identifying mathematically talented students, tools for instructional planning, and specific programming approaches. *Developing Math Talent* features topics such as: strategies for identifying mathematically gifted learners, strategies for advocating for gifted children with math talent, how to design a systematic math education program for gifted students, specific curricula and materials that support success, and teaching strategies and approaches that encourage and challenge gifted

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learners. The book also includes an extensive listing of both print and Internet resources that support math education for talented children. Additionally, the authors include an entire section featuring exemplary sets of challenging math problems for gifted students.

The classic guide for designing robust science and mathematics professional development programs! This expanded edition of one of the most widely cited resources in the field of professional development for mathematics and science educators demonstrates how to design professional development experiences for teachers that lead to improved student learning. Presenting an updated professional development (PD) planning framework, the third edition of the bestseller reflects recent research on PD design, underscores how beliefs and local factors can influence PD design, illustrates a wide range of PD strategies, and emphasizes the importance of:

- Continuous program monitoring
- Combining strategies to address diverse needs
- Building cultures that sustain learning

Discover how math applies to science, art, music, daily life, and more! Apply what you're learning outside a textbook, and see God's handiwork in math! Focus is on multiplication, division, fractions, decimals, ratios, percentages, shapes, basic geometry, and more! Math is a real-life tool that points us to God and helps us explore His creation,

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yet it often comes across as dry facts and meaningless rules. Here at last is a curriculum that has a biblical worldview integrated throughout the text and problems, not just added as an afterthought. Students don't just learn how to manipulate numbers on paper, but starting with arithmetic and laying the groundwork for geometry and algebra (covered in year 2), this curriculum both firms up the foundational concepts and prepares students for upper-level math in a logical, step-by-step way that helps students understand concepts, build problem-solving skills, and see how different aspects of math connect.

Your game plan for unlocking mathematics by focusing on students' strengths. What if instead of focusing on what students haven't mastered, we identify their mathematical strengths and build on students' points of power? Beth McCord Kobett and Karen S. Karp highlight five key teaching turnarounds are presented: identify teaching strengths, leverage students' strengths, design instruction from a strengths-based perspective, help students identify their points of power, and promote strengths in the school community. Each chapter provides opportunities to reflect and transfer practice while also sharing

- Downloadable resources, activities, and tools
- Examples of student work within Grades K–6
- Real teachers' notes and reflections for discussion

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Essential guide for teaching children aged 3-7, developing knowledge of key mathematical ideas and concepts in the nursery and primary classroom. Through an exciting multimedia format, Teaching Preschool and Kindergarten Math takes you into an early childhood classroom for a seeing is believing look at how to create a focused, successful mathematics program while simultaneously deepening your knowledge of the mathematical ideas that need to be developed at an early age. The demands of the CCSS require students to have a stronger grounding in math concepts in early childhood is the most powerful predictor of later learning. These factors and more make Teaching Preschool and Kindergarten Math an essential go-to resource for the teaching and learning of early childhood mathematics. 50-minutes DVD
Reproducibles 368 pages

A schoolwide solution for mathematics success! When “rules” seem to change from year to year, mathematics can seem like a disconnected mystery for students. Clear up the confusion with a Mathematics Whole-School Agreement! Expanded from the highly popular “Rules that Expire” series of NCTM articles, this essential guide leads educators through the collaborative step-by-step process of establishing a coherent and consistent learner-centered and equitable approach to mathematics instruction. You’ll learn to avoid “rules that

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expire”—tricks that may seem to help students in one grade but hurt in the long run. Features include · Abundant grade-specific examples · Effective working plans for sustainability · Barrier-busting tips, to-dos, and try-it-outs · PLC prompts and discussion points

The Math in Practice series supports teachers, administrators, and entire school communities as they rethink the teaching of mathematics in grades K-5. The series contains a Teacher's Guide, Administrator's Guide, and grade level books for grades K-5 which provide lesson ideas, teaching tips, and practice activities. --

Developing Mathematical Thinking A Guide to Rethinking the Mathematics Classroom Rowman & Littlefield

Written by three noted mathematics educators, this volume presents a process-based approach to building a high-quality mathematics program based on five NCTM principles and four NCSM leadership principles.

This key resource for K–12 educators offers a systematic guide to delivering Tier 2 and 3 math interventions within a multi-tiered system of support. The volume explains critical math areas in which many students have difficulty--early numeracy, time and money measurement, number combinations, fractions, word-problem solving, algebra, and more. Leading experts describe relevant standards and

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show how to use data-based individualization to plan, monitor, and intensify instruction in each area. Beginning with bulleted guiding questions, chapters feature a wealth of evidence-based intervention strategies, lesson-planning ideas, and case examples. Reproducible instructional activities and planning forms can be downloaded and printed in a convenient 8 1/2" x 11" size.

Shows K-6 teachers how to teach math using writing and reading lessons and activities in accordance with NCTM standard #2, math-as-communication. Includes classroom examples, lessons, activities, and stories for teachers to show how everyday language skills can transfer to math learning. Illustrates how to make writing a meaningful part of cognitive as well as affective development, how to use reading and writing in assessment of math skills, and how to make reading-math assignments more meaningful.

Rich tasks, collaborative work, number talks, problem-based learning, direct instruction...with so many possible approaches, how do we know which ones work the best? In *Visible Learning for Mathematics*, six acclaimed educators assert it's not about which one—it's about when—and show you how to design high-impact instruction so all students demonstrate more than a year's worth of mathematics learning for a year spent in school. That's a high bar, but with the amazing K-12

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framework here, you choose the right approach at the right time, depending upon where learners are within three phases of learning: surface, deep, and transfer. This results in “visible” learning because the effect is tangible. The framework is forged out of current research in mathematics combined with John Hattie’s synthesis of more than 15 years of education research involving 300 million students. Chapter by chapter, and equipped with video clips, planning tools, rubrics, and templates, you get the inside track on which instructional strategies to use at each phase of the learning cycle: Surface learning phase: When—through carefully constructed experiences—students explore new concepts and make connections to procedural skills and vocabulary that give shape to developing conceptual understandings. Deep learning phase: When—through the solving of rich high-cognitive tasks and rigorous discussion—students make connections among conceptual ideas, form mathematical generalizations, and apply and practice procedural skills with fluency. Transfer phase: When students can independently think through more complex mathematics, and can plan, investigate, and elaborate as they apply what they know to new mathematical situations. To equip students for higher-level mathematics learning, we have to be clear about where students are, where they need to go, and what it looks like when they get

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there. Visible Learning for Math brings about powerful, precision teaching for K-12 through intentionally designed guided, collaborative, and independent learning.

A thinking student is an engaged student Teachers often find it difficult to implement lessons that help students go beyond rote memorization and repetitive calculations. In fact, institutional norms and habits that permeate all classrooms can actually be enabling "non-thinking" student behavior. Sparked by observing teachers struggle to implement rich mathematics tasks to engage students in deep thinking, Peter Liljedahl has translated his 15 years of research into this practical guide on how to move toward a thinking classroom. *Building Thinking Classrooms in Mathematics, Grades K–12* helps teachers implement 14 optimal practices for thinking that create an ideal setting for deep mathematics learning to occur. This guide Provides the what, why, and how of each practice and answers teachers' most frequently asked questions Includes firsthand accounts of how these practices foster thinking through teacher and student interviews and student work samples Offers a plethora of macro moves, micro moves, and rich tasks to get started Organizes the 14 practices into four toolkits that can be implemented in order and built on throughout the year When combined, these unique research-based practices create the optimal conditions for learner-

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centered, student-owned deep mathematical thinking and learning, and have the power to transform mathematics classrooms like never before.

A mathematics professional development program for inclusive classrooms This professional development program shows general and special education teachers how to collaborate to provide a high-quality, standards-based mathematics education to all students, including those with disabilities. This book includes the handouts and reproducibles for the program. The corresponding kit includes a facilitator's guide and a companion DVD. TheMath for All learning experiences help teachers: Assess students' strengths and needs Use multiple instructional strategies to teach specific math concepts Tailor lessons based on individual students' strengths and needs to help them achieve high-quality learning outcomes in mathematics

An accessible guide to developing intuition and skills for solving mathematical problems in the physical sciences and engineering Equations play a central role in problem solving across various fields of study. Understanding what an equation means is an essential step toward forming an effective strategy to solve it, and it also lays the foundation for a more successful and fulfilling work experience. Thinking About Equations provides an accessible guide to developing an intuitive understanding of mathematical methods and, at the same time, presents a number of practical mathematical tools for successfully solving problems that arise in engineering and the physical sciences. Equations form the basis for nearly all numerical solutions, and the authors illustrate how a firm understanding of problem solving can lead to improved strategies for computational approaches. Eight succinct chapters provide thorough topical coverage, including: Approximation and estimation Isolating important

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variables Generalization and special cases Dimensional analysis and scaling Pictorial methods and graphical solutions Symmetry to simplify equations Each chapter contains a general discussion that is integrated with worked-out problems from various fields of study, including physics, engineering, applied mathematics, and physical chemistry. These examples illustrate the mathematical concepts and techniques that are frequently encountered when solving problems. To accelerate learning, the worked example problems are grouped by the equation-related concepts that they illustrate as opposed to subfields within science and mathematics, as in conventional treatments. In addition, each problem is accompanied by a comprehensive solution, explanation, and commentary, and numerous exercises at the end of each chapter provide an opportunity to test comprehension. Requiring only a working knowledge of basic calculus and introductory physics, *Thinking About Equations* is an excellent supplement for courses in engineering and the physical sciences at the upper-undergraduate and graduate levels. It is also a valuable reference for researchers, practitioners, and educators in all branches of engineering, physics, chemistry, biophysics, and other related fields who encounter mathematical problems in their day-to-day work.

This guide provides the practical tips and tools educators need to help their mathematically promising students develop their potential to the fullest.

Use the powerful strategies of play and storytelling to help young children develop their "math brains." This easy-to-use resource includes fun activities, routines, and games inspired by children's books that challenge children to recognize and think more logically about the math all around them.

Get them talking: Your formula for bringing math concepts to life! Want your middle schoolers to intelligently engage with

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mathematical ideas? Ready to help them construct and critique viable arguments that meet tough Standards for Mathematical Practice 3 standards? Look no further. This research-based gem will help you foster the critical reasoning and argumentation skills every student needs for intelligent discourse within our modern society. Learn how to bring mathematical argumentation alive in your classroom—all within a thoroughly explained four-part model that covers generating cases, conjecturing, justifying, and concluding. Filled with content-focused and classroom-ready games, activities, vignettes, sample tasks, and links to online tools and a rich companion website, this innovative guide will help you

Immediately engage students in fun, classroom-ready argumentation activities
Plan lessons that foster lively, content-driven, viable argumentation
Help students explore mathematical ideas and take ownership of their learning
Facilitate deep mathematical understanding
Promote students' precise use of mathematical language to construct, justify, and critique mathematical ideas and mathematical statements or the arguments of others.
Encourage logical, clear connections between abstract ideas for enhanced 21st century skills
This guide delivers all the tools you need to get serious about mathematical argumentation and bring well-planned, well-constructed mathematical discourse to life in your classroom today!

Learn how to help K–8 students who struggle in math. This book provides a variety of clear, practical strategies that can be implemented right away to boost student achievement. You will find out how to design lessons that work with struggling learners, implement the recommendations for math intervention from the What Works Clearinghouse, use praise and self-motivation more effectively, develop number sense and computational fluency, teach whole numbers and fractions, increase students' problem-solving abilities, and

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more! Extensive examples are provided for each strategy, as well as lesson plans, games, and resources.

Build student success in math with the only comprehensive guide for developing math talent among advanced learners. The authors, nationally recognized math education experts, offer a focused look at educating gifted and talented students for success in math. More than just a guidebook for educators, this book offers a comprehensive approach to mathematics education for gifted students of elementary or middle school age. The authors provide concrete suggestions for identifying mathematically talented students, tools for instructional planning, and specific programming approaches. *Developing Math Talent* features topics such as strategies for identifying mathematically gifted learners, strategies for advocating for gifted children with math talent, how to design a systematic math education program for gifted students, specific curricula and materials that support success, and teaching strategies and approaches that encourage and challenge gifted learners.

Results from national and international assessments indicate that school children in the United States are not learning mathematics well enough. Many students cannot correctly apply computational algorithms to solve problems. Their understanding and use of decimals and fractions are especially weak. Indeed, helping all children succeed in mathematics is an imperative national goal. However, for our youth to succeed, we need to change how we're teaching this discipline. *Helping Children Learn Mathematics* provides comprehensive and reliable information that will guide efforts to improve school mathematics from pre--kindergarten through eighth grade. The authors explain the five strands of mathematical proficiency and discuss the major changes that need to be made in mathematics instruction, instructional materials, assessments, teacher education, and the broader

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educational system and answers some of the frequently asked questions when it comes to mathematics instruction. The book concludes by providing recommended actions for parents and caregivers, teachers, administrators, and policy makers, stressing the importance that everyone work together to ensure a mathematically literate society.

Following the great success of the earlier books, this fourth book in the Mathematics Recovery series equips teachers with detailed pedagogical knowledge and resources for teaching number to 7 to 11-year olds. Drawing on extensive programs of research, curriculum development, and teacher development, the book offers a coherent, up-to-date approach emphasizing computational fluency and the progressive development of students' mathematical sophistication. The book is organized in key domains of number instruction, including structuring numbers 1 to 20, knowledge of number words and numerals, conceptual place value, mental computation, written computation methods, fractions, and early algebraic reasoning. Features include: " fine-grained progressions of instruction within each domain; " detailed descriptions of students' strategies and difficulties; " assessment tasks with notes on students' responses; " classroom-ready instructional activities; " an accompanying CD with extensive instructional resources. This book is designed for classroom and intervention teachers, special education teachers and classroom assistants. The book is an invaluable resource for mathematics advisors and coaches, learning support staff, numeracy consultants, curriculum developers, teacher educators and

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researchers.

Supercedes MA K-091 and MA K-258. Intended as a "toolkit" of suggestions and examples for developing Mathematics programs. Presents mission, philosophy, core beliefs, and key questions. Framework section delineates recommended K-12 program goals, content standards, grade cluster performance tasks and experiences, prototype assessments, and samples of student work by grade cluster, K-4, 5-8, 9-12 for ten strands: Number Sense; Operations; Estimation and Approximation; Ratios, Proportions and Percents; Measurement; Spatial Relationships and Geometry; Probability and Statistics; Patterns; Algebra and Functions; Discrete Mathematics. Chapter on Program Delivery Standards describes program components including: curriculum, instructional materials and technology, time, connections, assessment, professional interaction and development, grouping and tracking, remedial assistance and support alignment. Curriculum Development section includes: key issues and trends, assessing needs, philosophy, goals, identifying resource materials and assessment items / instruments, program implementation. Addresses common and controversial issues. Appendices include: Excerpts from SCANS Report, Tests, NCTM Position Statement, Profile of Equitable Classroom and Teacher.

Three mice make a variety of things out of different shapes as they hide from a scary cat.

Banish math anxiety and give students of all ages a clear roadmap to success Mathematical Mindsets provides practical strategies and activities to help teachers and

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parents show all children, even those who are convinced that they are bad at math, that they can enjoy and succeed in math. Jo Boaler—Stanford researcher, professor of math education, and expert on math learning—has studied why students don't like math and often fail in math classes. She's followed thousands of students through middle and high schools to study how they learn and to find the most effective ways to unleash the math potential in all students. There is a clear gap between what research has shown to work in teaching math and what happens in schools and at home. This book bridges that gap by turning research findings into practical activities and advice. Boaler translates Carol Dweck's concept of 'mindset' into math teaching and parenting strategies, showing how students can go from self-doubt to strong self-confidence, which is so important to math learning. Boaler reveals the steps that must be taken by schools and parents to improve math education for all.

Mathematical Mindsets: Explains how the brain processes mathematics learning Reveals how to turn mistakes and struggles into valuable learning experiences Provides examples of rich mathematical activities to replace rote learning Explains ways to give students a positive math mindset Gives examples of how assessment and grading policies need to change to support real understanding Scores of students hate and fear math, so they end up leaving school without an understanding of basic mathematical concepts. Their evasion and departure hinders math-related pathways and STEM career opportunities. Research has shown very clear methods to change this phenomena, but the

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information has been confined to research journals—until now. *Mathematical Mindsets* provides a proven, practical roadmap to mathematics success for any student at any age.

When Mouse and Elephant decide to go on the seesaw, Mouse needs a lot of help from other animals before they can go up and down.

In this country we have done a poor job of helping students come to see the wonder, beauty and power of mathematics. Standards can be brought into the picture, but unless we think about what it means to truly engage students in mathematics we will continue to be unsuccessful. The goal of this book is to begin to change the way students experience mathematics in the middle and high school classrooms. In this book you will find a theoretical basis for this approach to teaching mathematics, multiple guides and questions for teachers to think about in relation to their everyday teaching, and over 30 examples of problems, lessons, tasks, and projects that been used effectively with urban students. This practical, engaging book explores the fundamentals of pedagogy and the unique challenges of teaching undergraduate mathematics not commonly addressed in most education literature. Professor and mathematician, Suzanne Kelton offers a straightforward framework for new faculty and graduate students to establish their individual preferences for course policy and content exposition, while alerting them to potential pitfalls. The book discusses the running of day-to-day class meetings and offers specific strategies to improve learning and retention, as well as concrete examples and effective

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tools for class discussion that draw from a variety of commonly taught undergraduate mathematics courses. Kelton also offers readers a structured approach to evaluating and honing their own teaching skills, as well as utilizing peer and student evaluations. Offering an engaging and clearly written approach designed specifically for mathematicians, *A Beginner's Guide to Teaching Mathematics in the Undergraduate Classroom* offers an artful introduction to teaching undergraduate mathematics in universities and community colleges. This text will be useful for new instructors, faculty, and graduate teaching assistants alike.

Do you cringe when a student declares "cross multiply!" as soon as they see a problem involving fractions? It doesn't matter whether you teach elementary or high school, whether you're a parent or a tutor, having a student yell out a trick without stopping to think is painful. This book is filled with alternatives to the shortcuts so prevalent in mathematics education and explains exactly why the tricks are so bad for understanding math.

Mastery in Primary Mathematics contains clear, practical guidance for both teachers and leaders on how to implement a mastery approach in the classroom that transcends any particular context, school type or scheme currently being used. Filled with research-based evidence, case studies and concrete examples of teaching for mastery used successfully, this is the ideal toolkit to implementing a mastery approach across a school, regardless of expertise. Moulding pupils into confident and successful mathematicians is one of the most important jobs of a primary school. It can also be one of the most difficult. Teaching for mastery gives pupils the best possible understanding of mathematics and implementing it

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involves a two-pronged approach: mastery must be embedded in the classroom, but will only work with the full support of the school's leadership team. Based on educational research and school case studies, *Mastery in Primary Mathematics* gives practical advice on introducing and sustaining teaching for mastery, with sections for both class teachers and school leaders. In this must-have guide, Tom Garry, NCETM Maths Mastery Specialist Teacher, covers the areas of variation theory, mathematical reasoning and the use of correct mathematical language, and equips leaders with the necessary tools to make the mastery approach work across a school. With a view to planning at three levels – curricular, unit and lesson – in order to fully arm educators with the means to plan effectively, Tom draws on cognitive science as current developments in this field are crucial to understanding how children learn.

Combining research-based theory with fresh, practical guidance for the classroom, *The Essential Guide to Secondary Mathematics* is a stimulating new resource for all student and practising teachers looking for new ideas and inspiration. With an emphasis on exciting your mathematical and pedagogical passions, it focuses on the dynamics of the classroom and the process of designing and using rich mathematical tasks. Written by a highly experienced mathematics teacher who understands the realities of the secondary classroom, this book combines insights from the latest research into mathematical learning with useful strategies and ideas for engaging teaching. The text is punctuated by frequent tasks, some mathematical and others more reflective, which are designed to encourage independent thinking. Key topics covered include: Preparing yourself: thinking about mathematics and pedagogy, taking care of your health and dealing with stress Different styles of learning and teaching mathematics Ideas for lessons: what

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does it take to turn an idea into a lesson? Tasks, timings and resources Equality and dealing positively with difference Mathematical starters, fillers and finishers: achieving variety The mathematical classroom community: seating layouts, displays and practical considerations Assessment: effective strategies for responding to learners' mathematics and writing reports. The Essential Guide to Secondary Mathematics will be a valuable resource both for beginning teachers interested in developing their understanding, and for experienced teachers looking to re-evaluate their practice. Aiming to develop all aspects of your mathematics teaching, this book will help you to devise, adapt and implement ideas for successful and enjoyable teaching and learning. Intervention: providing effective support services. A Practical Guide to Teaching Mathematics in the Secondary School offers straightforward advice, inspiration and support for mathematics teachers whether in training or newly qualified. Based on the best research and practice available, it offers a wide range of tried and tested approaches that succeed in secondary classrooms. Each chapter contains a wealth of tasks and ideas that allow teachers to reflect on the approaches and make plans for using them in their own classrooms, and offers ideas for lesson plans, learning activities and suggested further reading and development. Illustrated throughout with case studies and practical insights from classroom observations and experience, this book covers key aspects of mathematics teaching, including: managing the class and learning environment; teaching the topics of mathematics; encouraging mathematical thinking; choosing and using resources; using multi-media technology; assessing work in mathematics. A Practical Guide to Teaching Mathematics in the Secondary School is an essential companion to the core textbook Learning to Teach Mathematics in the Secondary School. Written by expert

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professionals, it supports you in your development of imaginative and effective lessons on a variety of curriculum topics in different teaching situations.

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