

TEACHING MATH ONLINE

SAMPLE
MATERIAL
INSIDE

Great Ways to
Differentiate Instruction
and Support Parents,
K–8



Marian Small

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TEACHING MATH ONLINE

**Great Ways to
Differentiate Instruction
and Support Parents,
K–8**

MARIAN SMALL



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 Videos, video scripts, and templates for manipulatives included in Appendices A and B are available at tccpress.com/teachingmathonline

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Introduction

SINCE the spring of 2020, teachers have been faced with a new reality, where their interaction with students is not always in the classroom but at a distance. The kinds of normal conversations teachers and students have in the classroom are not possible, students getting answers immediately is not as easy, and students being willing and/or able to ask lots of clarification questions is less likely. Yet teachers still wish to provide rich instruction to maximize the benefit from the limited time during which their students may engage in math learning and to do it in a way that does not overwhelm the parents who are supporting students in this environment. This is particularly challenging for younger students, Grades K–5, for whom parents often have a more critical role, but often even for students in Grades 6–8.

In recent years, researchers have been increasingly exploring the application of technology in education. Although much of the research is focused on higher grade levels, some findings are pertinent at elementary levels as well. For example, Puentedura (2012) offered the SAMR model (**S**ubstitution, **A**ugmentation, **M**odification, **R**edefinition) as a framework for examining different ways that technology can be incorporated into the educational environment. While Modification and Redefinition could be valuable in elementary mathematics teaching, many teachers are focused, at this very difficult time, primarily on Substitution and Augmentation; they are not as interested in exploring the potential of the technology as in moving effective teaching into an online environment, keeping students engaged and learning.

The online environment presents particular challenges in engaging students and in finding new ways to judge student understanding without as much personal contact. Chapter 1 of this resource describes these issues and offers strategies for achieving the best virtual learning environment possible, including helping parents to partner in supporting student learning. Chapter 2 describes the benefits of open questions and parallel tasks—two strategies optimally suited for differentiating instruction, whether in the classroom or online, to reach all students—and highlights challenges and unexpected benefits of working online. Logistical issues unique to operating online at the K–8 level are the focus of Chapter 3, which also describes how to translate classroom tools to online and home environments. The next two chapters present a series of open questions and parallel tasks, illustrating

how these strategies can function in the online environment. Chapter 4 focuses on adapting existing tasks for online presentation, and Chapter 5 illustrates creation of tasks particularly suited to the home environment, an important online opportunity to show students how math applies to their everyday lives, a benefit that can shift students' mindsets about math forever and enable them to transfer academic learning to real-life application. A brief conclusion follows (Chapter 6), along with a Resources section that includes not only literature citations but also a list of online sources that provide a wide array of background information, online lessons, and interactive tools of value to teachers, parents, and students.

Two valuable additional resources are provided with this volume. I have created eight videos as models of videos that can be sent to parents; these may be accessed from the Teachers College Press webpage for this book (tccpress.com/teachingmathonline). Five of the videos focus on applying important math tools in the online environment, and three illustrate the use of probing questions in stimulating rich math conversation. Scripts for these eight videos are included in Appendix A and at tccpress.com/teachingmathonline for teachers who would like to use the scripts as bases to create their own videos or online lessons. Finally, Appendix B includes templates for common math tools that can be used in the home. These templates, and others, are also available online (tccpress.com/teachingmathonline).

 **VIDEOS & MATH TOOLS:** Available at tccpress.com/teachingmathonline

MY INTENTION with this resource is to show how materials teachers already have and use on a regular basis might be appropriately adapted to help enrich mathematics instruction in the virtual environment, and to uncover new ways to create home-based learning and partner with parents. I hope readers will find it useful.