

Strategies From Real Teachers for Real Classrooms

Grades
6–12

Differentiation That Really Works

Math



A **Prufrock Press** Book

- Provides Time-Saving Strategies for Differentiated Math Instruction
- Includes Field-Tested Lessons From Classroom Teachers
- Offers Templates for Developing Lessons for Each Strategy

Cheryll M. Adams, Ph.D.,
and Rebecca L. Pierce, Ph.D.

ROUTLEDGE

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That Really
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Dedication

This book is dedicated to the many teachers and students with whom we have worked in appreciation for what we have learned from them. We also dedicate this book to our families and friends for their love and support.

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CHAPTER 1

INTRODUCTION

Why We Wrote This Book

Many years ago, we were classroom teachers ourselves, and we spent time working with students, trying to understand their needs. We read some of the early work of A. Harry Passow and Sandy Kaplan coming out of the National/State Leadership Training Institute of the 1970s, and thus began our journey toward learning how to differentiate instruction to meet the needs of all of the learners in our classrooms. We both found early on in our teaching careers that giving all students the same assignment resulted in some students doing well while others were bored or frustrated. Thus, we learned how to differentiate as a means of surviving and allowing students to thrive. We learned that “more” and “faster” were not better for our gifted students, but that we needed qualitatively different work that centered on broad-based themes, issues, and problems. We learned that, in order to achieve, all of our students required choice and challenge. Now that we have left the precollege classroom and teach at the university level, we still have to differentiate to meet the needs of our undergraduate and graduate students.

Currently, we work together at the Center for Gifted Studies and Talent Development on a number of projects related to differentiated instruction and meeting the needs of learners in the classroom. The center is located in Burriss Laboratory School on the campus of Ball State University. The proximity of the center to the Laboratory School provides us the opportunity to work with teachers and students on a regular basis so that we do not lose the important connection to what is actually happening in classrooms today. Working in the Laboratory School and in other schools throughout the United States, we have been able to use our practitioners’ and researchers’ lens to identify strategies that work well in the classroom.

The strategies that we have chosen to include in this book had to meet several criteria: (1) be easy to implement, (2) be easy to modify, (3) encourage student engagement, (4) have inherent opportunities for differentiation, and (4) be appropriate for multiple grade levels. The strategies we've selected are not an exhaustive list of differentiation strategies, but they are the ones that we see most often being used by real teachers who differentiate well. Although there is little empirical evidence to support the use of these strategies, the practice-based evidence is widespread (Coil, 2007; Gregory & Chapman, 2002; Kingore, 2004; Tomlinson, 2003; Winebrenner, 1992). We think these strategies are vital for teachers to have in their bag of tricks if they want to provide choice and challenge for all learners in their classrooms. However, quality differentiation requires more than just a simple bag of tricks.

Working with teachers for more than 14 years nationally and internationally, we found some who were differentiating to a high degree and some who were just beginning to differentiate. We found some who did it well and some who struggled. Comparing and contrasting those teachers who differentiated well from their colleagues who struggled allowed us to zero in on classroom components that seemed to make the difference. What we found is that many teachers were using strategies to differentiate instruction but lacked the management to facilitate multiple groups working on different activities. Others had interesting lessons and activities but when some students finished early, chaos was present. Some teachers differentiated a lesson by providing several paths to reach the same goal, but all students were required to complete the same assessment. Those teachers who had the most successful classrooms not only used differentiated learning strategies but also made use of anchoring activities, classroom management, and differentiated assessment. Realizing that these four components are necessary led to the development of our model, *Creating an Integrated Response for Challenging Learners Equitably: A Model* by Adams and Pierce (CIRCLE MAP; Adams & Pierce, 2006). We have realized that when teachers have all four components clearly articulated and they implement them, the stage is set for successful differentiation.

We learned something else with our teachers: No matter the level of experience or the effectiveness of differentiation, everyone's issue was time. We have had the privilege to come in contact with teachers who differentiate in their classrooms on a daily basis. These classrooms are "pockets of excellence," where teachers embrace the differentiation mindset and look at everything they do through the differentiation lens. We felt other teachers could gain some time by using lessons that practicing professionals have already created and tested in their own classrooms. The lessons in this book

focus on middle and high school mathematics and can be used as written or can be modified to meet the needs of your own mathematics classroom. We have provided templates that can be used to develop your own materials using the strategies included here.

In this volume we have also included an appendix that shows how one teacher created differentiated lessons using only materials from her textbook. Teachers have the textbook on hand and readily accessible; thus, we wanted to provide some examples of textbook-based lessons, rather than exclusively lessons designed using supplemental materials. We hope that you find this additional resource helpful on your differentiation journey.

How Is This Book Different From Every Other Book on Differentiated Strategies?

This book is different because real teachers designed the lessons. Practicing professionals (everyday classroom teachers in the trenches) tested them in their own heterogeneous classrooms. These professionals differentiate on a regular basis. We have included comments for each lesson from the teacher who developed it, describing how to use the strategy and how his or her students responded to the activity. In addition, on many lessons, we have included comments from other teachers who reacted to it.

How to Use This Book

The following steps should be kept in mind as you make your way through the book:

1. Choose the strategy you want to implement.
2. Look at the sample lessons.
3. Don't be afraid to modify a lesson to fit your grade level and the needs of your own students.
4. Use the template to design your own lesson.
5. Use it in your classroom and enjoy!

CIRCLE MAP Model

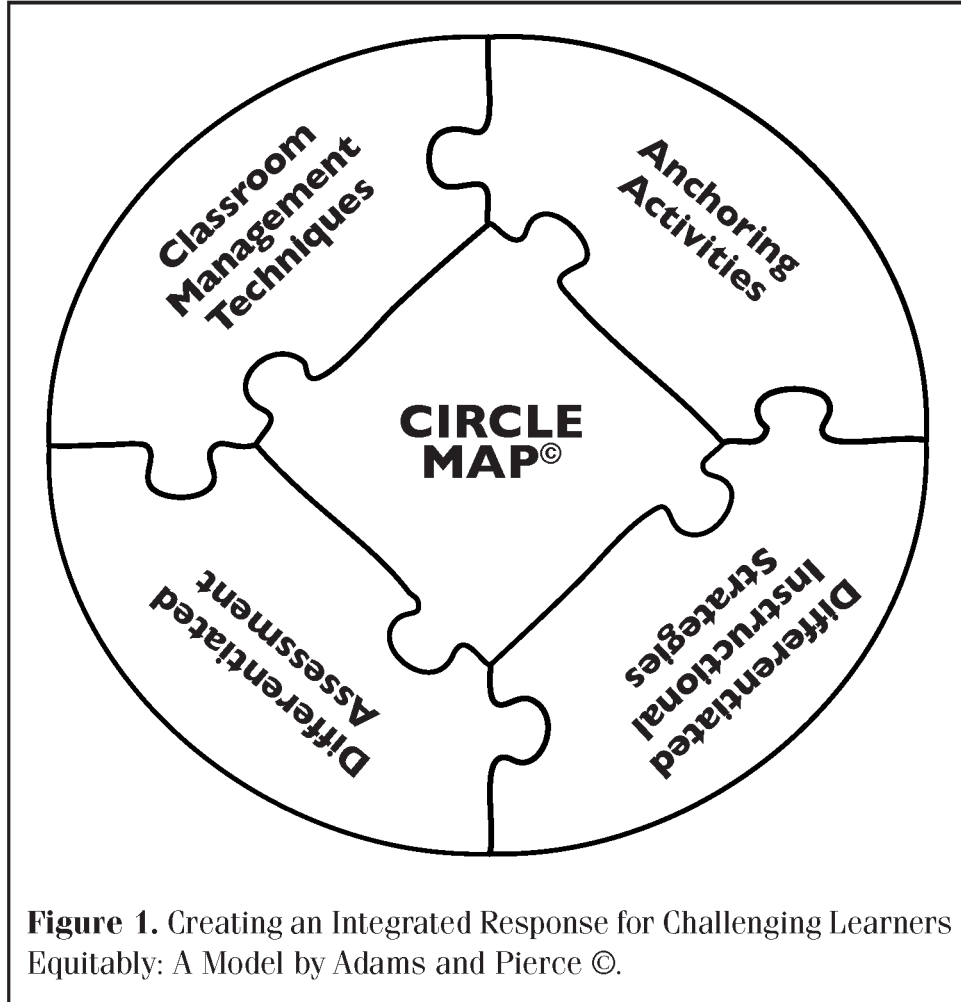
What Is Differentiation?

Although its early focus denoted modifying curricula to meet the needs of the gifted and talented (Passow, 1982; Ward, 1980), differentiation has since taken center stage as a means of meeting the needs of academically diverse students in the heterogeneous classroom through modifying the curriculum and learning experiences of these students (Tomlinson, 1999, 2001, 2003). Differentiation is not a collection of strategies; it is not simply offering students choices; it is not group work. Although these options may be found in a differentiated classroom, differentiation involves finding multiple ways to structure learning so that each student has an opportunity to work at a moderately challenging level. It is an organized, yet flexible, way of proactively adjusting teaching and learning to meet students where they are, while helping all students achieve maximum growth as learners (Tomlinson, 1999). Put succinctly, differentiation is a mindset, a lens to use in examining every aspect of the classroom. Instruction may be differentiated in content, process, product, learning environment, and affect according to the students' readiness, interest, or learning profiles. For example, all of the students may be studying force and motion (content), but the laboratory experiments in which they participate may be at varying levels of complexity to accommodate their academic readiness for a particular task (process).

Successful differentiation will occur in the classroom when a number of essential elements also are addressed. These essential elements include specific classroom management techniques that address the special needs of a differentiated classroom through flexible use of time, space, and student groups; planned use of anchoring activities; a variety of differentiated instructional strategies; and differentiated assessment (Adams & Pierce, 2006).

The Model

Having worked with preservice and in-service teachers over the last decade to help implement differentiated instructional strategies in their classrooms, we have noticed several commonalities among teachers who are successful. As a result of this research, we developed the CIRCLE MAP model. The CIRCLE MAP, shown in Figure 1, is appropriate for any grade level and content area. It weaves together four elements—classroom management techniques, anchoring activities, differentiated instructional strategies,



and differentiated assessment—that we found as the commonalities among teachers who differentiated successfully. Having observed teachers across the country and internationally, we found these elements consistently in classrooms that addressed the needs of all children. For a complete discussion of the model, see Adams and Pierce (2006).

Our purpose in writing this book is to introduce you to a variety of strategies that may be used to assist you in differentiating curriculum and instruction in your own classroom. We make the assumption that you have a good working knowledge of the differentiation mindset. If you don't, we would encourage you to read Carol Tomlinson's (1999, 2001, 2003) work for a complete discussion of the topic.



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CHAPTER 2

EXIT CARDS

Overview

An exit card is a tool used by teachers to gather data about student learning. Generally, exit cards are used to gather formative data that a teacher can then use to plan the next step. The exit card is provided to students at the end of a lesson and the teacher collects the cards as students either exit the classroom or exit one activity before going on to the next in the same classroom. Exit cards also may be known by other names, such as ticket to leave or door pass. Exit cards generally only have a few questions for students to answer. Sometimes the card may ask students to respond to an overall idea that was discussed in class; at other times students may have two or three math problems to work on that are similar to problems demonstrated in class.

How and When to Use Exit Cards

Exit cards are used at the end of a class, an activity, or a lesson. The teacher collects the completed exit cards and sorts the cards into piles based on the students' responses. There may be a group of students who clearly understand the ideas presented in the lesson and another group of students who clearly have gaps in their knowledge. There may be other students who fall between the two groups. The information from the exit cards allows the teacher to plan the next steps of instruction to address the different learning needs of the students.

Directions for Making Exit Cards

Exit cards are simple to design. For example, an exit card can be a piece of paper that the student uses to write down answers to a set of questions dictated by the teacher. Students may use their own paper or the teacher may hand out paper from the classroom recycle box. Index cards and Post-It® Notes also are simple and easy to use as exit cards, although somewhat more expensive. Some teachers may wish to customize their exit cards for a specific lesson or activity.

How This Strategy Fits in the CIRCLE MAP

Exit cards are an important data-gathering tool for formative assessment in the differentiated classroom. As such, they are essential to the “differentiated assessment” component of the CIRCLE MAP.

Examples

The examples we have chosen include exit cards that can be readily adapted to many topics. These cards were created by real teachers who used them in their own classrooms. When possible, we have included the comments from the teachers and their colleagues with the intention that the comments may provide additional insight to using the exit card for another topic.

For example, Marilyn Wood is a middle school math teacher who has decided to implement exit cards in her class this year. She creates a card to help her determine who understands the sequence of steps in order of operations. She designs a card that includes descriptions of each step. Putting these steps in order will establish whether or not students understand how to simplify expressions. As she collects the cards, Marilyn can easily determine who has complete, partial, and little understanding. This will allow her to determine the entry point for each student in the next lesson.