



# SYSTEMATIC INSTRUCTION

for Students With Moderate  
and Severe Disabilities

SECOND EDITION



**Belva C. Collins**

# **Systematic Instruction for Students With Moderate and Severe Disabilities**

## **Second Edition**

by

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University of North Carolina at Charlotte and University of Kentucky

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**BROOKES**  
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Baltimore • London • Sydney



**Paul H. Brookes Publishing Co.**  
Post Office Box 10624  
Baltimore, Maryland 21285-0624, USA

[www.brookespublishing.com](http://www.brookespublishing.com)

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Typeset by Absolute Services Inc., Towson, Maryland.  
Manufactured in the United States of America by Versa Press, East Peoria, Illinois.

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#### **Library of Congress Cataloging-in-Publication Data**

Names: Collins, Belva C., author.  
Title: Systematic instruction for students with moderate and severe disabilities / Belva C. Collins.  
Description: Second edition. | Baltimore, MD : Paul H. Brookes Publishing Co., 2022. | Includes bibliographical references and index.  
Identifiers: LCCN 2021021295 (print) | LCCN 2021021296 (ebook) | ISBN 9781681254388 (paperback) | ISBN 9781681254395 (epub) | ISBN 9781681254401 (pdf)  
Subjects: LCSH: Students with disabilities--Education--United States.  
Classification: LCC LC4031 .C647 2022 (print) | LCC LC4031 (ebook) | DDC 371.9--dc23  
LC record available at <https://lcn.loc.gov/2021021295>  
LC ebook record available at <https://lcn.loc.gov/2021021296>

British Library Cataloguing in Publication data are available from the British Library.

2025 2024 2023 2022 2021

10 9 8 7 6 5 4 3 2 1

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## About the Author

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Belva C. Collins, Ed.D., served as a professor and chair in the Department of Special Education and Child Development at the University of North Carolina at Charlotte and in the Department of Early Childhood, Special Education, and Counselor Education at the University of Kentucky. She now holds the title of Professor Emeritus at both institutions. Dr. Collins began her career as a teacher of students with intellectual disability in rural Southwestern Virginia before coming to the University of Kentucky to work as a research assistant on several federally funded grants to validate the use of response-prompting strategies in special education. She continued this line of research throughout her career in higher education and was successful in guiding the applied research of her students in investigating variations of systematic instruction in classroom and community settings. This work provides the foundation for this text. In addition to disseminating her own scholarly writing, Dr. Collins served as the executive editor of *Rural Special Education Quarterly*, the primary publication of the American Council on Rural Special Education (ACRES). Recent awards include the ACRES Eagle Award for service to rural special education, the North Carolina Teacher Educator Award, and the TED-Pearson Award for excellence in teacher education. She now devotes her time to writing and presenting on the topics of systematic instruction and special education teacher leadership.

## SECTION I

# Setting the Context for Systematic Instruction

Chapters 1 through 5 of this text describe how to set the context for systematic instruction for learners with moderate and severe disabilities (MSD). Before an instructor can begin to design a systematic instructional program, he or she needs to determine where instruction will take place, what will be taught, whether the addition of technology will enhance or facilitate learning, who will deliver instruction and how the person will be trained, whether baseline data justify instruction, whether high leverage practices are in place within the instructional settings, and which instructional practices have sufficient evidence to support their use. The chapters in Section I cover this information. Those who use this text may choose to begin by reading about this foundation in Section I to set the context for instruction. If, however, it is crucial that the reader first understand how to design and implement response prompting strategies (e.g., preservice instructor preparing for clinical hours in a classroom in which a seasoned mentor already has set up the context), the reader may want to begin with the chapters in Section II and then return to Section I.

FOR MORE go to; <https://bpub.fyi/SystematicInstruction2e>

# CHAPTER 1

## TERMS USED IN THIS CHAPTER

Applied behavior analysis (ABA)  
Core content  
Criterion of ultimate functioning  
Ecological inventory  
Functional skills  
Inclusion  
Least dangerous assumption  
Principle of parsimony  
Standards-based curriculum  
Zero degree of inference

# Using Systematic Instruction When Teaching Standards in Inclusive Classrooms

## CHAPTER OBJECTIVES

On completion of this chapter, the reader will be able to

- Explain why inclusion in general education settings is beneficial for learners with moderate and severe disabilities (MSD)
- Discuss options for providing instructional support in inclusive settings
- Explain why it is important for a core content standards-based curriculum to be both meaningful and relevant for learners with MSD
- Describe how to identify both academic core content and functional skills
- Discuss two approaches to combining academic core content and functional skills when teaching learners with MSD
- Design a lesson plan for a learner with MSD that combines academic core content and a functional skill
- Design a matrix that demonstrates how systematic instruction on individual education program (IEP) objectives can be embedded across the day
- Design a schedule for learners with MSD that shows inclusion and support across settings



Special education services for learners with MSD have undergone a transformation across the past few decades (Collins & Ludlow, 2018), changing the context in which systematic instruction is delivered. The preferred setting in which learners with MSD obtain an education has changed from a segregated school to a segregated classroom within the neighborhood school to a resource room to **inclusion** in a general education classroom. At the same time, the curriculum considered appropriate for learners with MSD has changed from a focus on developmental skills to a focus on **functional skills** to a focus on academic **core content** based on common standards for all students.

Although a continuum of placements still exists (Dymond & Carter, 2020), the preferred placement option is a fully inclusive general education environment for a number of reasons (Carter et al., 2015). Inclusive classrooms provide 1) access to the general education curriculum as required by law, 2) access to an expert on core content standards, 3) the opportunity for shared learning experiences and observational learning (both behavioral and academic) in the presence of same-age peers without disabilities, and 4) the opportunity for peers to provide support as buddies or tutors while establishing friendships. Although social reasons (e.g., making friends without disabilities) were part of the historical basis in the movement toward more inclusive services, the focus on access to core content is a current driving force. Still, learners with MSD are more likely to receive an education in a segregated placement over an inclusive placement (Kleinert et al., 2015), with a number of special education teachers holding a negative attitude regarding the potential for inclusion to succeed (Metsala & Harkins, 2019). One of the reasons for this is the impression that it is difficult to deliver specialized systematic instruction on meaningful content in general education settings, although current research contradicts this misperception (Kuntz & Carter, 2019). When Pennington and his colleagues (2016) listed five essential qualities of educational programs for learners with MSD, they included an environment with access to peers, as well as systematic instruction. It is helpful to remember that implementing quality inclusion is a learning process and educators are still learning to implement it in the best way possible (Kozleski et al., 2015).

With the current focus on inclusive services and access to core content, several relevant foundational principles in providing an education for students with MSD remain true and should not be ignored. First, the term **zero degree of inference** (Brown et al., 1976) requires that we never infer that a learner is incapable of functioning in an inclusive environment or acquiring core content due to a disability unless we have data that prove otherwise. Thus, we should make decisions for learners with disabilities based on the **least dangerous assumption** (Donnellan, 1984), which is the premise that we make decisions based on what will cause the least amount of harm until we have supporting data to prove otherwise. Second, we should practice the **principle of parsimony** (Etzel & LeBlanc, 1979) when designing an educational program and services for a learner by choosing the most basic and simple strategy available when several strategies appear to be equally effective and produce the same outcome (e.g., selecting placement in an existing inclusive classroom before creating a segregated one; teaching an existing curriculum before designing a new one). Third, our goals for learners with MSD should be based on the **criterion of ultimate functioning** (Brown et al., 1976), in which we always are striving for a future in which a learner can function as independently as possible in the least restrictive environment. Finally, we should recognize the principles of **applied behavior analysis (ABA)** that comprise systematic instruction and behavior management as being research and evidence based in providing an education for students with MSD (Pennington, 2019) and recognize that these strategies can be implemented in inclusive general education environments.

It is important to recognize that the setting in which a learner receives an education should not determine the curriculum. Likewise, the curriculum that a learner receives should not determine the setting. Good instruction is good instruction no matter where it takes place or which skills are being taught. That said, when learners with MSD are included in general education classrooms, each learner should be incorporated into all facets of the setting and not merely occupy space in a separate part of the room while engaging in separate activities with a paraprofessional (Feldman et al., 2015). In addition, no matter where a learner accesses core content, the curriculum should have meaningful and relevant connections to the learner's life (e.g., Chapman et al., 2019; Tekin-Iftar et al., 2017). The following sections will describe how to set up an appropriate standards-based

education for learners with MSD in inclusive general education settings, which is the ideal context for using research- and evidence-based instructional practices that include systematic instruction.

## PROVIDING ACCESS TO CORE CONTENT INSTRUCTION

A **standards-based curriculum** consists of core content selected by experts as being essential in the education of learners across specific grades. Anyone who is qualified can teach core content in classroom settings or other educational settings (e.g., community-based service learning projects). Although the content expert is typically a general education teacher certified in a specific discipline, others can be trained and supervised in providing core content instruction. Instructors may include special education teachers, paraprofessionals, peers, parents, and related service delivery professionals (e.g., Apitz et al., 2017; Copeland & Keefe, 2019; Heinrich et al., 2016; Knight et al., 2018; Kurth et al., 2015; Ryan et al., 2019; Tekin-Iftar et al., 2017). Although access to core content is guaranteed by legislation, a rationale for teaching basic core content is that its acquisition can create more opportunities for learners with MSD, such as membership in more inclusive learning environments with same-age peers (e.g., college classes) or more inclusive employment settings (e.g., public library) in the future.

### *Real Teacher Talk*

Systematic instruction can be used to teach meaningful, standards-based core content to learners with MSD. Here, seven professors of special education at universities in the United States and abroad describe the benefits of this approach, along with suggestions for how teachers implement systematic instruction for particular content areas and populations.

*The postschool opportunities are growing for students with moderate to severe disabilities, including increased opportunities for competitive employment as well as inclusive postsecondary education. Increased academic skills will enable students to gain maximum benefit from these opportunities and lead meaningful adult lives.*

Dr. Jenny Root  
Special Education Professor  
Florida State University

*I am currently interested in methods for teaching students with autism spectrum disorder (ASD) and intellectual disability (ID) science, technology, engineering, and math (STEM) skills. One of the reasons for this is that prior research has shown students with ASD may have a proclivity for STEM, and a strength-based approach to instruction is sorely needed in our field. The other reason is that I've seen collateral benefits to teaching these skills, including an increase in creativity, problem-solving, self-determination and even social and communication skills.*

Dr. Victoria F. Knight  
Special Education Professor  
University of British Columbia

*I have spent much of my career applying systematic instruction (SI) to written expression skills for students with autism and developmental disabilities. This has been an area that has been understudied but is so valuable across social, employment, and academic settings. Kids in schools demonstrate what they know through writing and, in these current times, young people (and older ones) often engage in written social media networks to maintain and develop relationships. . . . The data overwhelmingly support the use of SI strategies but are less clear related to where instruction should occur and which instructional targets will have the greatest impact on postsecondary outcomes. I study writing because it is a form of communication and, thus, can only improve an individual's access to reinforcers.*

Dr. Rob Pennington  
Special Education Professor  
University of North Carolina at Charlotte

*Teach core content with vigor! One of my teaching colleagues would always explain to naysayers of teaching core content that exposure to new content is a significant part of the learning for students with significant needs and little exposure to the world outside of their caregiver's home. I would add to that and say that exposure to core content is just the access point, and learning occurs when students are pushed toward new goals—goals that may never be uncovered without the challenge of something new to learn.*

Dr. Kathryn Leigh Haughney  
Special Education Professor  
Georgia Southern University

*Teachers need to work with their general education partners to make sure they thoroughly understand the standards they are targeting and to get ideas of what it looks like to teach that skill in the general education setting. If the general education setting is not an option for the students with moderate to severe disabilities, then the special education teacher needs to provide instruction to teach the grade-aligned content. After working with the general education teacher, the special education teacher needs to make sure to identify how to explicitly teach the content before getting into activities. Systematic and explicit instruction of the academic concepts can be fun, but it is critical that the students have lots of exposure and time to work on acquisition before applying it in an activity that might create a disconnect with the targeted skill. . . . All too often, teachers jump to the experiment before systematically teaching the concept they are targeting.*

Dr. Pamela J. Mims  
Special Education Professor  
East Tennessee State University

*Often general educators receive less instruction in systematic instruction than special educators, so it is a skill set that special education teachers can bring to the collaboration, particularly in co-teaching situations. The special educator can take the lead for parts of the lesson that lend themselves to using systematic instruction (e.g., vocabulary for a new unit). . . . This approach supports inclusive education and is an effective instructional approach for all the students in the classroom.*

Dr. Karen D. Hager  
Special Education Professor  
Utah State University

*Academic instruction for students with disabilities in the inclusive setting has changed dramatically since the introduction of special education services. . . . I suggest teachers develop systematic instruction plans covering the target skill, teaching procedure, response prompting strategy, plans for maintenance and generalization, and data collection procedures. First of all, I tell them they need to conduct assessment about what to teach from the curriculum and/or look at individualized education plans. After that, they need to design how to deliver instructional trials and/or probe trials in the classroom. . . . Several evidence-based practices have been identified for teaching core content to students with moderate to severe disabilities, such as task analysis, prompting (response prompting strategies), and modeling. . . . I always tell student teachers that they need to consider methods for providing academic content in ways that are also relevant, meaningful, and necessary in their students' current and future environments.*

Dr. Elif Tekin-Iftar  
Special Education Professor  
Anadolu University, Turkey

Although core content instruction can take place in a resource room or a segregated classroom, there are advantages to accessing core content in inclusive general education classes. First, the teachers in general education settings are content experts who can engage learners, both with and without disabilities, in purposeful activities using appropriate materials (Finnerty et al., 2019), such as science experiments conducted in chemistry or biology laboratories. As mentioned previously, the general education classroom provides easier access to same-age peers, which, in turn, provides the opportunity for learners to acquire content through observational learning or through

direct instruction from peers (Ledford & Wolery, 2015). In addition, inclusion of learners with MSD can be beneficial to their peers without disabilities, facilitating empathy while possibly planting the seeds for future careers (e.g., special education teacher, related service provider) or creating more understanding if these peers someday become parents to children with disabilities. The challenge of full inclusion, however, is that general education teachers typically are not prepared to work with learners with disabilities, especially in the delivery of systematic instruction. In addition, the typical pace of the curriculum across units may not allow time for learners with MSD to master content.

### Real Teacher Talk

Systematic instruction can be used with learners who do or do not have an IEP to teach core content standards, core content for alternative assessment standards, and functional and academic skills. Here, preK–12 teachers describe how they use systematic instruction.

*I conduct systematic instruction with the students who are behind his/her classmates. I try to teach main concepts and core content to them by using systematic instruction, such as response prompting.*

Pinar Çakir  
Special Education Teacher  
Middle School Inclusion

*[The] most important thing is to set targets which are functional for each child. I recommend my colleagues question the daily life equivalent of the skill.*

Nursinem Şirin  
Early Intervention/Preschool Teacher

*The type of core content I teach is typically alternate assessment standards. I feel that teaching some vocabulary that addresses main terms for the standards helps the students have something to “pick out” when we discuss and review the concepts related to alternate standards. For vocabulary that is presented in a general education setting, we will practice with systematic instruction in our special education resource room, then see if the student can identify the same words when presented in the general education room.*

Brian Newton  
Special Education Teacher  
Moderate/Severe Disabilities  
Secondary Resource Room

*I have task analyzed many core content math procedures, including finding area and perimeter, using the Pythagorean theorem, solving an equation, using subtraction, finding elapsed time, and finding tax. I have used systematic instruction to teach all of the core content standards targeted on the Kentucky alternate assessment. I have primarily relied on system of least prompts and simultaneous prompting to teach these core content skills. Typically, if there are vocabulary terms and concepts to teach prior to the skill, I use constant time delay to teach those terms that are usually paired with pictures.*

Carey Creech-Galloway  
Special Education Teacher  
Moderate/Severe Disabilities  
Elementary School Resource Room

## PROVIDING ACCESS TO FUNCTIONAL SKILL INSTRUCTION

Functional skills are those skills that are immediately useful to a learner in a current environment (e.g., home, school) or may be useful in a future environment (e.g., supported apartment, employment). In addition to identifying functional skills through an adaptive behavior scale (e.g., Vineland Adaptive Behavior Scales [Sparrow, 2011]) or interview (e.g., Choosing Outcome and

Accommodations for Children [COACH] [Giangreco et al., 2011]), the IEP team can identify functional skills by compiling an **ecological inventory** (Brown et al., 1979). Although it is ideal to teach functional skills in the settings where they are needed, functional skills also can be embedded in the general education curriculum (e.g., Copeland & Keefe, 2019; Tekin-Iftar et al., 2017) and in inclusive activities, such as service learning projects (Pence & Dymond, 2015). Although responsibility for functional skill instruction typically rests with the special education teacher, others can be prepared to teach functional skills. Instructors may include general education teachers, paraprofessionals, peers, parents, and related service delivery personnel (e.g., Britton et al., 2017; Park et al., 2020). Although it is appropriate to teach some functional skills (e.g., self-care) in a one-to-one format in an isolated setting, most functional skills can easily be taught in inclusive settings where learners with MSD can practice them within normal routines where the skills are needed (e.g., using a locker in the hallway, purchasing lunch in the cafeteria) with the added benefit of having same-age peers as role models.

The process for conducting an ecological inventory to identify individualized functional skills appropriate for a learner (Brown et al., 1979) is not difficult. First, the teacher (with input from parents or caregivers) lists four skill domains: 1) educational (vocational for older learners), 2) community, 3) domestic, and 4) recreation/leisure. Under each domain, environments and sub-environments relevant to the learner currently or in the future are listed. Then, under each sub-environment, activities in which the learner will be expected to engage are identified. Finally, the various skills the learner needs to acquire to engage in those activities as independently as possible are listed, as well as individual supports that may be needed. Going through this process on an individual basis is important because there may be differences across learners, depending on their unique strengths and needs, their culture, and their geographic environment (e.g., rural versus urban).

## TEACHING MEANINGFUL AND RELEVANT CORE CONTENT

All learners, regardless of ability, need to learn content with meaningful applications. When teaching learners with MSD, this is even more crucial. To acquire new content, learners with MSD require more repeated exposures presented in a systematic fashion. Because instructional time is limited, targeted skills must be prioritized so those skills most needed in a learner's life can be taught with specially designed instruction. Complex and abstract concepts must be broken down into basic skills that learners can comprehend and apply in their daily lives. Finally, skills must be taught to criterion using valid practices that enable learners to maintain the skills over time and generalize them to their daily lives. There are two approaches to teaching meaningful and relevant core content to learners with MSD: 1) adding functional applications to core content and 2) adding core content to functional skill instruction. Using both approaches when developing IEPs results in an individualized and balanced curriculum that will benefit these learners (Ballard & Dymond, 2017; Pennington et al., 2016).

### Adding Functional Applications to Core Content

When prioritizing and designing the instruction of core content for learners with MSD, a number of questions should be answered:

1. How can the content be applied in the real world both now and in the future?
2. How does the content form a foundation for the instruction of future content?
3. What skills are necessary to master the content?
4. If the content is to result in a concept, what examples and nonexamples can be used during instruction to facilitate the formation of concepts?
5. How will learners be expected to generalize the acquired content?



6. How can maintenance be ensured?
7. Is mastery at a set criterion necessary for content to be useful to learners or to allow progression in a determined sequence?
8. Will learners have the opportunity to revisit content at future points in the curriculum?
9. Can targeted skills be taught in isolation, or is it necessary for learners to master a broader scope of skills for content to be useful?

Perhaps the key question, given the amount of time that may be necessary to teach core content to these learners, is to ask which content is most useful to learners to promote meaningful interactions in their lives, to facilitate independence, and to provide access to less restrictive environments across domains both now and in the future.

Sometimes the relevance of core content is easy to determine. Learners need to read to the extent possible to gain information as well as for personal enjoyment. Learners need to communicate through the written word to provide information. Learners need to apply math concepts to increase personal independence (e.g., manage personal finances, ensure nutritional sustenance, schedule and participate in daily activities) and to increase vocational options (e.g., food industry, carpentry, sewing, plant and animal maintenance, retail industry). Learners need to be able to apply a foundation in science to activities in their personal lives (e.g., cooking, dressing appropriately, maintaining optimal health). Sometimes, it is more difficult to make core content relevant when its applications are more remote to the lives of learners (e.g., weather patterns or geographic events found in a different part of the world) and when it is difficult to convey in a way that is concrete to learners (e.g., atomic core of elements, gravitational pull of planets). Instructors must analyze why core content is important and how it has an effect on the lives of learners to formulate a context for instruction. Although systematic instruction may be required to facilitate the acquisition of core content, a simple strategy to ensure content is personally relevant to learners is to include examples during instruction of how the content can be applied in real life. A simple way to do this is to embed real-life examples as nontargeted information during instruction (see Chapter 9).

To add functional applications to core content instruction, the IEP team first identifies the grade-level core content standards that all learners are expected to meet, noting that most learners with MSD will be participating in required alternate assessment based on preidentified alternate achievement standards. Once this is done, the IEP team can focus on specific needs of the learner with a disability by identifying other meaningful skills for instruction based on performance on adaptive behavior scales and interviews and through the ecological inventory process. Once the IEP team has identified goals and objectives through this process, the teacher can create matrices to identify the academic classes in which core content is being taught and the corresponding units of study in which functional skill instruction can be embedded.

### Real Teacher Talk

Systematic instruction can be embedded throughout the school day by embedding brief teaching trials into everyday classroom activities and routines. These instructional trials can be implemented not only by special education teachers but also by general education teachers, paraprofessionals, and the student's peers.

*I love the strategy of utilizing peers to implement response prompting strategies during embedded instructional trials in an inclusive classroom. . . . Embedded instructional trials are little trials that can easily be embedded throughout the day during times like transitions between activities and small down times (e.g., when the teacher is passing out materials; Jimenez & Kamei, 2015). These opportunities are perfect for peers or the paraprofessional to implement these instructional trials for students to get more exposure to a skill as working toward skill acquisition.*

Dr. Pamela J. Mims  
Special Education Professor  
East Tennessee State University

*In inclusive settings, the application of embedded instruction and the use of peers to be the agent of instruction (peer supports) are great strategies. Or, combining the two: Embedded instruction can be used by peers.*

Dr. Fred Spooner  
Special Education Professor  
University of North Carolina at Charlotte

*[I suggest using] embedded instruction—inserting systematic trials within the context of the lesson—distributed across the day, also use of peers in peer support arrangements inserted into ongoing activities*

Dr. Melinda Jones Ault  
Special Education Professor  
University of Kentucky

*I suggest teachers use distributed teaching trials in the classroom by embedding the target skills into classroom activities. They can deliver instruction to the large group and then approach the students with special needs and conduct several 1:1 massed trials to help the students acquire the skill. Mainly, they need to design direct distributed training trials and embedded distributed trials during general education classes.*

Dr. Elif Tekin-Iftar  
Special Education Professor  
Anadolu University, Turkey

*I believe [teachers] should start by embedding systematic instruction within daily instructional routines. The instructional arrangements in [inclusive general education] settings are likely to be different than in the special education classroom and many general education teachers may not prefer rearrangement of their current routines. I believe prompting procedures should be implemented by general education teachers and their peers, and further they should be taught that systematic instruction is an appropriate tool for all learners. General educators can be taught to embed systematic instruction in whole group choral responding activities to beef up basic skills. Peers can be taught to use systematic instruction to help each other study for exams or just practice new skills. I guess I am suggesting that attaching systematic instruction to kids with more severe disabilities may not be the best way to assure they are adopted on the inclusive setting.*

Dr. Rob Pennington  
Special Education Professor  
University of North Carolina at Charlotte

*A current research topic in which I am interested is embedding systematic instructional strategies into ongoing classroom activities and routines to support children's inclusion in inclusive preschool settings. I suggest teachers use systematic instruction in inclusive settings by developing an intervention plan that considers the context in which instruction will be embedded using materials that are part of ongoing classrooms and routines.*

Dr. Jennifer Grisham  
Early Childhood Professor  
University of Kentucky

## Adding Core Content to Functional Skill Instruction

Because learners with MSD may need an increased amount of exposure to core content to achieve mastery, embedding instructional trials on core content during natural routines throughout the day is advantageous. In addition to giving learners the opportunities to apply core content in their daily lives, this increases the opportunities to receive feedback on performance and to make relevant links between instruction and practice. Likewise, a number of functional skills can be taught in instructional trials that are distributed in activities throughout the day, and core content can be embedded in each of these. For example, a learner who is being taught to wash hands during restroom breaks also can be taught anatomical parts (e.g., hands, wrists, fingers, knuckles, nails),

hygiene (e.g., disease prevention), reading (e.g., restroom, boys/girls), antonyms (e.g., hot/cold, left/right, in/out), math (e.g., counting), and science (e.g., water conservation, bacteria, liquid and solid states of matter). In some cases, inclusive non-core content general education classes (e.g., consumer science, health, computer science), recreational classes (e.g., art, music, drama, physical education), or vocational classes (e.g., carpentry, sewing) may focus on the instruction of functional life skills while also providing the opportunity to embed core content (e.g., reading and defining vocabulary, measuring, performing math computations) that is necessary for successful acquisition of skills.

### Creating a Daily Instruction and Activity Matrix

A daily instruction and activity matrix is helpful in identifying when and where instruction on IEP objectives will take place. The instructor and the method of systematic instruction also can be listed. The first step is to list all IEP objectives (academic and functional) across the top. The second step is to list the classes and activities in which a learner participates down the side. Once this is done, the teacher can check which objective will be addressed in each class or activity throughout the day, as shown in Figure 1.1.

It is important to recognize that all instruction on IEP objectives does not occur in specific academic settings. In addition to routine school activities that occur each day (e.g., lunch, bathroom breaks, recess), other activities occur at designated times in the school calendar (e.g., school field trips, assembly programs, extracurricular clubs and activities) that also provide an appropriate setting for embedding IEP objectives.

### Creating a Class Unit Matrix

Because general education teachers group instructional goals and objectives into units of study, the special education and general education teachers will need to discuss when units of study will be covered throughout the year. Once this is done, the two teachers can collaborate to identify how functional objectives will be taught in specific lessons. To do this, it is helpful to create a class unit

Time/class	Individualized education program objectives				
	Following daily schedule	Reading and following directions	Washing hands	Making healthy choices	Solving basic applied math problems
8:00 Homeroom	X	X			
8:30 Language Arts	X	X			
9:30 Math	X	X			X
10:30 Band	X	X			X
11:30 Lunch	X	X	X	X	
12:00 Recess	X			X	
12:30 Science	X	X	X	X	X
1:30 Social Studies	X	X			X
2:30 Service Learning	X	X	X	X	X
3:00 Departure	X	X			

**Figure 1.1.** Example of a daily instruction and activity matrix.



Unit objectives					
Individualized education program objectives	Read with sufficient accuracy and fluency to support comprehension	Demonstrate understanding of main idea key details	Ask and answer comprehension questions	Write narrative about a sequence of events**	Follow discussion rules/ask for clarification**
Read and follow directions	X*	X**	X	X	X
Retell events from personal experiences		X	X	X	X
Keep a diary	X	X		X	X
Listen to others and ask questions, if needed	X	X	X	X	X

**Figure 1.2.** Example of a class unit matrix for language arts (second grade). (\*From Standard RF.4.4, National Governors Association Center for Best Practices, Council of Chief State School Officers. [2010]. Common Core State Standards for English Language Arts. Washington, DC: Author. Retrieved from: <http://www.corestandards.org/ELA-Literacy/RF/4/4/>. © Copyright 2010 National Governors Association Center for Best Practices and Council of Chief State School Officers. All rights reserved.

\*\*Source: Standards SL.2.2, SL.2.3, W.2.3, SL.2.1a, SL.2.1b. National Governors Association Center for Best Practices, Council of Chief State School Officers. [2010]. Common Core State Standards for English Language Arts. Washington, DC: Author. Retrieved from: <http://www.corestandards.org/ELA-Literacy/>)

Unit objectives					
Individualized education program objectives	Solve real-world equations involving the four operations	Solve problems involving geometric figures	Compute unit rates associated with ratios and fractions	Solve mathematical problems involving area and volume	Explain x and y on a graph
Understand and follow one- and two-steps directions	X	X	X	X	X
Solve applied math problems		X	X	X	X
Draw out a model to build something	X	X		X	X
Compare objects by multiple quantities	X	X	X	X	X

**Figure 1.3.** Example of a class unit matrix for math (seventh grade). (Source for unit objectives: Standards 7EE.B.3, 7.G.A.1, 7.RP.A.1, 7.G.B.6, 7.RP.A.2.d. National Governors Association Center for Best Practices, Council of Chief State School Officers. [2010]. Common Core State Standards for Mathematics. Washington, DC: Author. Retrieved from: <http://www.corestandards.org/Math/Content/7/>)

Unit objectives					
Individualized education program objectives	Explain how traits are determined by structure of DNA	Analyze relationships between biochemical processes and energy used in cell	Analyze how classification systems are developed based on speculations	Analyze interdependence of living organisms within their environments	Understand relationship between structures and function of cells and their organelles
Recognize characteristics of heredity	X		X		
Sort things by one or more attributes	X		X		
Make healthy eating choices	X	X		X	
Take care of live plants and animals		X		X	X

**Figure 1.4.** Example of a class unit matrix for science (secondary biology). (Source: NGSS Lead States. [2013.] Next Generation Science Standards: For States, By States. Washington, DC: The National Academies Press. Retrieved from: <https://www.nextgenscience.org/standards/standards>)

matrix. The first step is to list the academic units of study to be covered during the year across the top. The second step is to list the functional objectives identified for a learner along the side. The collaborating teachers will be able to check off which functional skills can be embedded into specific units of study as the year progresses. (See Figures 1.2, 1.3, and 1.4 for examples across grade levels.)

### Creating a Lesson Plan That Includes Both Core Content and Functional Skills

Once the teacher has used matrices to identify when and where learners with MSD will receive instruction on specific IEP objectives, corresponding lesson plans can be created. This process begins by first stating the core content objective and the functional skill objective to be addressed. The teacher then will need to determine whether the primary purpose of the lesson is to teach the core content, the functional skill, or both. Once this is determined, the teacher will need to identify the primary instructor (e.g., general or special education teacher, paraprofessional, peer tutor, related service personnel). The next step is to determine the instructional context that is most appropriate. The learner can be taught one-to-one, in a small group, or in a large group using a massed, spaced, or distributed trial format (Kurth et al., 2015). Regardless of the format, a systematic instructional procedure that is research or evidence based should be used (Pennington et al., 2016), even if it is embedded in large-group instruction. The specific procedure will depend on what is being taught, as well as on the learner's specific needs. Finally, the teacher must ensure that formative assessment data are collected (see Chapter 4), with the understanding that instruction will need to recur until criterion is met. Snapshots of abbreviated lesson plans that combine functional and core content can be found in Figures 1.5, 1.6, and 1.7.

Unit of study	Folk stories
Lesson	Appalachian stories
Core content objective	Describe characters in a story
Functional skill objectives	Identify appropriate clothing for weather and activities
Setting	Inclusive language arts class
Instructor	Language arts teacher and peer
Sequence of lesson	Teacher reads story to class, discussing characters in pictures; peers work together to answer questions using communication device for support

**Figure 1.5.** Example of an elementary language arts unit lesson that combines functional and core content.

Unit of study	Statistics and probability
Lesson	Creating a scatter plot graph
Core content objective	Use axes to plot a point from a survey
Functional skill objective	Use communication device to ask a question
Setting	Inclusive math class
Instructor	Math teacher and peer
Sequence of lesson	Teacher gives example and assignment for activity; learner conducts survey of students in class with peer using communication device, then plots data with peer

**Figure 1.6.** Example of a middle school math unit lesson that combines functional and core content.

Unit of study	Biology
Lesson	Principles of heredity
Core content objective	Identify dominant and recessive traits
Functional skill objective	Identify healthy lifestyle choice for inherited diseases and conditions
Setting	Inclusive biology class
Instructor	Biology teacher and peer
Sequence of lesson	Following lecture, student identifies pictures of offspring with parental traits with peer, then also identifies pictures of healthy lifestyle choices based on inherited diseases or conditions

**Figure 1.7.** Example of a secondary school science unit lesson that combines functional and core content.

### Real Teacher Talk

Two keys to implementing systematic instruction effectively are 1) first identifying the “big ideas” or essentials for learners to understand in each core content area and 2) connecting core academic content to practical, real-world contexts. Ask, “What are the most important content components for all learners?” and “How will this content help them function with greater independence both in and out of school?”

*It is so important to focus on the critical elements and practical applications of the content. In other words, what are the most important components of this content and how will the student use it—both inside and outside of the classroom? Instructional time is so limited that it is essential to use it well—we must be very clear on what we are teaching and why. Once that is determined, use an explicit instructional approach to design the lesson (i.e., modeling, guided practice, independent practice).*

Dr. Karen D. Hager  
Special Education Professor  
Utah State University

*Teach using modifications of the content. Implement a functional component within teaching of the content when possible. Lately I’ve been suggesting introducing the lesson, activating background knowledge, and using an attention grabber in different ways every lesson. Implement systematic instruction for particular targets within the lesson, other components of the lesson use visuals/graphic organizers and teach concepts with model-lead-test strategy (often the same daily). Then end the lesson with generalization activities that are different every lesson.*

Dr. Melinda Jones Ault  
Special Education Professor  
University of Kentucky

*Teaching core content to students with moderate to severe disabilities provides a full educational opportunity to acquire core content and complement acquisition of daily living skills. Students with moderate to severe disabilities require more time to learn skills than other students with disabilities, experience more difficulty in learning complex skills, and require programming for generalization and maintenance. Therefore, they need to have increased academic opportunities providing instruction tailored to their needs and performance. Teachers need to anchor core content instruction in a real-world context/requirement by considering how the specific content (core content) is necessary for the independence of the specific student. For example, they need to think and plan how they use the concepts and reasoning from science or math in current and future environments.*

Dr. Elif Tekin-Iftar  
Special Education Professor  
Anadolu University, Turkey

*I believe teachers should prioritize core content instruction because it is complementary to other domains, such as communication and self-determination. Beginning with chronologically age-appropriate standards, teachers should target the “big ideas” in each core content area while simultaneously ensuring students have foundational skills in literacy and numeracy. Students with moderate to severe disabilities are most likely going to have skill gaps in these areas that require instruction that may not be grade aligned. For example, foundational reading standards are found in kindergarten to second grade, yet students with MSD are likely going to need continued explicit instruction in this area throughout their school experience. Similarly, early numeracy skills, such as counting with one-to-one correspondence, number identification, and making sets, are foundational to later success in mathematics, yet are only found in kindergarten state standards. Teachers can embed these core content skills within grade aligned math lessons, such as counting tiles that fit inside a square to find the area or identifying numbers on the x axis of a graph. Core content instruction should be made personally relevant and meaningful by contextualizing it within the real-world setting as much as possible and directly teaching students to generalize beyond the classroom.*

Dr. Jenny Root  
Special Education Professor  
Florida State University

*If possible, it makes sense to include functional content as well as core content in the same lesson. However, I don't think this should preclude teachers from teaching core content on its own, for its own sake. Further, isn't reading or math a "functional" skill?*

Dr. Victoria F. Knight  
Special Education Professor  
University of British Columbia

## SAMPLE EDUCATIONAL PROGRAM FOR A LEARNER WITH MODERATE TO SEVERE DISABILITIES

When the educational team meets to establish an IEP for Kaia, a middle school learner with a moderate disability, they already know the standards that Kaia's same-age peers are expected to learn as they select corresponding goals and objectives for Kaia. When they interview Kaia's caregiver for input while compiling an ecological inventory, they learn that Kaia lives in a small neighborhood in their rural town. Each day, she must cross the street to go to the bus stop to catch the school bus, which is of concern to Kaia's caregiver. Someday, the caregiver hopes that she will live in a supported apartment in a nearby city where she can cross a street to catch a bus to go shopping or to work at a job site. After task-analyzing the activity of crossing the street, the team recognizes that it will be beneficial for Kaia to learn to identify the colors of a stoplight (i.e., red, green, yellow) and what they mean, to read and respond to related survival words (e.g., *stop*, *walk*, *don't walk*, *caution*), to recognize numerals as the seconds appear on a monitor and only walk when she has sufficient time, and to remain within specific boundaries (i.e., white lines) when walking. The team then determines which of these skills she can accomplish independently and which may need a support or accommodations based on her hearing, vision, motor skills, and degree of cognitive impairment.

Once the ecological inventory process is complete, the team discusses how the targeted skills can be taught systematically. Kaia's caregiver can be trained to work on street crossing in the natural environment each day, and her teacher or other staff can supplement this instruction when Kaia's class goes on field trips. While working on street crossing, core content in language arts, math, science, social studies, and physical education can be embedded, as shown in Table 1.1.

**Table 1.1.** Examples of core content objectives that can be taught in functional activities

Class	Functional objective
Language arts	While crossing the street, Kaia will identify the words displayed on the "Walk" sign with 100% accuracy for three opportunities. While crossing the street, Kaia will demonstrate comprehension of words displayed on the "Walk" sign by performing the correct response for three opportunities. While crossing the street, Kaia will state the opposite of "walk" as "don't walk" with 100% accuracy for three opportunities.
Math	While crossing the street, Kaia will identify the numbers displayed on the "Walk" sign with 100% accuracy for three opportunities. When standing alone in front of a "Walk" sign, Kaia will subtract the numbers shown from 10 to determine how many seconds are left to cross with 100% accuracy for three opportunities.
Science	While crossing the street, Kaia will state the weather conditions and season of the year before crossing with 100% accuracy for three opportunities. While crossing the street, Kaia will identify the cloud structures in the sky and the type of weather they indicate with 100% accuracy for three opportunities.
Social studies	While crossing the street, Kaia will state the name of the street, town, county, state, and country before crossing with 100% accuracy for three opportunities. While crossing the street, Kaia will state the rules for crossing a street safely (stop, look left-right-left, and listen for oncoming traffic before crossing) with 100% accuracy for three opportunities.
Physical education	While crossing the street, Kaia will stay within the boundaries of the sidewalk for three opportunities. While crossing the street, Kaia will use a stopwatch to time the number of seconds it takes for her to cross the street from one curb to the opposite curb for three opportunities.

**Table 1.2.** Examples of functional objectives that can be taught in academic classes

Class	Functional objective
Language arts	During language arts, Kaia will read and define “walk” and “don’t walk” with 100% accuracy across three opportunities. Opportunities may include lessons on contractions (do not = don’t) or opposites (do versus do not).
Math	During math class, Kaia will identify and count numbers up to 10 with 100% accuracy across three opportunities. Opportunities may include lessons on telling time (counting seconds, minutes, hours), using a number line (counting forward/backward), and fractions (10 seconds is one-sixth of 60 seconds [1 minute]).
Science	During science class, Kaia will identify red, green, and yellow with 100% accuracy across three opportunities. Opportunities may include identifying green leaves, red berries, and yellow blossoms during biology class.

Although a general education class (e.g., health, social studies) may have offered a specific unit on safe street crossing for a limited period when Kaia was younger, some of the essential skills to cross a street can be embedded in Kaia’s current daily academic curriculum. For example, classroom instructors can embed instruction on colors across lessons in classes as those colors appear naturally in materials (language arts, math, science, social studies, electives). Numerals, counting, and time can be taught in math, whereas using measures of time can be embedded in following the daily schedule (e.g., changing classes). Walking within boundaries can be taught when playing games in physical education class or when changing classes in the hallway. Additional examples of functional objectives for Kaia that can be taught in academic classes can be found in Table 1.2.

## ADDRESSING THE CURRICULUM AND INCLUSION FROM A DISTANCE

Even when best practices are in place, there are times when learners may find themselves participating in instruction at a distance from their teachers and peers (e.g., hospitalizations, school closures). This requires a great deal of collaboration between general and special education teachers as well as with families. To address content, a decision will need to be made as to the format in which instruction will continue. There are several options. A learner may receive instructional materials (adapted as needed) for independent work. When assistance is needed, teachers may coach family members or caregivers (in person or at a distance) in content and its delivery. If technology is available, learners may access face-to-face classes from a distance or participate in fully online classes. Delivery may be from the special or general education teacher or another trained instructor. If a large-group instructional format is used, supplemental one-to-one instruction also may be needed.

Inclusion is a bit more difficult to address under these circumstances. Whether or not the learner participates in virtual general education classes, interactions with peers without disabilities should be facilitated. Distance education delivered via technology can connect the learner with peers in a large-group or small-group format (e.g., breakout rooms, chat rooms). If virtual options are not available, one-to-one peer interactions can be facilitated in real time by connecting via phone calls (video or audio). Delayed interactions can take place via texts, discussion board posts, or even snail mail. Peer interactions can consist of collaborative work on projects, peer tutoring, or just social interactions.

## SUMMARY: MEANINGFUL, STANDARDS-BASED SYSTEMATIC INSTRUCTION

Before presenting *how* to teach using systematic instruction, it is important to determine *where* to teach and *what* to teach. The premise of this chapter is that core content should be taught in a way that is meaningful and relevant to learners with MSD if they are to someday live and participate as independently as possible in least restrictive adult environments (e.g., supported apartment or employment, community and recreational activities) and that instruction should occur in the most inclusive settings possible where learners with and without disabilities can interact. This means that both core content and functional skills should be taught. After functional skills



are identified, they often can be embedded within academic general education core content classes. Because learners with MSD usually require intense, specially designed instruction with repeated exposures to master content, core content also can be embedded when teaching specific functional skills within other appropriate activities throughout the day. Whereas academic core content is identified through reviewing state standards, functional skills are identified through an ecological inventory process, as well as through adaptive behavior scales and interviews.

## QUESTIONS FOR REFLECTION

1. Explain why inclusion in general education settings is a beneficial practice for learners with MSD.
2. Why is it important to teach core content in a way that is meaningful and relevant to the life of a learner with moderate to severe disabilities?
3. What are some strategies that can be used to ensure that core content is meaningful to learners with MSD?
4. Create matrices that show a) how functional objectives can be embedded in daily instruction and activities and b) how functional objectives can be embedded in instructional units throughout the year.
5. Create a brief lesson plan that addresses both academic and functional content that lists the following: a) unit of study, b) specific lesson topic, c) core content objectives, d) functional skill objective, e) instructional setting, f) instructor(s), and g) sequence of the lesson.

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**“Even more of a gift than the first edition, this book provides the tools needed to stand tall in our belief that all individuals with moderate and severe disabilities *can* and *will* learn when provided quality instruction.”**

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