Shaping Explicit Instruction to Foster Culturally Responsive Math Instruction Through Word Problems for Elementary Learners

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Mathematics is typically perceived as an objective subject due to its clarity and linearity. If this is accepted as true, then students of any race, ethnicity, gender, or class should have access to high-quality culturally responsive instruction in mathematics. Because this is not always the case, we explore strategies that special education teachers, whose instruction typically focuses on student difficulties, can use to provide intensive math instruction with an authentic and responsive approach. This article discusses practices and strategies focused on using explicit instruction to build access, foster individual identities, and develop equitable pathways for students to reach high expectations.

Keywords: **diversity, mathematics, word problems, explicit instruction, culturally responsive**

Introduction

Culturally Responsive Math Instruction for Inclusive Elementary Classrooms

Over the past decade, classrooms have become more inclusive and culturally diverse, a trend projected to continue (NCES, 2023). The National Center for Education Statistics (NCES) reported a decrease in the percentage of White students from 52% to 45%, while the student population of diverse and ethnic backgrounds increased from 48% to 55% (NCES, 2023). This demographic shift necessitates a change in instructional approaches to be more inclusive and welcoming to the growing populations of diverse students.

This article aims to guide educators, across the United States and abroad, in implementing explicit instruction through a culturally responsive lens, particularly in teaching word problems at the elementary level. The focus on explicit instruction is to support inclusion in the general education classroom for diverse student populations, which could include refugees or immigrants. Effective math teachers focus on high expectations for math understanding and provide equitable pathways to achievement. This approach is rooted in the belief that diversity should be considered in all aspects of planning and delivering high-quality math instruction. Access to this quality instruction aligns with the

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Individuals with Disabilities Education Act, 20 U.S.C. § 1450 (2004), which emphasizes maintaining high academic achievement standards and clear performance goals for children with disabilities.

Culturally and linguistically diverse learners deserve materials and experiences that are relatable and connected to real-life applications. Teachers can build on these connections by creating effective mathematics learning environments that invite multiple perspectives and support the diversity of the student population (Gutierrez, 2009). Students should find relevance and ownership in their mathematics knowledge and feel supported and encouraged in their learning journey.

Defining Culturally Responsive Teaching

Culturally responsive teaching (CRT) in mathematics education is a pedagogical approach that recognizes and values students' cultural backgrounds, experiences, and identities as integral to their learning process. This approach seeks to bridge the gap between students' home cultures and the academic environment by making learning relevant and meaningful, particularly for marginalized and underserved student populations. CRT in mathematics education not only addresses the content of what is taught but also considers how it is taught, striving to make mathematics accessible and engaging for all students by connecting mathematical concepts to their lived experiences.

At its core, culturally responsive mathematics teaching challenges traditional, Eurocentric methods of instruction that often dominate mathematics classrooms. These traditional methods tend to emphasize rote learning, memorization, and standardized testing, which can alienate students whose cultural ways of knowing and communicating differ from those valued in mainstream educational settings (Ladson-Billings, 1995). CRT, instead, emphasizes the importance of cultural relevance, relational teaching, and the development of students' critical consciousness, allowing them to see mathematics as a tool for understanding and transforming their world (Gay, 2010). Teachers who adopt culturally responsive approaches in mathematics create learning environments that affirm students' identities, utilize culturally familiar contexts, and encourage students to see themselves as capable and competent mathematicians.

One of the foundational principles of CRT in mathematics is the recognition of the cultural nature of mathematical knowledge itself. Scholars argue that mathematics is not a neutral or culture-free discipline but is deeply embedded in cultural contexts that shape how mathematical knowledge is created, understood, and applied (Nasir et al., 2008). By acknowledging that mathematical practices vary across cultures and that students bring diverse mathematical experiences from their homes and communities, teachers can position these cultural funds of knowledge as valuable resources in the classroom (Moll et al., 1992). For instance, mathematical concepts such as patterns, measurement, and

problem-solving are embedded in various cultural activities, such as quilting in African American traditions, navigation techniques in Pacific Islander cultures, and market bargaining in Latin American communities. Drawing on these examples in the classroom helps students make connections between their everyday lives and the mathematical concepts being taught, thereby enhancing their engagement and understanding.

In addition to integrating culturally relevant content, CRT in mathematics emphasizes instructional practices that support students' cultural ways of learning. For example, collaborative learning, storytelling, and the use of manipulatives are often more effective for students from cultures that value collective learning and oral traditions (Jackson, 2013). Culturally responsive mathematics teachers utilize these strategies to create a more inclusive classroom environment that honors the diverse cognitive styles and communication patterns of their students. Furthermore, CRT emphasizes the importance of creating a classroom culture that promotes respect, trust, and strong teacher-student relationships. Teachers who know their students' cultural backgrounds and incorporate that knowledge into their teaching practices can better support students' academic success and overall sense of belonging in the classroom (Bondy et al., 2012).

Developing students' critical consciousness is another key component of CRT in mathematics. Critical consciousness involves helping students recognize and critique social, political, and economic inequalities and empowering them to use mathematics as a tool for social justice (Gutstein, 2006). Culturally responsive mathematics teachers design lessons that not only cover mathematical content but also challenge students to think critically about real-world issues, such as economic disparities, environmental justice, and access to resources. For example, a lesson on statistics might involve analyzing data on income inequality or health disparities, allowing students to use mathematics to make sense of these inequities and consider potential solutions. This approach not only makes mathematics more relevant and engaging for students but also encourages them to see themselves as active agents of change in their communities.

However, implementing culturally responsive teaching in mathematics education requires a commitment to continuous learning and self-reflection on the part of educators. Teachers must examine their own biases and assumptions about students' abilities and work actively to dismantle deficit perspectives that view students from marginalized backgrounds as lacking rather than as possessing valuable cultural knowledge (Villegas & Lucas, 2002). Professional development and ongoing support are critical for helping teachers develop the skills and knowledge necessary to enact culturally responsive mathematics instruction effectively. This includes training on how to identify and incorporate students' cultural funds of knowledge, how to facilitate classroom discussions on social justice issues, and how to create a positive and inclusive learning environment.

Culturally responsive teaching in mathematics education is a transformative approach that seeks to make mathematics instruction more inclusive, relevant, and empowering for all students. By valuing students' cultural backgrounds, integrating culturally relevant content, and promoting critical consciousness, CRT challenges the traditional, exclusionary practices of mathematics education and opens up new possibilities for engaging students in meaningful mathematical learning. This approach not only enhances students' academic achievement but also fosters a deeper sense of identity, belonging, and agency, equipping them with the tools to navigate and challenge the world around them.

Adapting Explicit Instruction to Meet Diverse Needs

Adapting explicit instruction for culturally diverse students is essential for creating equitable learning environments that respond to the unique needs of all students. Explicit instruction, characterized by clear, structured, and systematic teaching approaches, has been widely recognized for its effectiveness in promoting academic success among students, particularly those with learning disabilities and those who are at risk for academic failure (Archer & Hughes, 2011). However, when working with culturally diverse students, traditional forms of explicit instruction may need modifications to ensure that they are culturally responsive, engaging, and relevant. By embedding culturally relevant pedagogy (CRP) into explicit instruction, educators can enhance students' academic outcomes and foster a more inclusive learning environment.

Understanding Cultural Responsiveness in Explicit Instruction

Cultural responsiveness involves recognizing and respecting the diverse cultural backgrounds, languages, and experiences that students bring into the classroom. Ladson-Billings (1995) defined culturally responsive pedagogy as an approach that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes. When explicit instruction is adapted to be culturally responsive, it not only maintains the core components of direct teaching but also integrates students' cultural contexts into the learning process, making instruction more meaningful and accessible (Gay, 2010). This adaptation requires educators to be aware of students' cultural backgrounds and to utilize culturally relevant examples, languages, and practices that resonate with their experiences.

To effectively adapt explicit instruction for culturally diverse students, it is crucial for educators to start by building relationships and understanding the cultural assets students bring to the classroom. This approach can involve conducting culturally sensitive assessments and observations to identify students' strengths, interests, and learning preferences. The information gathered can then be used to modify instructional materials, examples, and activities to align with students' cultural contexts (Gay, 2018). For instance, instead of using generic examples in a math problem, a teacher might incorporate culturally

relevant scenarios that reflect the students' lived experiences, such as local community settings or culturally significant events. This type of adaptation helps to bridge the gap between the students' cultural world and the academic content being taught.

Culturally Adapted Instructional Language and Delivery

Language plays a significant role in the effectiveness of explicit instruction, especially for students from culturally and linguistically diverse backgrounds. Culturally responsive explicit instruction requires modifications in how content is communicated to ensure that language barriers do not hinder comprehension. Teachers should consider the language proficiency of their students and provide clear, concise instructions that are linguistically accessible. This might include using visual aids, gestures, or translated materials to support understanding. Additionally, teachers should encourage the use of students' home languages as a resource, which can foster a deeper connection to the content and facilitate learning (Paris, 2012).

Furthermore, the pacing and delivery of instruction should be adjusted to accommodate diverse learning needs. Some students may require more time to process information or benefit from repeated modeling and guided practice. The explicit nature of instruction does not change, but the way it is delivered can be adjusted to be more engaging and responsive. Teachers can incorporate interactive elements such as call-and-response, culturally relevant storytelling, and collaborative learning activities that resonate with students' cultural communication styles. For example, using narrative approaches that reflect oral traditions common in many cultures can make instruction more relatable and memorable for students (Howard, 2019).

Incorporating Culturally Relevant Content and Contexts

Integrating culturally relevant content into explicit instruction involves more than just including multicultural examples; it requires a deliberate effort to connect learning to students' cultural and community contexts. This approach aligns with the principles of culturally sustaining pedagogy, which seeks to maintain and value cultural pluralism in the classroom (Paris & Alim, 2017). By embedding content that reflects students' cultural histories, languages, and experiences, educators can make learning more engaging and affirming. For instance, in a history lesson, a teacher might incorporate perspectives and contributions of diverse cultural groups that are often marginalized in traditional curricula. Similarly, in a reading lesson, texts that reflect students' cultural backgrounds can be used to enhance literacy skills while validating their cultural identities.

The use of culturally relevant content also extends to the examples and scenarios used during instruction. In explicit instruction, examples are a critical tool for demonstrating skills or concepts. When these examples are culturally relevant, they not only clarify the content but also validate students' lived expe-

riences. For example, when teaching problem-solving skills in mathematics, a teacher might use examples that involve situations familiar to the students' communities, such as calculating costs for traditional cultural events or measuring ingredients for culturally significant recipes. This approach not only makes the content more accessible but also helps students see the value and application of what they are learning in their own lives.

Fostering a Culturally Inclusive Learning Environment

Creating a classroom environment that values cultural diversity is essential for the success of culturally adapted explicit instruction. Teachers can foster a sense of belonging and respect by celebrating cultural differences and encouraging students to share their cultural knowledge and experiences as part of the learning process. This inclusive atmosphere supports students' academic engagement and motivation, as they feel seen and valued in the classroom. Additionally, it provides an opportunity for all students to learn about and appreciate cultural diversity, promoting a more inclusive and respectful school culture (Banks, 2015).

Teachers should also be reflective practitioners, continually examining their own biases and assumptions about culturally diverse students. Professional development in culturally responsive teaching can equip educators with the skills and knowledge needed to effectively adapt their instructional practices. By engaging in ongoing learning about cultural diversity and inclusive teaching strategies, educators can better serve their students and create a classroom environment where all students have the opportunity to thrive.

Adapting explicit instruction for culturally diverse students involves a commitment to recognizing and valuing students' cultural identities within the learning process. By integrating culturally relevant pedagogy, modifying instructional language and delivery, incorporating culturally relevant content, and fostering an inclusive learning environment, educators can enhance the effectiveness of explicit instruction for all students. This approach not only supports academic achievement but also affirms students' cultural identities, contributing to a more equitable and inclusive educational experience.

Explicit Instruction

Explicit instruction is a highly effective approach for teaching word problem-solving skills, particularly when focusing on evidence-based practices. This instructional method involves systematically presenting information in clear, manageable steps, ensuring that students receive direct guidance without the ambiguity often found in more implicit instructional methods where learners are left to infer concepts on their own. Explicit instruction prioritizes a structured approach in which educators' model specific concepts and skills directly, using clear examples and demonstrations to facilitate a comprehensive understanding of the content (Archer & Hughes, 2011).

The effectiveness of explicit instruction is rooted in its structured nature, which allows for a sequence of teaching strategies that are adaptable to meet diverse learner needs. Archer and Hughes (2011) identified six key instructional strategies central to explicit instruction: (1) review, (2) teacher presentation with modeling of skills, (3) guided practice, (4) corrective feedback, (5) independent practice, and (6) review. These strategies provide a systematic framework that educators can tailor to suit the varying needs of students, offering a balance of teacher-directed modeling and student-centered practice.

The flexibility within the sequence of these strategies is a defining feature of explicit instruction. For students who struggle with particular concepts, educators can emphasize more teacher-directed activities, such as modeling and guided practice, to provide additional support. For instance, during the teacher presentation phase, educators' model problem-solving processes step-by-step, making their thinking visible to students. This modeling helps demystify the problem-solving process and provides a clear example for students to emulate during guided and independent practice sessions (Rosenshine, 2012).

Guided practice is another critical component, wherein students work on problems with scaffolding from the teacher. This phase allows students to apply what they have observed during the teacher's modeling while receiving immediate feedback and support. Corrective feedback during guided practice helps to address misconceptions and solidify understanding, ensuring that students are not simply practicing errors but are refining their skills with precision (Swanson et al., 2019). Feedback is most effective when it is specific, timely, and constructive, allowing students to adjust their approaches before moving on to independent practice.

Independent practice provides students with opportunities to apply their skills autonomously, solidifying their learning through repetition and reinforcement. This phase of explicit instruction is crucial because it enables students to demonstrate mastery of the content without direct teacher support, building confidence and fluency in problem-solving (Archer & Hughes, 2011). The review component, both at the beginning and end of the instructional sequence, serves to reinforce key concepts, ensuring that learning is cumulative and that previously taught material is retained.

Explicit instruction's structured and direct nature makes it particularly effective for teaching complex skills like word problem-solving. The clear presentation of information, with an emphasis on modeling and guided practice, helps students understand how to approach word problems systematically. Additionally, the instructional sequence's flexibility allows educators to adjust the level of support based on student needs, which is especially beneficial for students who require additional assistance in understanding the material.

In summary, explicit instruction provides a well-structured and systematic approach that directly addresses students' learning needs, particularly in the context of teaching word problem-solving skills. By utilizing key instructional strategies—review, modeling, guided practice, corrective feedback, independent practice, and review—educators can deliver content in a clear, organized manner that enhances student understanding and supports mastery of complex concepts (Archer & Hughes, 2011). This approach not only aids learners in grasping the material but also empowers them to apply their knowledge confidently and independently. In the following vignette, we use the example of Mrs. Connors, an elementary special education teacher, and how she designs her word problem solving lessons for Felipe, her bilingual student with autism. We will see how Mrs. Connors builds access to material that Felipe can relate to and uses her relationship to increase confidence so Felipe can identify as a mathematician and problem solver. We will also see how Mrs. Connors partners with Felipe's general education teacher, Mr. Moore, to create a pathway for him to meet the rigorous expectations placed on 2nd grade students with support and scaffolding.

Vignette

Mrs. Connors is a passionate special education teacher who has been working at Frontier Elementary School for seven years. Mrs. Connors' classroom serves students with intellectual disabilities, autism, and low incidence disabilities. One of the students in her classroom, Felipe, is a second grader who comes from a Spanish speaking home. At school, Felipe speaks and seems to understand concepts presented in English. Mrs. Connors feels confident in the relationship she has built with Felipe and his family since kindergarten and feels comfortable using what she knows about his culture, home life, and personal interests to adapt her classroom lessons to be accessible, identity-supporting, and equitable for him to meet his grade level's high expectations.

Mr. Moore, Felipe's second grade teacher, is new to their building and brings with him three years of elementary experience. Mr. Moore provides most of Felipe's math instruction, and despite providing him with appropriate accommodations and resources, he notices that Felipe seems to be struggling with understanding how to solve word problems. Mr. Moore emails Mrs. Connors seeking her advice, for he doesn't feel like he can help Felipe more than he already is and is not sure what to do.

Mrs. Connors, having worked with Felipe over the past three years, knows that the dynamics of Frontier Elementary do not afford a very diverse student or teacher population. There are no faculty of ethnically or linguistically diverse cultures nor a large population of students from the same or similar backgrounds. Most of their students come from White middle-class households, and this is generally the audience that teachers tend to teach to when creating their lessons. Mrs. Connors knows that with a few tweaks to how Mr. Moore plans his lessons, keeping Felipe in mind, he will be more likely to understand the content and processes being taught. She also

knows that if this does not change the outcome of Felipe's learning, it will ensure her that it is the skill he is struggling with and not how it is being presented. Mr. Moore is receptive to this feedback and willing to see if it will benefit Felipe's understanding and allow him to be more participative in class.

Together, Mr. Moore and Mrs. Connors develop a plan to address how they will teach word problems, allowing Felipe to access the information in a new way relevant to him. This plan includes utilizing culturally relevant materials and manipulatives, embedding music and cooking into word problems, making connections to real life situations, and increasing the use of resources (e.g., definitions, drawings, and visuals) to help Felipe comprehend necessary vocabulary.

Creating Access

Creating access for students to engage appropriately with math content sounds simple. However, it is not enough to open our classroom doors to all students. Research says that providing students with access is not enough (NCTM, 2014). Teachers must have a deep understanding of what practices are involved in supporting access and equity in their mathematics lessons. The following are not comprehensive solutions but a good starting place for ensuring that all students have access to rich learning in mathematics: high quality and rigorous instruction, intentional use of available resources, differentiated support throughout their learning, and high expectations (NCTM, 2014).

Creating accessible math content for a diverse audience requires having multiple ways students can engage with content that also allow them to use their unique assets and differences to be successful in learning. This provides avenues to participate in activities regardless of the student's instructional level. This culture of access does not discriminate against the opportunity to connect with content based on level of skill, dis/ability, culture, or socio-economic status.

Special education teachers have a unique ability to tailor their instruction to be accessible to a diverse audience of students. They can do this through their intentional use of resources, differentiated supports, and high expectations for the students they serve. These strategies should be adapted to meet the specific needs of individual students and ever-changing educational contexts.

Intentional Use of Resources

Designing learning stations that cater to various student strengths and abilities can help students engage with content in different ways. Each station can focus on specific skills or concepts while integrating contexts that are relevant and relatable to the students in the groups. For example, Mrs. Connors might include a set of word problems where a child is helping their parent in the kitchen, cooking meals from Felipe's culture, as a way to integrate her use of resources while creating a way for Felipe to connect with the materials.

Another way to help students engage with mathematical content is to integrate technology tools and resources aligned with learning objectives. Tech-

nology such as educational apps, interactive websites, and multimedia resources can enhance the learning experience. Mr. Moore can incorporate Felipe's love of music by allowing him to watch and listen to educational music related to their topic as a supplemental way for Felipe to engage with the content.

Differentiated Support

Providing tiered assignments that vary in complexity, allowing flexibility to choose tasks that match student skill levels, can help teachers cater to their struggling learners and those who need enrichment. When implementing flexible grouping strategies based on student needs, small group, one-on-one instruction, and whole-class activities can be used to address diverse learning preferences. While developing individualized learning plans, educators should consider each student's strengths, weaknesses, and learning styles. This might involve creating differentiated assignments, assessments, or resources. Mrs. Connors and Mr. Moore can work together to make sure that Felipe's needs are met at his level during the whole group lesson by intentionally planning ways to engage Felipe by making content relatable to his experiences. In strategic small group instruction, Mr. Moore can provide more support by providing visual and written examples of the vocabulary within the word problems. Then, Mrs. Connors can provide Felipe explicit instruction on the areas Felipe is continuing to struggle with during her one-on-one special education time.

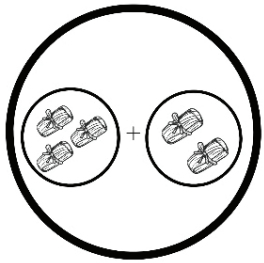
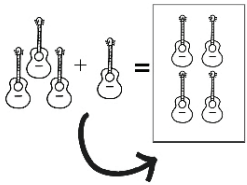
High Expectations

Communicating clear and high expectations benefits all students. This includes setting standards for academics, behavior, and classroom participation while clearly articulating learning goals and outcomes. Reinforcing positive behaviors and academic achievements helps recognize and celebrate student successes, fostering a positive and high-achieving classroom culture. Providing constructive feedback that focuses on growth involves students in setting their own goals and helps them develop strategies to achieve those goals. For Felipe, his teachers need to use specific vocabulary and provide visual and written supports linked to corresponding math symbols. See Table 1 for an example of paired visual and written representations.

Supporting Identities in Mathematics

Supporting identities in mathematics involves deliberately incorporating instructional elements that resonate with the diverse backgrounds and experiences of students. This approach aims to create an inclusive learning environment by using examples, problems, and contexts that reflect students' cultural, racial, gender, socioeconomic, and personal identities. By doing so, educators seek to make mathematics more relatable, breaking down potential barriers to understanding and fostering a sense of value and representation for all students. This strategy enhances engagement, motivation, and overall success in learning mathematics.

Table 1. ***Example Of Paired Visual and Written Representations***

Vocabulary Word	Definition	Math Symbol	Visual Representation
Addition	The process of joining (something) to something else so as to increase the size, number, or amount.	+	
Total	A total is a whole or complete amount, and "to total" is to add numbers	+	
Increase	To make greater as in number or size.	+	

Challenges and Solutions

A challenge faced by Mrs. Connors and Mr. Moore is ensuring that all students can access and understand the mathematical concepts being taught. This may require adaptations or accommodation for students with disabilities or language barriers. In American schools, the prevalent approach to addressing disability diagnoses is through providing accommodations. Recent studies have

shown that a large majority of students with disabilities are granted accommodation, indicating that these adjustments are more commonly implemented than evidence-based interventions (Lovett, 2021). Mrs. Connors and Mr. Moore must work together cohesively to ensure that all students receive the support they need. They must be mindful of their own biases and assumptions about their students, willing to learn about their students' cultures and backgrounds.

Culturally Relevant Curriculum

When addressing the challenge of ensuring accessibility and understanding for all students, the commitment to creating word problems that resonate with Felipe's identity becomes a pivotal strategy. Recognizing that traditional approaches may not be as effective for students like him, Mrs. Connors and Mr. Moore take deliberate steps to infuse cultural relevance into the curriculum. The incorporation of culturally relevant materials, music, cooking, and real-life connections in word problems is not merely an instructional adjustment; it is a profound acknowledgment of the diverse backgrounds and lived experiences in the classroom. By doing so, they work against potential biases and assumptions, fostering an inclusive learning space that values and celebrates differences.

Affirming Student Identity

The effort to mirror situations familiar to Felipe in word problems is not just about making math more accessible; it affirms his identity within the academic context. By embracing and integrating elements of students' cultural backgrounds, teachers send a powerful message that their experiences are valued and incorporated into the broader narrative of learning. This approach enriches the educational experience for all students by promoting a more comprehensive and inclusive curriculum.

Creating an Inclusive Environment

As Mr. Moore navigates the challenges of boosting student engagement in math, he recognizes the transformative potential of this approach. Creating word problems that align with Felipe's experiences is a dynamic strategy that can be adapted to meet the unique needs of every student in his classroom. In this way, the teachers are not just supporting Felipe's identity but are laying the foundation for an educational environment where every student feels seen, heard, and connected, fostering a positive and inclusive atmosphere for learning. By incorporating culturally relevant materials and real-life connections into word problems, they aim to make the content more relatable and engaging. This approach promotes a sense of belonging and recognition, actively overcoming any potential biases or assumptions. Table 2 provides helpful prompts for educators to facilitate and ensure they are creating a supportive classroom culture.

Table 2. ***Considerations & Prompts to Help Facilitate Creating a Supportive Classroom Culture***

Consideration	Prompts/Questions
Diversity Awareness	• How can I incorporate diverse perspectives, voices, and examples in my teaching materials? • Am I mindful of the various learning styles and preferences that may exist among my students?
Cultural Sensitivity	• How does the content of this lesson respect and reflect the cultural diversity of my students? • Are there any cultural references or examples that may be misunderstood or alienating to certain groups of students?
Language	• Is the language used in my lesson accessible and inclusive for students who may have different language backgrounds? • Have I considered providing additional support for students who are learning the language of instruction?
Inclusive Teaching Strategies	• What instructional strategies am I using to accommodate different learning styles and abilities? • How can I adapt my teaching methods to make the content accessible to students with diverse needs and abilities?
Representation in Materials	• Do the teaching materials, including textbooks and multimedia, represent a variety of cultures, genders, and perspectives? • Are there opportunities for students to contribute materials or examples from their own backgrounds?
Implicit Bias Reflection	• What biases or assumptions might I hold about certain groups of students, and how might these impact my teaching? • How can I actively work to identify and overcome my own biases?
Individual Student Needs	• Have I considered the individual needs of each student, including any accommodation or modifications required? • How can I provide additional support for students who may face unique challenges or barriers to learning?
Continuous Reflection	• Am I regularly reflecting on my teaching practices to identify areas for improvement in terms of diversity and inclusion? • Have I sought feedback from students and colleagues regarding the inclusivity of my lessons?

Designing Equitable Pathways to Success

Special educators can create equitable pathways to success in word problems for students from linguistically and ethnically diverse backgrounds, students with disabilities, and those where these identities intersect. Differentiated instruction, alongside collaboration and communication with families, are key strategies in designing these equitable pathways within individual classrooms. Through differentiated instruction, teachers can employ diverse representation by incorporating relevant examples and contexts in word problems. They can also use strategies such as visual aids, manipulatives, clear language and vocabulary support, flexible assessment methods, scaffolding, and feedback, all while fostering an inclusive classroom environment. These strategies allow teachers to tailor their approach to the strengths of their students and provide numerous opportunities for success.

Table 3. Word Problem Examples

Example	Culturally Inclusive Example
John has 25 apples and gives 3 to his friends. How many apples does he have now?	Lena helps her mom make tamales. She puts 3 on her plate and she eats 2. How many tamales does she have left on her plate?
Jason is buying a new bike that costs $300. His parents give him $200, and he earns $40 by mowing a neighbor's lawn. How much more money does he need to afford the bike?	Dominic got $20 from his grandmother for his birthday. His mother is taking him to the store to spend his money. Dominic finds a soccer ball for $15. How much money does Dominic have left to save for next time?

Differentiated Instruction

Differentiated instruction and explicit instruction can be effectively combined to meet the diverse needs of students. Teachers can integrate both approaches within their daily teaching by using their knowledge of students' levels of understanding and strategically grouping students for targeted instruction. Clear lesson objectives and a breakdown or roadmap of what is expected can help students understand their learning goals. Teachers can also use various instructional strategies to accommodate different learning preferences, such as presenting a whole group lesson with options for students to engage with the materials (e.g., hands-on activities, partner discussions, or drawing visual representations).

Flexible grouping for targeted instruction is most beneficial, allowing for shifts based on students' needs. This scaffolded approach provides additional support to students who need it and gradually releases them into more independent groupings as they demonstrate understanding. Differentiated materials, such as adapting word problems to be more relevant to students' lives, and individualized feedback help students understand expectations and progress toward goals. Teachers should maintain a brisk and engaging pace while allowing flexibility to adjust for varied learning rates. This provides opportunities to reteach, review, or explore extensions based on student progress. The combination of explicit and differentiated instruction creates dynamic and inclusive opportunities for student success, presenting content clearly while allowing flexibility and customized support.

Case Example: Felipe

Mrs. Connors and Mr. Moore have multiple opportunities within their word problem instruction to provide Felipe with differentiated and explicit instruction. Mr. Moore can strategically group Felipe with peers needing similar support. Strategic small grouping allows Mr. Moore to frequently check Felipe's understanding and provide more targeted support than whole group instruction. Mr. Moore can use clear language to communicate lesson objectives with examples of how Felipe might relate this to his life. Finally, Mr. Moore can provide step-by-step guidance with modeling strategies such as: the use manipulatives, using visual representations for vocabulary comprehension. These strategies will aid Felipe's understanding of more concrete concepts. Mrs. Connors can share insights into Felipe's interests, such as his enjoyment of cooking and cultural foods, allowing Mr. Moore to incorporate these interests into small group examples to engage Felipe and help him relate to the story problems.

Collaboration and Communication with Families

For students from diverse cultural backgrounds, effective communication with families is vital for school success. This communication builds strong connections, providing educators with new perspectives on students' cultural contexts. When home and school collaborate, there is better alignment between school learning and home experiences, supporting learning connections and reinforcing key concepts. Effective parent-teacher communication supports language development and celebrates linguistic diversity in the classroom. Teachers who understand their students' native languages can better individualize support, recognizing and incorporating diverse cultural norms, values, and communication styles. Regular, positive communication allows teachers and parents to address learning barriers promptly, ensuring students receive necessary support. In Felipe's case, Mrs. Connors maintains strong communication with his family and includes Mr. Moore in these exchanges. For example, an email from Felipe's mother about their recent family visit to Mexico City provides valuable context

for Mr. Moore, helping him understand Felipe's potential tiredness and offering a connection point to engage Felipe in class.

Implications for Practice

The collaboration between Mrs. Connors and Mr. Moore, along with insights from Felipe's family, highlights the importance of tailored instruction for students from diverse cultural and linguistic backgrounds in math. They recognize Felipe's need for specific vocabulary, visual supports, and culturally relevant contexts in word problem instruction. Mr. Moore and Mrs. Connors create word problems that resonate with Felipe, fostering his identity and engagement. This collaboration supports Felipe's pathway to success and enhances Mr. Moore's ability to provide inclusive instruction for all students. Special educators have unique opportunities to build cultural relevance within their materials and use explicit instruction. In math word problem instruction, making content relatable and relevant to students' experiences is essential for understanding. This approach helps diverse students feel seen and represented in a subject often aligned with a White middle-class audience.

Some actionable steps for teachers wanting to implement these strategies in their classrooms start with identifying the different students you serve (e.g., students with disabilities, students with a different primary language). Teachers should consult Table 2 to determine the level at which their classroom is facilitating culturally responsive practices. From there they should consider ways they can differentiate for students who need additional support. Additional support can be provided through explicit instruction and more modeling and guided practices or through materials tailored to individualized needs (e.g., visual representations, manipulatives, written directions).

Conclusion

This exploration of explicit instruction within a culturally responsive framework underscores the importance of intentional efforts to ensure equitable access, supportive identity formation, and the creation of pathways for student success. The case of Mrs. Connors and Mr. Moore demonstrates the transformative potential of culturally responsive explicit instruction. Recognizing and valuing diverse learner backgrounds allows educators to create an inclusive mathematics education that resonates with all students' experiences.

The changing classroom demographics highlight the urgency for educators to employ explicit instruction to adapt to and value diverse learner backgrounds. The multifaceted approach of access, identity support, and equitable pathways encourages culturally responsive teaching, paving the way for inclusive mathematics education. As the educational landscape evolves, this exploration provides a foundation and a call to action for educators to embrace explicit instruction as a powerful tool for fostering student success.

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Appendix 1

The Big 3 Strategies for Adapting Explicit Instruction to Be More Culturally Responsive