nwea

WHITE PAPER

The transformative ten: Instructional strategies learned from high-growth schools

Chase Nordengren, PhD
Principal Research Lead, Effective Instructional Strategies; NWEA

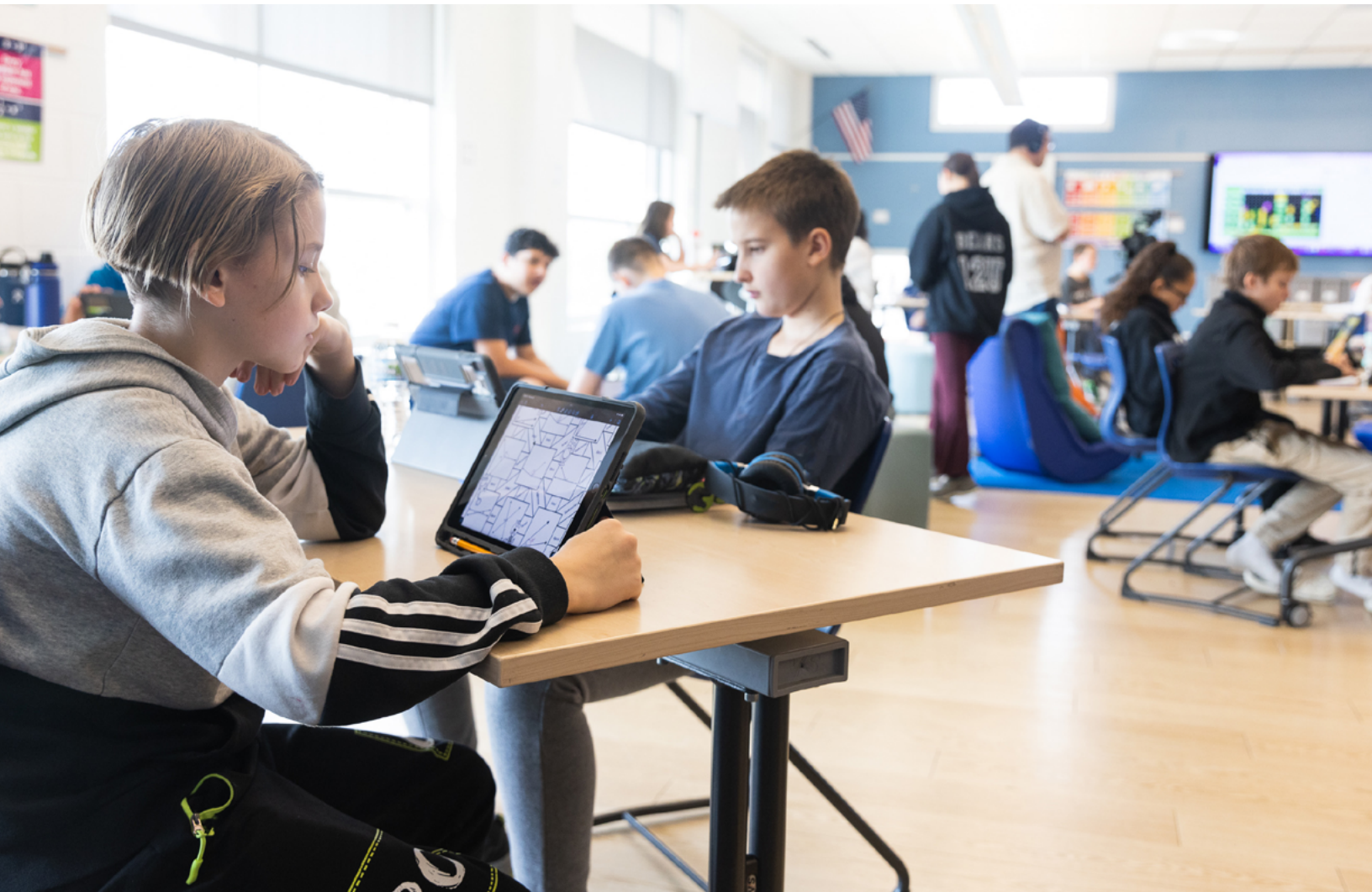

Table of contents

Introduction

When looking to make a big impact on how students learn, attention usually turns to the biggest systems like policies, budgets, and standards. While these systems are critical, they are not what students themselves interact with: when a student enters a classroom, they see their classmates, a teacher, and the educational content that teacher brings to life. At this level, seemingly small-scale and subtle adjustments can mean big changes for the academic growth students experience and the joy and empowerment they draw from learning.

In 2018, NWEA® researcher Andrew Hegedus began an exploration with one of those large systems: the longitudinal data on the achievement and growth of 700,000 students in 24,500 public schools present in our MAP® Growth™ assessment (Hegedus, 2018). His study found that schools showing high levels of growth were not necessarily those showing high levels of achievement and that high-growth schools could exist in communities with a variety of income levels and demographics. His—and our—next question was necessarily a smaller one: what can be learned from those high-growth schools about teaching and learning?

Much has happened since 2018, including a generational pandemic that has stretched schools to the brink and further expanded gaps between students at the same grade level. Research from several organizations, including NWEA, found that students affected by the pandemic showed a wider variety of achievement levels than ever before (Curriculum Associates, 2022; Dorn et al., 2021; Kuhfeld et al., 2020, 2022; Rambo-Hernandez et al., [2020], cited in Hawkins, 2020). One of these studies found a typical classroom of 30 students was likely to now include three more students who were two or more grade levels behind (Dorn et al., 2021). Public schools now report half of their students enter school behind grade level (National Center for Educational Statistics, 2023). Even with schools reopened, perceived changes in students' behaviors and mental resiliency left many teachers wondering whether something about students has fundamentally changed and whether what students are taught should also change.

To understand better how teachers were addressing this substantive challenge, it made sense to return to these "high growth for all" schools. If the first study of these schools was a wide-angle lens, this study applies a zoom, focusing intensely on the work of four teachers in two high-growth schools in one district. This report documents ten concrete classroom strategies designed to meet two competing needs: meeting learners where they are and providing all learners access to the grade-level content they need to succeed. While this balance is tricky, it does not require teachers to choose one approach over another. These ten strategies show how small changes in instruction can support big growth for students.

Learning from high-growth schools

Most research in education identifies the best schools by their achievement: the percentage of students meeting or exceeding a particular set of standards. Exclusively focusing on achievement, however, is controversial: achievement has been related to several factors outside the realm of school control, especially student poverty and background (Hattie, 2023; Hegedus, 2018). One alternative is identifying schools by their growth: the amount of learning students demonstrated in a given time period, regardless of where that learning started or ended.

Switching from focusing on achievement to focusing on growth can highlight a completely different set of schools with a different set of instructional practices. In a random sample of 1500 schools, Hegedus (2018) found that some 60% of high poverty schools produced growth that was above average. To understand which schools are most effective and avoid stereotyping schools that serve the neediest students, Hegedus argues, policymakers and researchers must consider both a school's achievement levels and growth levels.

What about these high-growth schools distinguishes them from their peers? To help answer this question, Hegedus, Cronin, and King (2020) took a deeper dive into MAP Growth data, identifying 789 schools that produce high-growth year-after-year for students across achievement levels, from the lowest achieving to the highest. While some of these schools sit in high-income communities and serve mostly homogenous student bodies, others serve a diverse variety of students and work with the same kinds of limited resources that most schools in the US must work with.

For this zoom into "high growth for all" schools, this study focuses on two of those schools, an elementary and middle school in Schiller Park, Illinois. Schiller Park Schools looks a lot like many other school districts across the country: 55% of students in the district are non-white, 62% of students receive free or reduced-price lunches, 25% of students are identified as English language learners, and the district's per-pupil spending ($12,365) in 2021 was around $2,000 below the state average (Illinois State Board of Education, 2022). Still, the elementary and middle school featured here beat the odds: both produced higher-than-typical student growth, across each decile of student achievement, six school years in a row.

This record of resilient growth precedes the COVID-19 pandemic. However, we can view it as one of the district's most valuable resources entering into the uncertain environment the pandemic produced. With how much rapid change has hit all kinds of schools, the case studies here undoubtedly represent practices different than those in place in 2020. Nevertheless, they show how one group of teachers in a high-growth environment finds balance between conflicting priorities during a challenging time.

The debate at the heart of effective instruction

What kind of instruction best helps students grow? While there are as many approaches to instruction as there are teachers, the debate around what makes for effective teaching has centered in recent years on one choice: either focus on providing all students the grade-level content prescribed by state-level standards or differentiate content for students based on their level of readiness. Under the pressures created by the unfinished learning left by the pandemic, the volume of this debate has intensified.

Proponents of focusing on grade-level instruction argue that placing students in below grade-level content traps them in a system that permanently prevents them from getting access to the tiers of knowledge they need to succeed relative to their peers (Hollingsworth & Ybarra, 2017). Lack of access to grade-level assignments and materials is, according to prominent advocacy organization TNTP, one of the most significant barriers to opportunity for students of color and underserved students generally (TNTP, 2018). In their review of 1,000 lessons, 5,000 assignments, and 20,000 student work samples, they find that students were able to meet the demands of their assignments 71% of the time. However, students showed mastery of grade-level content in those assignments only 17% of the time. This gap, they say, is responsible for instruction that is nonengaging for students, leads to increased use of remediation coursework in postsecondary education, and disproportionately impacts students of color, low-income students, emergent bilingual students, and students with mild or moderate disabilities.

On the other side of the debate, proponents of differentiated instruction argue that students with different backgrounds, academic experiences, and proficiencies require different teaching strategies and different content to succeed (Subban, 2006). Because students bring different knowledge and learning experiences to the classroom, they will have different "entry points" to a lesson, different ways of becoming engaged with learning (National Academies of Sciences, Engineering, and Medicine [NASEM], 2018). Asking all students to start from the same place can frustrate students who are below that level and bore students above that level (Tomlinson, 2017b). The result is not only lost learning, but further student disengagement and critical gaps in knowledge and skills as students mature. Scholars of differentiation have focused on the ways teachers can address multiple entry points within a lesson by changing what students do in the classroom or who they do it with.

These two points of view have been pitted against one another, with heated language that makes balancing the two ideas appear to be an either-or proposition:

- For advocates of grade-level instruction, "'meeting kids where they are' becomes an excuse for holding persistently low expectations, and ineffective 'differentiation' means some students get less and never have the chance to catch up." (TNTP, 2018, p. 50). Teaching grade-level content, they argue, is a fundamental issue of instructional equity. "You can't provide equal opportunity unless you provide equal

access to grade-level content…Schools that allow students to be taught below grade level become remedial schools, and students taught below grade level perform below grade level" (Hollingsworth & Ybarra, 2017, p. 85).

- Differentiation advocates argue instead that "the grade-level-or-bust playbook turns a temporary state of academic deficit into a permanent one…. These same policies may be causing some of the most disadvantaged students to fall even further behind in the pandemic's wake" (Rose & Watson, 2022, pp. 16–17). "Standards-based instruction and the high-stakes testing that drives it," Tomlinson writes, "can often feel like a locomotive rolling over everything in its path, including individualized learning" (Tomlinson, 2000, p. 6).

Both approaches are credible: they come from well-meaning experts who bring to bear large portfolios of evidence supporting their respective points of view. They are also both deeply focused on complex issues of educational equity, of how teachers can give the best opportunities to students historically ill-served by schools and schooling.

But choosing one approach over the other is unnecessary and unwise. Teachers can and must balance both priorities to achieve high-growth for all students. The modern classroom provides a variety of tools to support this process.

A more complicated question

Broad ideological pronouncements cannot by themselves explain how particular students should be taught particular content. Students can engage with learning in many ways during the six and a half hours of a typical school day, and the 180 days of a typical school year. The opportunity to move between multiple learning contexts even within a subject area allows for exposure to a wide variety of academic content, both on- and off-grade level. To understand how best to strike that balance, it is critical to get specific about both the demands of the curriculum and the needs of individual students.

Nuancing grade-level content

It makes intuitive sense that, to have equitable educational opportunities, all students need opportunities to access the same content. Too often, regressive tracking policies have trapped students in low-level content based on shoddy judgments or single test events from years prior. These approaches fail if for no other reason than students have different ability levels within subject areas: a student's proficiency in geometry, for example, may be totally different from what they know in statistics and probability. Some of the strongest research in contemporary neuroscience has demonstrated the ability of all students to intuitively understand foundational concepts in mathematics and literacy (National Research Council, 2000). Students can build off these intuitions to reach extraordinary levels of achievement given the right resources and opportunities from their educators.

Still, advocacy for grade-level instruction remains vague in two important respects. First, it is often difficult to understand what precisely proponents mean when they describe

"access" to grade-level content. Does access require students always be taught in whole-group heterogeneous classrooms, as Hollingsworth and Ybarra (2017) imply, or can access to a standard and its related skills look different based on a student's prior knowledge? Within the 60 or 90 minutes of a typical instructional period, teachers often give students several different activities which may involve several different texts or learning standards. There seems to be no consistent rule for how to understand when the demands of "access" have been met.

Second, the research on grade-level mastery presented by organizations like TNTP may not account for what learning looks like in progress. Standards are complex and multi-faceted learning goals, including multiple skills that students must build over time; it is understandable that demonstrating mastery may take students several assignments or practice opportunities. If students were able to demonstrate mastery of every standard at every opportunity, their teachers would have very little new to offer them.

Both grade-level instruction and differentiation are nonnegotiable features of the modern classroom

Nuancing differentiation

Conversely, differentiation advocates must more fully engage with the role grade-level standards play in most classrooms. For teachers, attending to standards is not a choice: they must ensure instruction stays focused on the key learning topics identified in each subject level in each grade. Without clear guidance and support, teachers can sometimes feel like they have little opportunity to deviate from their curricular scope-and-sequence, which may contain clear and specific learning targets for each instructional week. Because much of the work on differentiation was conducted before standards gathered full steam, it does not account for the sheer speed with which today's educator is asked to go through their curriculum.

To ensure differentiation does not lead to unequal opportunities, teachers need more information on how to evaluate differentiation tools and how to use them effectively, reinforcing the skills students need without closing off access to critical content. The explosion of computers and digital tools in classrooms has fundamentally redefined what these tools are and what they are capable of. Ninety percent of district leaders surveyed in March 2021 said their districts provide a computer or mobile device for every middle and high school student; 84% said the same for their elementary students (Bushweller, 2022). Computers were once just one part of a school day: a lab students went to or a cart that came to the classroom. In many schools today, as in almost every other aspect of our lives, a computer or tablet is available for students to use at all times and has become a primary method of delivering material to students, assigning schoolwork, and completing assessments.

But differentiation using technology is not as simple as sitting a student in front of a tablet and hoping for the best. Delivered incorrectly, a technology-focused differentiation strategy can leave some students doing mostly rote practice of lower-level skills without ever getting the opportunity to engage in higher-level discourse or applied thinking in a subject area. Teachers must still ensure that students receive the right content given their learning needs, that the content is engaging, and that students stay on-task.

Focusing on strategies

The following pages provide tools and techniques teachers can use to balance differentiation with grade-level instruction for each student. Many of them leverage the fundamentally important role technology plays in the modern classroom. However, none of them are strictly dependent on any single platform or product: they are adaptable to the resources and preferences of each teacher. Most importantly, they acknowledge the primary educational challenge of the rest of this decade: getting students back to proficiency amidst a unique set of challenges.

By focusing on the specific instructional moves high-growth teachers use, this report hopes to get beyond picking one side or another. Both grade-level instruction and differentiation are nonnegotiable features of the modern classroom. Balancing this focus is not a simple equation, a percentage of time that should be spent in one mode of learning or another. Instead, the unique needs of each student should dictate how they progress through a learning journey to maximize what they learn and how much they can grow.

Our approach

This report describes ongoing qualitative research into the instructional strategies employed in "high growth for all" schools. From the 789 schools in the Hegedus, Cronin, and King (2020) data set, the two schools in Schiller Park were selected for their demographic diversity and common district context. A first visit in Spring 2022, including interviews and observations among the staff of both schools, led to the choice of four teachers to maximize variation among grade levels and subject areas.

During the 2022–2023 school year, I visited each of these four teachers three times, observing and recording 75 hours of instruction and 12 hours of interviews. Both interviews and observations focused on the characteristics of what was taught that day, using a combination of Tomlinson's (1999, 2017b) schema of differentiation by content, process, and product and a focus on state standards as overarching frameworks.

Interviews and observations were transcribed and reviewed twice. Before the second round of observations, transcripts were coded using Tomlinson's categories and five themes drawn from preliminary interviews: collaborative cultures, dynamic grouping, formative assessment, scheduling, and standards and content. This process identified the ten common strategies discussed in this report. Review of later interviews and observations focused specifically on examples of those ten strategies in practice.

The results of qualitative studies like this one are not intended to be generalizable to a population: that is, they are not intended to conclusively show that these strategies can or will lead to high student growth. Instead, this study is intended to provide rich detail on the work of a limited set of participants to allow teachers and leaders to juxtapose their own work with the work of participants, facilitating lessons learned from their work in a high-growth context.

Change in schools is constant, especially during these times. The strategies described here have evolved and are used differently than when these schools were identified in 2020. Though it would make things much easier for researchers, we cannot ask schools to remain static while we look to understand the full impact of these in-the-moment changes. This report is not an attempt to show how these two schools produced high-growth in the past. Instead, it is an attempt to document classroom practices in these schools and serve as a call for ongoing research into the specific instructional strategies at play in high-growth schools more generally.

This work is dedicated to the memory of our NWEA colleague Dr. Andrew Hegedus. Andy's generous spirit, patience, and creative thinking exemplified the value of using educational data in the service of making schools work better for more kids. His work showed that high-growth schools could beat the odds and compelled us to ask what we could learn from them. We are gratified to continue learning.

Optimizing instructional time

Time is the most valuable resource a classroom teacher has. The four strategies in this section help to maximize students' instructional time by providing different opportunities to learn in whole-group, small-group, and individual settings. Strategies like these allow students to engage with information repeatedly over encounters spaced over days and weeks, a strategy learning science research shows is key for effective retention. They also allow more opportunities for activities involving project-based learning or advanced cognition. Whatever approach a teacher takes to developing higher-order thinking, these strategies can provide the space in the schedule teachers need to make those activities happen.

Strategy 1: Provide supplemental learning time for targeted retrieval practice

Traditionally, intervention schedule blocks have been used to provide supplemental instruction in literacy and mathematics primarily to students below grade level, often leveraging a model like Response to Intervention (RTI) or Positive Behavioral Interventions and Supports (PBIS). Providing additional instructional time in these subjects both recognizes the central importance of literacy and numeracy, especially for early learners, and provides additional opportunities to reinforce the building block skills necessary for success with grade-level content. By offering intervention as a resource for all students, Schiller Park Schools has created a level playing field for access to grade-level content during regular instruction and opened new opportunities for the types of repeated practice supported by the learning sciences.

According to learning sciences research, learners learn best with several opportunities to practice new knowledge, applying that knowledge to new contexts over a period of several days or weeks (Goodwin et al., 2023). After initially learning how to "carry the 10" in two-column addition, for example, students who practice using addition problems requiring a variety of strategies retain that skill better than students who practice once or practice on problems that only require that strategy. This approach, sometimes called "retrieval practice," shows robust benefits across all types of learners and in all subject areas (NASEM, 2018).

Retrieval practice becomes even more effective when targeted: when teachers adjust the practice for the needs of small-groups or individual students (Goodwin et al., 2023). Targeted practice gives expert teachers the opportunity to formatively assess student misconceptions and focus on areas in most need. While targeted supports cannot and should not replace robust initial instruction, they provide subsequent opportunities to practice specific skills that keep students on track.

The whole-school intervention strategies in Schiller Park support multiple opportunities for this spaced, mixed, and targeted practice. At the elementary level, Schiller Park students receive an hour of "reading room" intervention time daily in addition to standard literacy instruction. While core literacy time focuses directly on grade-level curriculum,

reading room focuses on specific reading skills, taught both by classroom teachers and eight reading room specialists. This allows for up to 15 student groups per grade, specifically focused on guided reading, key literacy skills, and skills practice.

While fluency assessments are used to place students in their initial reading room groups, elementary teachers at each grade level collaborate with reading specialists to ensure students move between groups regularly as they either master specific skills or demonstrate the need for additional support. Reading room content is intentionally structured to reinforce skills related to the primary literacy lesson: if, for example, students are asked to compare and contrast two informational texts during core literacy time, reading room may focus on developing compare and contrast skills using other texts.

In middle school, intervention periods for reading and mathematics are provided twice a week to supplement core instruction in humanities and mathematics. While the middle school does not have additional specialists to support instruction during this time, grade level teachers use the time to enable several of the other strategies listed here, including reinforcing fundamental skills (Strategy 6), teaching to multiple standards (Strategy 7), and focusing on academic vocabulary (Strategy 10).

The time can also create opportunities for project-based learning. In one unit during Alison's sixth grade mathematics intervention, students used paper airplanes to explore concepts in engineering and measurement. Students designed their own paper airplanes, measured the distances they flew, wrote written reflections on the strengths and weaknesses of their designs, then revised their designs and repeated the exercise. An exercise like this one, incorporating multiple subject areas and requiring higher-order thinking on standards that come late in the year, is often given short shrift during core instruction. Placing the work during intervention not only provides an opportunity for the activity to happen, but it also allows Alison to differentiate the tasks themselves based on participants in the group.

At both the elementary and the middle school levels, expanding the purposes and scope of intervention periods has created opportunities to provide differentiated and supplemental supports around important skills while including all students in the core work of the grade. In doing so, it creates multiple opportunities for creative and in-the-moment teaching that keeps students on track and inspired, regardless of their achievement level.

Strategy 2: Mix whole-group, small-group, and individual activities

Many classrooms now give students opportunities to learn outside of whole-group instruction. Small-group and individual activities can provide students with additional practice, enable the use of digital learning tools, and allow teachers to meet with students one-on-one. Dynamically mixing whole-group, small-group, and individual activities depending on the lesson and students' learning needs helps high-growth teachers strike the right differentiation balance: providing formative information on where students are, creating opportunities for more small-group attention, and leveraging technology to

provide additional opportunities for retrieval practice.

Small-group activities are a cornerstone of differentiated instruction. Across multiple studies, expert teachers are shown to mix collaborative, cooperative, and whole-group instruction (Anderson & Taner, 2023). Instructional technologies turbocharge these strategies by providing affordances—opportunities to learn in new and different ways, like interactivity, immediate feedback, student choice, or open-ended input (NASEM, 2018). Small-groups also give teachers an opportunity to give more students one-on-one attention while all students are continuing to learn.

One reading period in Kaitlin's third grade classroom began with whole-group instruction focused on that week's curriculum: two texts written by Laura Ingalls Wilder. Kaitlin used whole-group instruction to reinforce key vocabulary terms (Strategy 10) and to engage students in peer conversation (Strategy 9). During the second half of the period, Kaitlin divided students into two groups, each alternating between guided reading with her and independent work in a language arts skills app. As Strategies 3 and 4 describe, frequent conversations with other grade-level teachers and this initial formative assessment cycle provide multiple opportunities to adjust groups as students master new material.

Kaitlin believes this flexible approach allows her to maximize the value of instructional time for all students, not just those requiring additional support. "If I want to meet with a group and I know that these six kids are much higher, I can even record a video [for them]. I'm still teaching to them, I'm just not doing it right now." Meeting with students in small-groups allows more time to listen to students read aloud than is otherwise available in whole-group instruction. Using one of several digital platforms, Kaitlin can also assign students varied practice work based on their learning level and use the results of this work as additional formative information to support regrouping and adjusting instruction.

Across all high-growth teachers, the key to effective small-group instruction is flexibility. The demands of each lesson, the learning needs of each student, and the resources available all play a role in determining the ideal balance of activities during a period. Each of the profiled teachers, however, used this balance to gain formative information on student performance, maximize opportunities for students to practice key skills, and give appropriate attention to students who were both above and below grade level.

Strategy 3: Adjust student groups in real time

Just as flexibility is key to designing group tasks, the makeup of student groups themselves should also remain flexible. The collection of practices called "ability grouping" contains a wide variety of approaches, from the permanent "tracking" that is rightly considered inequitable, to the regular and consistent changes to student groups that are typical in Schiller Park. Past effectiveness studies indicate student grouping can effectively promote student growth where changes to groups are consistent, within classrooms, and based on regular data about student performance (Deunk et al., 2018). Moving students between groups to shift their instruction can be both subtle and highly effective.

First-grade teacher Emily uses a similar class period structure to that described in Strategy 2: a quick whole-group lesson, followed by small-group activities. During the whole-group lesson, Emily looks for evidence to support student proficiency: "am I participating, am I actively using my hundred chart or whatever tool they have, do they have the skills or the strategies to help them work independently or not?" While initial student groupings are set using MAP Growth assessments, these formative assessments play a significant and ongoing role in where students are grouped: "It's very fluid, open. You can notice something one day, find a spot [in another group] the next day."

The evidence on tracking

Dozens of studies have attempted to answer whether "tracking"—the set of approaches to separate students into smaller groups by their real or perceived abilities—has a positive or negative impact on student outcomes. These are summarized in John Hattie's Visible Learning framework (2023), a comprehensive meta-analysis of the strategies and conditions that lead to student achievement. Hattie shows that tracking has a likely small positive impact on student achievement. He also shows that eliminating tracking has the same small, positive impact.

How can we explain these two seemingly contradictory findings? Unquestionably, putting students into groups that never change is inequitable and bad for learning, especially in high school (Hanushek & Wößmann, 2006; Rui, 2009; Terren & Triventi, 2022). Tracking in the absence of reliable and valid student data, made solely based on a teacher's own judgments, similarly perpetuates inequities and can reveal some of the ugly prejudices that have historically held students of color, students with disabilities, and emergent bilingual students behind. But all grouping is not created equal: students can be grouped at the same or at different ability levels, engage in all different kinds of activities, and shift groups for many different reasons. Some of those practices work toward the benefit of all students. Some do not.

By not labeling groups and by keeping a student's placement low stakes, Emily also allows for rapid changes without causing students undue concern or stress:

> If I'm working with the low group, and all of a sudden Mark is getting addition. He's doing it in his head, and he doesn't need as much scaffolding. Then I'll put him in the other group.... [I will say] 'Oh, you're going to go to your table today and try these. And then, we'll see what happens tomorrow.' Same with a kid if they're struggling at their seat. 'Well, come join us.' And it can just be fluid as that. Like, you're always going to be team one, team two. You can move.

This dynamic approach also allows the purpose of groups themselves to change as a lesson requires. As research describes, students also benefit from mixed-ability grouping depending on the nature of the content being learned and their ability level. Keeping groups fluid and purpose agnostic (at least in the eyes of students) allows teachers to adopt whatever grouping strategy is appropriate to that day's instruction.

Strategy 4: Share students and strategies within a grade level

High-growth teachers further multiply their ability to support student grouping by sharing students between classrooms at a grade level. The math itself is simple: if one teacher can support two different student groups, two teachers can support four by constituting groups from an entire grade rather than a single classroom. Sometimes called "coteaching," teachers can share students through a variety of formal and informal mechanisms (Model Teaching, 2019). Whatever the model, coteaching requires close grade-level coordination and ongoing attention to interim and formative assessment information to master.

Kaitlin (third grade) emphasizes that consistent communication both before and during the school year ensures effective shared groups with her grade-level colleague. "We made sure that we have the same expectations, we have the exact same posters, we are same setup. So we're hoping that if we do this regrouping, it won't be a big adjustment for these kids because they're going into each classroom and it's the very same routines." During each major topic area, Kaitlin and her coteacher regroup based on MAP Growth scores for that content area. "I have a student at a 184 in math, that's her overall RIT score. But then her geometry is a 202. So during our geometry topic, why is she in my low group when she's at a 202?" By working across the grade level, Kaitlin and her coteacher can ensure enough groups to target student ability levels even with students both above- and multiple grades below third grade level.

While Kaitlin and her coteacher move students between their two classrooms, Alison (sixth-grade mathematics) and her coteacher share a common double sized classroom. Described in Strategy 8, Alison's approach centers around a unique self-directed learning model where students by default work individually rather than as part of whole-group instruction. Working with a coteacher in a common space, however, affords flexibility to that model: Alison and her coteacher will frequently give different "micro-lessons" or lectures on specific skills or areas of student misunderstanding, and students can be rearranged throughout the classroom to participate or not participate in these lessons. Having two teachers also allows for added attention to individual students as they complete self-directed work and can allow for quick small-group sessions to form as additional review is required.

School structures need not be a barrier to effective coteaching. By working within their school structures, high-growth teachers find ways to maximize the value of common planning and routines by sharing students. In so doing, they double or triple their ability to provide differentiated supports and can more specifically target individual student needs.

Exposing students to more content

An important and reasonable concern about instructional differentiation is that it may limit every student's ability to engage in the same content as their peers. Teachers are well familiar with the feeling of having too much to cover in a year; this concern is multiplied for students who need to spend more time reinforcing foundational skills or learning content from a prior grade. There is no one-size-fits-all solution for how to prioritize learning to ensure every student gets the most out of each school year. However, the three creative strategies described here give some insights into how high-growth teachers can better their chances by optimizing how content is delivered across the week, month, and school year. With the right sequencing, students can be given extra time to reinforce their weakest skills without missing the learning units at the end of the curriculum map.

Strategy 5: Differentiate tasks within a unit

Differentiation and rigor are not mutually exclusive. Differentiating *how* students access and engage with content can even be necessary to make sure all students are actively engaged in learning instead of sitting as passive participants (McTighe & Brown, 2005). Still, teachers should avoid the temptation to make assignments for lower ability learners simpler for simplicity's sake. Tomlinson (2017a) describes striking the balance as creating "respectful tasks" that are engaging, work with the core principles of a discipline, and require students to work as critical and creative thinkers. With appropriate differentiation, high-growth teachers work to create tasks that challenge students at each ability level.

Seventh grade humanities teacher Christina teaches two double-length sections with students grouped each trimester based on their MAP Growth scores. While students engage with the same texts in these sections, Christina scaffolds each section differently based on that grouping. "We have standards that we have to teach of course, and I have to assess those standards, but definitely the skills drive a lot of what we're doing," with one section focused on addressing skills one-by-one, and the other section revisiting skills as needed for practice.

On one day, both sections were engaged with the same text: the Linda Sue Park novel *A Long Walk to Water*. Both sections engaged with informational texts providing background knowledge on the novel's setting (South Sudan) alongside the novel's text. While one section's work focused primarily on two skills (identifying the main idea, and comparing and contrasting characters and ideas), the other section's work called on a variety of skills including rephrasing, finding meaning for words in context, and interpreting abstract language. Importantly, both classes included students working in groups on tasks that were complex for them, and Christina deliberately created mixed table groups to maximize opportunities for all students to participate.

Kaitlin (third grade) employs several of the same techniques. While all students in the grade will read the same texts, some groups respond to activities with full sentences, while other groups begin responding with phrases with the intention of working toward

full sentences over time. Kaitlin also creates time for groups with differentiated tasks to intermingle at the end of the lesson, allowing students to benefit from peer learning.

As with all the other strategies listed here, the specifics matter. Differentiation can support rigorous access to grade level content when all tasks call on students to work at their highest ability and offer the opportunity for students to engage and make connections. If students are assigned tasks that are inappropriate to them as learners, they are more likely to disengage and not reap the benefits of the content in the first place.

Strategy 6: Provide targeted practice for foundational skills

Ensuring all students are exposed to rigorous content also requires ensuring students have access to the skills students need to interact with that content. One of the primary concerns from some advocates about differentiation is the tendency for some students to get "stuck" learning from a prior year's standards without the ability to meaningfully progress back to grade level. High-growth teachers avoid this risk by using interim and formative assessment information to understand what skills students may be missing from prior grades and connect those skills to standards that are on grade level.

In Schiller Park, focusing on skills is one of the most common uses of intervention time (Strategy 1). Differentiated groups in intervention may focus on a "skill of the week," identified through MAP Growth or another assessment as a skill for which students need practice. Observed examples of a focus on skills vary widely from skill-to-skill, but demonstrate the potential power of this focus:

- Emily (first grade) noted the power of differentiated learning in apps and other platforms to help reinforce skills. When using apps to provide skills practice in mathematics, students "progress as quickly [as] they can respond…. They know what game they're supposed to do, and that's their job to hit those." These affordances, Emily argues, often make digital tools more engaging than traditional math games or manipulatives.

- Kaitlin (third grade) uses repeated exposure to skills practice to build up challenge and independence. Each week, a new skill is introduced, and becomes a repeated element throughout warmup activities during that week. "We want to expose them more to more challenging activities, or really get them to do more independent work." Kaitlin also believes weekly skills open access to more content across the academic year "This week we're doing hyperbole. When are we ever going to get to cover that [otherwise]?"

- In Alison's sixth-grade math class, identifying missing skills is a critical and ongoing part of day-to-day instruction. "When we see kids are always making a common mistake, we'll add a task or we'll do a short mini lesson on some of those skills." By monitoring student work both in the moment and after students have completed it, Alison ensures that students participating in the self-directed instructional model

(Strategy 8) can participate in the same activities without misconceptions building on top of one another.

- As discussed more in Strategy 5, Christina's seventh-grade humanities instruction is particularly skills-focused, partially in recognition of the unfinished learning created by the pandemic. The differences in skills and background knowledge accessible to her current students are so different from previous years, Christina says, "it's almost a new version of seventh grade really." With a curriculum spanning reading, writing, and history, Christina focuses particular attention on intervention in writing skills to ensure these skills are not marginalized.

These represent four of many approaches to layering skills within a curriculum (Marzano, 2017). As students enter school with increasingly diverse academic backgrounds, high-growth teachers recognize that they will also enter with very different sets of skills. Ensuring this gap does not put some students permanently behind requires using careful observation to focus on the specific skills students need to be successful at grade level.

Strategy 7: Teach from multiple standards at once

Anyone with teaching experience knows the frustration that can come in April and May when it becomes obvious that time to finish the curriculum is running thin. A curriculum's end is no less important than its beginning, and routinely missing the final topics in a curriculum is one way a student's learning gaps can snowball over time. To avert this problem, high-growth teachers think carefully about how to ensure equal coverage across essential standards.

With the self-directed learning strategy in Alison's sixth grade math class (Strategy 8) comes the reality that some students will progress much faster than others. While this benefits the fastest students, who can move into the next year's curriculum, some students may not gain enough momentum to finish the year's learning. Alison strategically uses the content covered in intervention (Strategy 1) to help address this problem:

> We started with probability at the beginning of the year. Now we're moving into statistics, so we basically flip-flopped our units and just kind of targeted skills that aren't necessarily in our curriculum, and then we just try and do some fun activities based on those skills … then we'll kind of cycle back and review … and just refresh their minds on some of those things before they have to retake the test again in spring.

Other high-growth teachers from Schiller Park also noted their use of both intervention time and technology-based practice platforms to get to topics slated for later in the curricular year. By operating the curriculum front-to-back and presenting alternative practice opportunities back-to-front, high-growth teachers provide another mechanism for students to receive the spaced practice (Strategy 1) that learning sciences research indicates supports greater retention.

Empowering students

Whatever their opinions on differentiation, the goal of all educators is the same: prepare students for the complex ways of thinking and knowing that typify mastery of all academic content areas. The most important approaches to building complex thinking, and the most important knowledge base for expert teachers, come from subject-specific pedagogical content knowledge (Anderson & Taner, 2023). To teach science well, a teacher must first understand how students learn that subject specifically.

The three strategies presented here, however, are particularly noteworthy for the ways they support other strategies in the report across subject areas. Once high-growth teachers provide both the time and the content for students to engage in higher-order thinking, these additional strategies support continual practice of prior learning and create a clear and efficacious path for students toward content mastery. At the end of that path lie the reading, writing, problem-solving, and thinking skills students need to fully take control of their own learning.

Strategy 8: Create opportunities for self-directed learning

School is not just for learning the content on the page; it is also an opportunity to practice the tools and techniques that will help the student learn and adapt across their lifespan. While teachers direct the vast majority of learning taking place in schools, self-directed learning is the most reported approach for learning in workplaces (NASEM, 2018). Practice with self-directed learning can help target many of the skills that are important for current and future learning success, including self-regulation, autonomy, and motivation (Brandt, 2020). By finding strategic opportunities to introduce self-directed learning, high-growth teachers take advantage of these benefits while also giving students opportunities to show what content they feel ready for next.

Alison has structured her sixth grade math class around a fully self-directed model. At the beginning of each unit, students are provided a list of tasks to complete during the unit. These tasks combine online learning platforms, reflection questions, and standard worksheets or whiteboard problems that students take pictures of to upload to their digital portfolio. During class, students focus on completing these tasks while Alison moves around the room both observing student work and providing one-on-one supports for students as needed.

Using the self-directed model as a baseline provides several opportunities for flexibly adapting supports. Students working in table groups naturally consult one another as they encounter difficulties, and Alison and her coteacher work to build table groups that can function effectively together. Allowing students to teach one another is a key strategy drawn from learning sciences (NASEM, 2018), and the self-directed model encourages this peer teaching where students feel comfortable. Where multiple students need additional supports, Alison and her coteacher can create small-groups that focus on a “micro-lesson” or practice a particular strategy. Most importantly, the process of collecting student

artifacts digitally creates a treasure trove of formative assessment information Alison and her coteacher review nightly to understand which students require additional supports the next day.

While a fully self-directed learning model is the most elaborate form of this strategy, other high-growth teachers also use self-directed learning opportunities to some degree. Most learning technologies used during individual work time are adaptive and offer students degrees of choice about what they will work on next. Project-based learning offers students opportunities to make choices about how they will practice and apply knowledge.

Within any approach to flexibly balancing whole-group, small-group, and individual tasks (Strategy 2) is the opportunity to experiment with self-directed learning as is appropriate for a particular content area or student. This practice can be an invaluable way to allow students to expose themselves to content at their own pace and provide rich formative assessment information for where students are ready to go next. Self-directed learning also prepares students for the realities of learning as adults, when they may not always have a teacher to guide them.

Strategy 9: Use student discourse as formative assessment

Getting students talking to one another is one of the most important things that can happen in any classroom. Enabling higher-level learning and application often requires "elaborative interrogation … a strategy in which learners are asked, or are prompted to ask themselves, questions that invite deep reasoning, such as why, how, what-if, and what-if not" (NASEM, 2018, p. 103). In talking to one another, students confront the limits of what they currently understand, build on one another's knowledge bases, and consider how learning in one context applies to work in another.

Building effective classroom discussion, research indicates, requires supplementing direct instruction with a structured activity that helps focus students on comprehending what was taught, making connections to other learning areas, and exploring strategies for solving problems or engaging in critical thinking (Goodwin et al., 2023). A crucial benefit of this level of student talk is the amount of formative assessment information it produces. Discourse and formative assessment go hand in hand: by observing how students talk to one another, high-growth teachers uncover many of the otherwise hidden aspects of student thinking that are much more difficult to measure with a pen and paper assessment (Heritage & Wylie, 2020).

High-growth teachers in this study used student discourse in all grade levels and subject areas. In Christina's seventh grade humanities class, providing many opportunities for student discourse is a top priority, and an essential tactic for understanding the learning of a new generation of students:

> I have my portable desk, I call it. I just like to just sit a lot and just listen to them.... I'll just simply just sit there and listen and make those mental notes

> and make those observations.... I try to just listen because I feel like for the next couple years it'll probably be a similar situation with the groups I'm getting where perhaps the background knowledge or the content the vocabulary isn't going to be what I've seen in the past.

Christina acknowledges that her newest class of students is different than every class that came before, and likely requires different supports as a result. Observing student discourse is a linchpin strategy for quickly understanding those differences.

In third grade, Kaitlin uses student discourse as an initial form of formative assessment with small-groups. By having a group of eight or nine students discuss a topic early in the week, she says, she understands each student's level of comfort with the task, which facilitates supporting specific students who need the support later in the week. Basing discussions in small-groups, Kaitlin says, also encourages some students to express more: "I think the fact that they got that chance to talk, they felt more comfortable with it." With the students needing the most support identified through discourse, Kaitlin can move other students to more self-directed or video-directed activities (Strategy 2, Strategy 8) and focus her attention on students most needing support.

Student conversation is the most concrete representation of students' higher order thinking. By introducing student discourse early and often, high-growth teachers create opportunities for all students to engage in higher-order thinking around grade-level topics. By setting active and complex engagement as the goal for these activities, teachers also generate important formative insights that help focus their attention on getting all students in the class to that level of discourse quickly.

Strategy 10: Explicitly teach academic vocabulary

Ensuring students succeed with grade-level content means, in part, giving students the tools they need to understand new materials. Improving students' "background knowledge" is an often stated, yet fairly vague goal. In recent years, researchers have come to understand the critical role that specific vocabulary plays in the background knowledge; indeed, "knowledge of specific terms is, for all intents and purposes, synonymous with background knowledge" (Marzano, 2004, p. 62).

Direct instruction in subject-specific vocabulary terms helps students at all ability levels access grade-level content (Goodwin et al., 2023). The benefits of this approach extend both to learning works themselves and to strategies that help students learn new words, like analyzing prefixes and suffixes or using a dictionary (Goodwin et al., 2023). Despite the power of this approach, specific time during the instructional day is rarely carved out to instruct on vocabulary, especially at the middle school level (Kelley et al., 2010). High-growth teachers create specific opportunities for students to learn new vocabulary and vocabulary strategies.

Christina (7th grade humanities) views working on vocabulary as part of building out other skills in reading comprehension:

> So they're working on vocabulary and not just the meaning of the words, but based on the context, there's a phrase that they use—'nuclear family'—what does that look like? And so they're analyzing the vocabulary, they're thinking about theme and specific examples and evidence from the story that supports that theme.

Developing vocabulary in mathematics is equally important. Alison (sixth-grade math) argues vocabulary introduces more complex forms of mathematical thinking: "it's always easy to just give them the trick" to solve a problem, but introducing mathematical vocabulary allows students to actively participate in mathematical conversations (Strategy 9).

At the elementary level, academic vocabulary provides much of the insights into metacognition —thinking about thinking—that are important tools in learning sciences for promoting growth (NASEM, 2018). Kaitlin focuses in literacy on introducing new vocabulary early in the week as students are encountering new genres of text for the first time. Understanding common vocabulary for a genre allows students to make subsequent connections on rereads: "What did we notice? What did we connect to? What were we wondering?" Kaitlin also argues vocabulary creates additional opportunities for high-achieving students to grow, giving them additional opportunities to immerse themselves in a text even if they are reading above grade level.

Several studies of reading comprehension suggest a student's ability to read is highly variable based in part on the level of background knowledge they have entering into the text (Elleman & Oslund, 2019; Lupo et al., 2018; O'Reilly et al., 2019). Explicit teaching of academic vocabulary can be an essential tool to boost students' background knowledge and thereby give them access to grade-level materials. Practicing vocabulary can allow all students access to texts they may not otherwise appear to be able to read.

Conclusion

In 1990, Philip Jackson estimated elementary teachers have 200 to 300 exchanges with students every hour, requiring they make at least 1,500 decisions each day (Jackson, 1990). Whatever that count would be today, it remains true that expert teachers display adaptive expertise (Anderson & Taner, 2023), making constant adjustments to their instruction based on the needs of their students. Those adjustments—and the motivations behind them—are each opportunities to make meaningful changes in student learning.

Research on effective instruction has for too long failed to account for the importance of these small decisions. An education that is entirely individual to each student is an unrealistic goal given the limited time and bandwidth of teachers. It is also unrealistic, however, to assume all students can succeed in a homogenous, whole-group environment where 25 or more students are expected to learn the same thing at the same rate. The space in between—where teachers make creative, sometimes on-the-spot decisions about how to manage students' time and attention between whole-group, small-group, and individual activities—maximizes the value of time in school and allows for student exposure to a variety of content both on- and off-grade level.

Focusing on student growth, rather than exclusively on achievement, provides unique insight into those decisions. With a growing number of students entering school one or more grade levels behind, it is unrealistic to assume every student has an equal opportunity to return to grade level each year. However, the right instruction focused on optimizing students' time can supercharge their growth, providing the right combination of on-grade level content and off-grade level skills practice. When sustained over multiple years, that focus can bring students back to proficiency.

The vision of effective instruction supported by the practices documented here is one that respects individual student needs and assets, focuses on growth, and provides maximum support and regard for the teachers most responsible for what students learn. Those values are not only empirically resonant with contemporary research on effective teaching and learning, but they are also essential to understanding how classrooms function today. The policies, budgets, and standards that provide the backbone of effective schools are necessary and still critical. But the essence of learning lies in relationships: students to each other, a student to their teacher, and that student to the world they seek to know.

Works cited

Anderson, J., & Taner, G. (2023). Building the expert teacher prototype: A metasummary of teacher expertise studies in primary and secondary education. *Educational Research Review*, *38*, 100485. https://doi.org/10.1016/j.edurev.2022.100485

Brandt, W. C. (2020). *Measuring student success skills: A review of the literature on self-directed learning*. Center for Assessment. https://www.nciea.org/library/measuring-student-success-skills-a-review-of-the-literature-on-self-directed-learning/

Bushweller, K. (2022, May 17). What the Massive Shift to 1-to-1 Computing Means for Schools, in Charts. *Education Week*. https://www.edweek.org/technology/what-the-massive-shift-to-1-to-1-computing-means-for-schools-in-charts/2022/05

Curriculum Associates. (2022). *State of student learning 2022*. Curriculum Associates. https://stateoflearning.curriculumassociates.com/

Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018). Effective differentiation Practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, *24*, 31–54. https://doi.org/10.1016/j.edurev.2018.02.002

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2021). *COVID-19 and education: An emerging K-shaped recovery* (p. 15). McKinsey and Company. https://www.mckinsey.com/industries/education/our-insights/covid-19-and-education-an-emerging-k-shaped-recovery

Elleman, A. M., & Oslund, E. L. (2019). Reading comprehension research: Implications for practice and policy. *Policy Insights from the Behavioral and Brain Sciences*, *6*(1), 3–11. https://doi.org/10.1177/2372732218816339

Goodwin, B., Rouleau, K., Abla, C., Baptiste, K., Gibson, T., & Kimball, M. (2023). *The new classroom instruction that works: The best research-based strategies for increasing student achievement*. ASCD.

Hanushek, E. A., & Wößmann, L. (2006). Does educational tracking affect performance and inequality? Differences- in-differences evidence across countries. *The Economic Journal*, *116*, C63–C76. https://doi.org/10.1111/j.1468-0297.2006.01076.x

Hattie, J. (2023). *Visible Learning MetaX* [Database]. https://www.visiblelearningmetax.com/

Hawkins, B. (2020, June 9). New research predicts steep COVID learning losses will widen already dramatic achievement gaps within classrooms. *The 74*. https://www.the74million.org/article/new-research-predicts-steep-covid-learning-losses-will-widen-already-dramatic-achievement-gaps-within-classrooms/

Hegedus, A. (2018). *Evaluating the Relationships Between Poverty and School Performance* (p. 15). NWEA. https://www.nwea.org/research/publication/evaluating-the-relationships-between-poverty-and-school-performance-whitepaper/

Hegedus, A., Cronin, J., & King, G. (2020). *Schools that produce high-growth for all students—A descriptive study* [Unpublished manuscript]. NWEA.

Heritage, M., & Wylie, E. C. (2020). *Formative assessment in the disciplines*.

Hollingsworth, J. R., & Ybarra, S. E. (2017). *Explicit direct instruction (EDI): The power of the well-crafted, well-taught lesson*. Corwin.

Illinois State Board of Education. (2022). *Illinois Report Card*. https://irc.isbe.net/State.aspx

Jackson, P. W. (1990). *Life in Classrooms* (Revised edition). Teachers College Press.

Kelley, J. G., Lesaux, N. K., Kieffer, M. J., & Faller, S. E. (2010). Effective academic vocabulary instruction in the urban middle school. *The Reading Teacher*, *64*(1), 5–14. https://doi.org/10.1598/RT.64.1.1

Kuhfeld, M., Soland, J., & Lewis, K. (2022). Test Score Patterns Across Three COVID-19-Impacted School Years. *Educational Researcher*, *51*(7), 500–506. https://doi.org/10.3102/0013189X221109178

Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). Projecting the Potential Impact of COVID-19 School Closures on Academic Achievement. *Educational Researcher*, *49*(8), 549–565. https://doi.org/10.3102/0013189X20965918

Lupo, S. M., Strong, J. Z., Lewis, W., Walpole, S., & McKenna, M. C. (2018). Building background knowledge through reading: Rethinking text sets. *Journal of Adolescent & Adult Literacy*, *61*(4), 433–444. https://doi.org/10.1002/jaal.701

Marzano, R. J. (2004). *Building background knowledge for academic achievement: Research on what works in schools*. Association for Supervision and Curriculum Development.

Marzano, R. J. (2017). *The new art and science of teaching*. Solution Tree Press.

McTighe, J., & Brown, J. L. (2005). Differentiated instruction and educational standards: Is detente possible? *Theory Into Practice*, *44*(3), 234–244. https://doi.org/10.1207/s15430421tip4403_8

Model Teaching. (2019). *The six coteaching models reference guide*. Model Teaching. https://www.modelteaching.com/wp-content/uploads/2019/07/The-6-Coteaching-Models-Reference-Guide.pdf

National Academies of Sciences, Engineering, and Medicine [NASEM]. (2018). *How people learn II: Learners, contexts, and cultures*. The National Academies Press. https://nap.nationalacademies.org/catalog/24783/how-people-learn-ii-learners-contexts-and-cultures

National Council on Educational Statistics. (2023, February 9). *School Pulse Panel*. https://ies.ed.gov/schoolsurvey/spp/

National Research Council. (2000). *How people learn*. National Academies Press. https://nap.nationalacademies.org/read/9853

O'Reilly, T., Wang, Z., & Sabatini, J. (2019). How much knowledge is too little? When a lack of knowledge becomes a barrier to comprehension. *Psychological Science*, *30*(9), 1344–1351. https://doi.org/10.1177/0956797619862276

Rose, J., & Watson, M. (2022). The urgent need for tailored math instruction. *Advancing Math and Science Instruction*, *22*(2), 12–17. https://www.nasbe.org/the-urgent-need-for-tailored-math-instruction/

Rui, N. (2009). Four decades of research on the effects of detracking reform: Where do we stand? A systematic review of the evidence. *Journal of Evidence-Based Medicine*, *2*(3), 164–183. https://doi.org/10.1111/j.1756-5391.2009.01032.x

Subban, P. (2006). Differentiated instruction: A research basis. *International Education Journal*, *7*, 935–947. https://doi.org/10/bwpm8w

Terren, É., & Triventi, M. (2022). The effect of school tracking on student achievement and inequality: A meta-analysis. *Review of Educational Research*. https://doi.org/10.3102/00346543221100850

TNTP. (2018). *The opportunity myth*. TNTP. https://opportunitymyth.tntp.org/

Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Association for Supervision and Curriculum Development.

Tomlinson, C. A. (2000). Reconcilable differences: Standards-based teaching and differentiation. *Educational Leadership*, *58*(1), 6–13. https://www.ascd.org/el/articles/reconcilable-differences-standards-based-teaching-and-differentiation

Tomlinson, C. A. (2017a). Differentiating instruction in response to academically diverse student populations. In R. J. Marzano, *On Excellence in Teaching, Solution Tree, 2007*. Solution Tree Press.

Tomlinson, C. A. (2017b). *How to differentiate instruction in academically diverse classrooms* (Third edition). ASCD.

nwea

MAY23 | WELTSK6140