



District
Management
Group

CASE STUDY

Powerful Improvements Through Secondary Scheduling

*Strengthening Instruction, Maximizing Opportunities for Intervention,
and Increasing Equity at Columbia Public Schools (MO)*

by David James and Laura Smith

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Strengthening Instruction, Maximizing Opportunities for Intervention, and Increasing Equity at Columbia Public Schools (MO)

David James and Laura Smith

Columbia Public Schools (CPS) Superintendent Dr. Peter Stiepleman had been planning to retire at the end of the 2020-21 school year in order to “graduate” from Columbia Public Schools at the same time as his son. Little did he know that in his final year as CPS superintendent, he would be managing through a pandemic and figuring out how to provide meaningful virtual instruction for a majority of the school year.

For many district superintendents, managing through a global pandemic has meant all other projects had to be put on hold. But Stiepleman, recently named 2021 Missouri Superintendent of the Year, was determined to carry out the larger, longer-term changes he had been planning for the district.

Before the pandemic, Chief Financial Officer Heather McArthur had been preparing to make a number of changes to the district’s budgeting practices to better align district finances with the district’s programming goals. With McArthur’s goals in mind, Stiepleman joined a strategic budgeting training led by District Management Group (DMGroup) at the American Association of School Administrators (AASA) conference in 2019. Following the session, he knew that he and McArthur needed to bring DMGroup to their district to host a professional development session about how they could better leverage the precious resources of teachers, staff, and student time.

During their in-district professional development session in January 2020, DMGroup’s message resonated with CPS’s central office and school-based leaders: schools and districts that set clear priorities, manage course offerings precisely and strategically, and build schedules that effectively use staff and student time can better leverage the impact of staff as well as ensure more equitable learning opportunities for students.



Dr. Peter Stiepleman
Superintendent, Columbia Public Schools (MO)
2021 Missouri Superintendent of the Year

FAST FACTS



Columbia
PUBLIC SCHOOLS

COLUMBIA PUBLIC
SCHOOLS (MO)

18,213 students

- **58%** White
- **20%** Black
- **7%** Hispanic
- **5%** Asian
- **9%** Multiracial

Total
Schools:

33

(21 elementary, 7 middle,
4 high school, 1 preschool)

Operating
Budget:

\$250,239,460

“There are so many more moving parts with secondary scheduling. While it feels like there may be some opportunities to increase efficiencies, we don’t know quite how to go about targeting them.

– Heather McArthur

Chief Financial Officer, Columbia Public Schools (MO)

Knowing that the district’s five-year forecast showed deficit spending even prior to the pandemic, Superintendent Stiepleman and CFO McArthur, along with Assistant Superintendent for Secondary Education Dr. Jennifer Rukstad, decided to engage DMGroup to conduct a comprehensive study of the schedules at CPS’s six middle schools and four high schools during the 2020-21 school year with the goal of recommending ways that the district could better serve its secondary school students and make the best use of its resources. With a seventh middle school opening up in the fall of 2020, McArthur was particularly eager to bring in DMGroup to share scheduling best practices that the district could incorporate.

Examining Current Secondary Scheduling Practices

Although the district had clear processes for projecting enrollment and class sizes for the elementary schools, McArthur commented, “There are so many more moving parts with secondary scheduling. While it feels like there may be some opportunities to increase efficiencies, we don’t know quite how to go about targeting them.” Stiepleman added, “The district has always had an interest in creating more student voice and choice and intervening when students struggle. While the district has good stories to tell about student achievement, there are also persistent challenges that we just haven’t been able to crack on our own.”

Taking a close look at current practices

A team from DMGroup partnered with CPS to take a close look at current practices. To assess the effectiveness of current secondary scheduling, DMGroup sought to answer the following key questions:

- **Time:** How do students and teachers currently spend their time?
- **Staff:** Is the way teachers are currently staffed across departments aligned with student needs and district guidelines?
- **Coursework and Enrollment:** What courses are currently offered in the district, and how does enrollment vary by department and course type?
- **Priorities:** What are the district’s priorities, and do existing secondary schedules reflect these priorities?

To build a deep understanding of current scheduling practices, the DMGroup team worked with the district to collect a combination of quantitative data and qualitative information. The qualitative information provides important insights into the district’s needs, strengths, and culture.

Total Staff:

2,900

Per Pupil Expenditure:

\$13,170

FRPL Population:

44%

SPED Population:

10%

Graduation Rate:

90%

Source: Columbia Public Schools Budget 2020-21

This in-depth approach to understanding the district context is helpful in identifying potential solutions that are most powerful and most achievable.

- **Qualitative Assessment:** The DMGroup team hosted a series of interviews and focus groups to hear directly from stakeholders across the district about their experiences, insights, and vision for school schedules. Interviews and focus groups included district leaders, content coordinators, principals, school counselors, general education teachers, special education teachers, and English Language Learner (ELL) teachers.
- **Quantitative Assessment:** The DMGroup team also analyzed school schedules quantitatively, including examining schedules through the lens of CPS students and CPS teachers.

Guided by challenges raised during focus groups and its initial data exploration, the DMGroup team dove further into the data for the next two months, running select analyses on the following areas:

- **Access to Core Instruction:** By deconstructing student schedules, the team analyzed how much time students spent in core instruction and non-instructional activities (passing periods, study halls, lunch, etc.) across every grade level in every secondary school.
- **Extra-Time Intervention:** By analyzing the different intervention structures at each school, the group size of each intervention, and the corresponding amount of staff dedicated to intervention, the DMGroup team examined how often students are able to access extra time for learning. While conducting this analysis, the DMGroup team worked to determine if there were modifications the school could make to expand the reach of intervention.
- **Teacher Collaboration:** Through qualitative conversations and a deep dive into teacher schedules, the team looked at how common planning time for teachers is used and what supports the district provided to maximize the impact of this time. The DMGroup team specifically sought to understand whether there was a predetermined structure for how the time was used, the ability for teams to access district supports like content coordinators,



and the frequency with which special education teachers and ELL teachers participated.

- **Class Size:** By looking at every course offered at every school, the team analyzed how class size averages differed across subjects for core classes, elective courses, and honors or Advanced Placement (AP) classes. The team also checked whether opportunities for more advanced classes varied across departments.

Once all of these analyses were completed, the DMGroup team synthesized their findings and began comparing the district's current practices with established best practices.

Key Findings and Insights: Taking a Data-Driven Approach to Scheduling

While the analyses that the DMGroup team conducts expose many meaningful findings, DMGroup firmly believes that a short list of findings is more helpful than a long list. Therefore, DMGroup always seeks to distill the results into key insights. DMGroup works to identify a handful of actionable items that will have the most impact for students and teachers.

For CPS, the DMGroup team identified those opportunities that would be the most impactful for the middle schools and the high schools to consider. Through separate reports for the middle schools and high schools, DMGroup shared its findings and recommendations. Some key findings and recommendations were as follows:

1. Increase the amount of instructional time students receive throughout the day

Despite different scheduling structures (the district's high schools follow a block schedule and the middle schools follow a traditional eight-period schedule), students in all of the secondary schools had eight courses in a school year.



Heather McArthur
Chief Financial Officer,
Columbia Public Schools (MO)

Multiple periods of non-core instruction coupled with other non-instructional times, like passing periods, lunch blocks, and study halls, left CPS students with only 40% to 45% of their day for core instructional activities (*Exhibit 1*). Many of the most effective secondary schedules DMGroup has examined aimed to

devote at least 50% to 60% of the day to core instruction and no more than 10% of the day to non-instructional time.

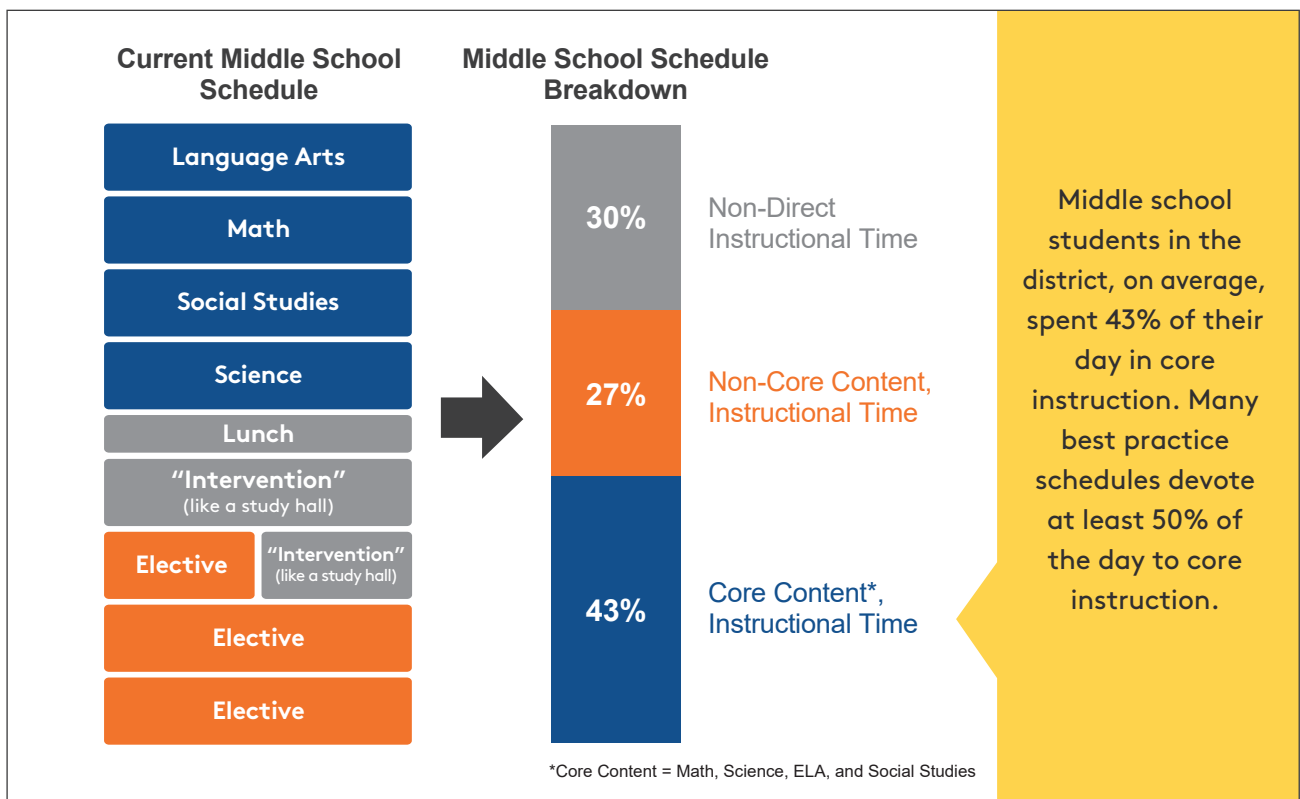
DMGroup recommended that the district reallocate the time dedicated to study halls or whole-grade intervention blocks that functioned like study halls to other periods in the day. For instance, by removing

the period at the middle schools that functions like a study hall and reallocating the time to the other seven periods, the schools could repurpose approximately 134 hours of “study hall” time — the equivalent of 19 entire school days — toward instructional time. Each of the other seven periods that received the repurposed time would gain an estimated additional 20 hours of instruction as a result. This change would increase core instruction to align with the best practice of 50% of a student’s day.

2. Rethink the approach to intervention: Replace “all hands on deck” intervention periods and “ad-hoc drop-in supports” with extra-time courses taught by content-strong teachers for students who struggle

Like many districts across the country, CPS’s middle schools and high schools were trying to incorporate as much intervention as possible into the schedule. Conversations with school and district staff as well as an in-depth review of how existing intervention time was spent revealed, however, that despite good intentions, the time was having limited impact for students.

Exhibit 1 ANALYSIS OF CORE AND NON-CORE TIME AT CPS MIDDLE SCHOOLS



Source: DMGroup.

At the middle schools, students had one-and-a-half periods devoted to intervention in an eight-period day. However, intervention was not frequently used for direct instruction. Instead, students were often randomly assigned to a teacher using an all-hands-on-deck staffing technique in which the assigned teacher might not teach the subject the student struggled with. Most days, the time was used for students to work on computer learning programs. While computer learning programs can be impactful, they are not meant to be a standalone intervention or a replacement for content-strong teachers.

CPS’s high schools had created ad-hoc drop-in intervention in which students could visit a content-strong teacher on stand-by to help throughout the day. The extra support required a high degree of student initiative, however, and was not consistently available, especially for students who were struggling the most.

Some of the middle and high schools offered extra-time intervention courses in reading and math taught by content-strong teachers for students who struggled. This was a best practice in action, but less than 10% of the district’s middle school and high school students were enrolled in these general education–based intervention courses (*Exhibit 2*).

DMGroup recommended that the district expand this extra-time intervention model. By repurposing the staff dedicated to the all-hands-on-deck and ad-hoc drop-in intervention models toward the extra-time model, the district would be able to go from serving 10% of students to 30% of middle and high school students, without adding any additional staff members.

3. Increase equity between schools and departments by precisely matching staffing to enrollment

CPS had well-established guidelines for schedulers to use when actually building each school’s master schedule. However, the guidelines were often interpreted differently: some schedulers viewed established target class sizes as the maximum class size, while other schedulers were comfortable adding students to classes to go above the target class size (as long as the maximum class size was not exceeded). These differences in interpretation of class size targets resulted in schools having significantly different class sizes; some schools had 20% more students in a core class than neighboring schools (*Exhibit 3*).

Some of the class sizes differences were intentional. With a lens toward equity, the district began staffing Title 1 schools differently from their lower-needs counterparts. While the intention was to provide additional support to the schools that needed it most, in practice the additional staffing was simply spread across multiple classes. In the district, Title 1 middle schools had an average core class size of 22 students, while non-Title 1 schools had an average core class size of 24 students.

DMGroup recommended that instead of using the extra staffing to reduce class sizes in Title 1 schools by one or two fewer students, schools could consider adhering to the district’s target class sizes and using the repurposed FTE to hire an additional counselor, social worker, or interventionist to help meet the needs of students at those schools.

Exhibit 2 PERCENTAGE OF STUDENTS RECEIVING EXTRA-TIME, GENERAL EDUCATION-BASED INTERVENTION COURSES

	Math Intervention	Reading Intervention
Middle Schools	3% of Middle School students	7% of Middle School students
High Schools	<1% of High School students	7% of High School students

Source: DMGroup.

Columbia Public Schools’ extra-time, general education–based intervention courses followed research-backed intervention practices, but very few students had access to this type of intervention in the district.

Exhibit 3 CPS MIDDLE SCHOOL AND HIGH SCHOOL CLASS SIZE ANALYSES

Middle Schools

School	Average Core Class Size	Average Non-Core Class Size
School #1	24.6	18.9
School #2	24.5	18.4
School #3	23.1	17.8
School #4	22.4	18.1
School #5	22.1	18.4
School #6	20.6	18.3
Average	22.9	18.3

Middle School #1 core classes are 20% larger than those at Middle School #6.

High Schools

School	Average Core Class Size	Average Non-Core Class Size
School #1	23.7	21.6
School #2	22.5	19.4
School #3	21.3	19.1
Average	22.5	20.0

High School #1 core classes are 10% larger than High School #3's.

Source: Columbia Public Schools and DMGroup.

4. Increase equity between schools and departments by precisely matching staffing to enrollment

One obstacle to precisely matching staffing to enrollment was the sheer number of courses at the high schools. Each of the three high schools offered over 100 elective options per year—a true point of pride within the district. In responding to student interest, however, schools unintentionally began creating smaller and smaller elective classes to accommodate student requests.

Despite district guidelines to only offer courses with a minimum class size of 18 students, 114 single-section courses existed across the three high schools that had an average enrollment of 12 students in each class (*Exhibit 4*).

Often when a class did not meet the minimum enrollment of 18 students, school and district leaders would meet for a discussion, which typically became a “keep the course” or “end the course” debate, with some advocating for small classes as necessary

to provide equity in offerings across all of the high schools, and others advocating for more cost-effective staffing. These conversations would often end in a stalemate, with the status quo —“keep the course” — prevailing.

Such “keep” or “end” conversations about elective courses present a false dichotomy. Instead, DMGroup provided the following options to maintain all of the extraordinary opportunities the district provides its high school students, while still increasing efficiency:

- **Alternate course offerings:** One option was for the high schools to begin offering every other year those courses that typically have lower enrollment. Nearly all colleges have adopted this type of scheduling to better manage resources, and this method would allow the district’s high schools to pull students from two different “years” to increase enrollment.
- **Combine courses:** The high schools already combined low-enrollment courses with related courses to keep class enrollment closer to the district guidelines, but some schools and departments leveraged the technique more than others. The high schools had an opportunity to expand the number of low-enrolled courses that they combined. Often, hands-on courses and higher-level world language courses were good candidates for combining.



Students at work at Hickman High School

- **Use virtual classrooms:** While prevalent everywhere now, virtual classrooms were popular at the secondary level even before the pandemic. By having one teacher at one high school offer a course and live-stream it to classrooms at other high schools, the district would be able to offer high-interest electives or AP courses without creating a unique section at each school.
- **Set stricter minimum-enrollment thresholds:** Once the high schools tried a combination of the three methods listed above for each of their

lower-enrolled courses, there would be very few classes that were still under-enrolled. For the remaining lower-enrolled courses, the district could consider setting stricter minimum-enrollment thresholds, with the hope that this method would not need to be used frequently.

Managing Change: Building Support to Align Schedules with the District's Priorities

Stiepleman, McArthur, and Rukstad worked closely with DMGroup to create multiple opportunities to share the findings of the study with a wide audience and to begin discussing what should change in the future. The team gathered a list of stakeholders whose support would be essential to implementing any schedule changes.

McArthur commented, "We really wanted to be thoughtful and intentional about including and not excluding stakeholders from the information. A top priority was making sure our principals had a voice in the district's next steps since they are our building leaders. We also needed to have central office leaders, our data team, and content coordinators in the presentations to help act on the information."

Exhibit 4 HIGH SCHOOL CLASS ENROLLMENT ANALYSIS

School	Number of Low-Enrollment, Single Section Courses	Average Enrollment
High School #1	41	11.2
High School #2	47	11.7
High School #3	26	14.1
District Total	114	12.3

Source: DMGroup.

Over the course of roughly a month, the team conducted an in-district “roadshow” via Zoom to share the findings and recommendations from the study and collect feedback from five different groups:

1. District leaders
2. Principals
3. The district’s wider leadership team, including district leaders, district content coordinators, assistant principals, and counselors
4. CPS Union Leadership
5. CPS School Board

During the conversations, stakeholders were able to ask questions about the implications of the proposed scheduling changes and share creative ways to embed the potential changes into schedules.

Equally important, stakeholders shared what supports they would need from the district leadership team to make the changes happen, including:

- Expert “technical scheduling” support to build schedules that precisely match enrollment to staffing
- A clear understanding of what decisions school leaders had the autonomy to make at the school level versus what decisions were district-level decisions
- An opportunity to collaborate with other school leaders to discuss shared staff schedules and joint elective offerings

Two questions that weren’t asked during the conversations were, “Why now?” and “Why this change?” Stiepleman commented, “In the past when central office made a scheduling requirement or set parameters around class size, it became a school site versus central office issue. However, having started this work nearly a year before

with the DMGroup professional development session, the shared words and ideas were already rooted and firmly anchored.”

The district’s inclusive approach to sharing and discussing the findings over the course of the month was the first set of many conversations to thoughtfully implement changes moving forward.

Planning for the Future

Stiepleman celebrated that the overarching outcome of the review was that the district “can still offer intervention with the highest-quality teacher, provide dedicated time for advisory, and maintain instructional minutes. The recommendations were about ways to rethink scheduling models or approach challenges in a different way, not to dismantle the clear intent of what our school district is trying to do.”

As the 2020-21 school year wraps up, the district is already looking to the future. Dr. Rukstad said, “The district’s principals are already looking at their schedules in new ways and coming up with new ideas on what to change.” DMGroup’s findings are also forming the groundwork for larger structural changes in 2022-23. The district hopes to increase instructional time at the middle schools, look critically at class sizes, and offer lower-enrolled courses virtually across schools as a way to manage course offerings.

While CPS may be transitioning to a new superintendent, Stiepleman shared that the secondary scheduling work would continue. “We knew that I would be leaving the district when we started this work. With a new five-year strategic plan on the horizon, we purposefully wanted this to be a blueprint for the district to use moving forward so the new superintendent doesn’t have to start from scratch.” ♦

“*The recommendations were about ways to rethink scheduling models or approach challenges in a different way, not to dismantle the clear intent of what our school district is trying to do.*”

– Dr. Peter Stiepleman
Superintendent, Columbia Public Schools (MO)