CPS Gradebook Technical Report

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Introduction

In this short report, we explore teachers’ use of Gradebook—Chicago Public Schools (CPS)’s electronic grade tracking system—in ninth-grade math classes in CPS in the 2016–17 school year. This technical report concludes one phase of a larger Consortium study of gender differences in CPS ninth-grade math courses. The results of that study will be published separately in summer 2022.

CPS officials requested that we investigate Gradebook usage independently of our larger research question and prepare a short report describing it so that they could understand trends and implications about grading practices. However, because our larger study pertains to grades in ninth-grade math, this report is restricted to that subject and grade level.

About 15 years ago, Gradebook replaced traditional paper gradebooks with a more versatile electronic system to help teachers keep track of students’ marks and calculate their grades. Gradebook suggested default grading categories and weights that teachers could alter easily. It also provided parent and student portals, allowing them to monitor student progress. Local school administrators were also able to track patterns and trends in student performance within their own school in Gradebook. They could create a wide variety of reports to look across subject areas or grade levels. (District level administrators also had access to Gradebook, but not authority to change local decisions.)

Although Gradebook is no longer used in CPS, ASPEN, its successor, is very similar and the patterns we observe here likely apply to ASPEN as well. While Gradebook was, and ASPEN is now, ubiquitous in CPS, there is little system-wide written guidance about their use. The one document that we have located is Professional Grading Standards and Grading Practice Guidelines for Chicago Public School Teachers, developed by a joint committee of CPS and the Chicago Teachers Union (CTU) in 2017. We refer to this CPS-CTU guidelines document several times within this report.

We hope that this short report will prove to be helpful to CPS principals, teachers, and network and central office staff in their reflections and decisions about grading practices in their classrooms and schools.

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1 Chicago Public Schools (2017).
Data

To the best of our knowledge, Gradebook data from CPS have never been used before in external research, nor carefully examined and analyzed either internally or externally. Thanks to major efforts from CPS and Consortium data experts, we obtained the 2016–17 school year Gradebook files in the summer of 2020. It took Consortium staff approximately six months to reconstruct and connect five of 13 different “back end” Gradebook tables into a single file that more closely resembled what “front end” users see. (See Appendix A on p.11 for names of specific files used and how they were connected.) In terms of data points, this was the largest data file that the UChicago Consortium ever received from CPS.²

We extracted both fall and spring semester algebra and geometry classes of ninth-graders in the 2016–17 school year from the complete Gradebook data set. Since CPS charter schools did not report student grades to CPS, the analysis excluded Chicago charter high schools. Table 1 contains counts of schools, math teachers, math sections, and students observed in the following analyses. We defined math sections as algebra and geometry classes that enrolled ninth-grade students. For most of the analyses, we used the section as our unit of analysis instead of teacher, because a single teacher may use different categories and weightings in different sections.

Key Terms

Throughout this report, we use multiple terms that have specific meanings that are not intuitive and require explanation. Some of these terms come directly from Gradebook, and we have created others from analyzing the raw data in Gradebook. Appendix B provides more detail, but the most important to keep in mind are the following:

- **Category Titles.** Gradebook provides six default category titles: 1) assignments, 2) homework, 3) class participation, 4) quizzes, 5) exams, and 6) projects. Teachers can alter these titles, using category titles they find more appropriate, such as “quizzes/tests.” Teachers can also add up to three additional categories and provide the titles themselves. Categories are like “buckets” that contain multiple tasks (called “assignments” in Gradebook).

- **Category Family.** This term refers to our own coding of the 709 unique category titles that we observed in the data files into larger buckets called “families.” We did this to create a more parsimonious set of categories to make our analysis more interpretable. These are presented in Table 2.

- **Task.** We use term “task” to refer to the multiple pieces of work within each category title or family. We chose to call these tasks to avoid having two separate meanings of Assignments (a category title, in addition to the units contained in the bucket). An example of a task is “Problems 1-5, page 38.”

### TABLE 1

Description of Analytic Sample SY 2016-17

<table>
<thead>
<tr>
<th>Sample</th>
<th>Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>17,056</td>
</tr>
<tr>
<td>Teachers</td>
<td>366</td>
</tr>
<tr>
<td>Schools</td>
<td>86</td>
</tr>
<tr>
<td>Sections</td>
<td>1,804</td>
</tr>
</tbody>
</table>

**Note:** We defined math sections as algebra and geometry classes that enrolled ninth-grade students.

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² Gradebook data use at the UChicago Consortium is governed by a legally valid data sharing agreement with CPS. Per this agreement, the UChicago Consortium holds no Personally Identifiable Information, such as student names.
Findings

1. Most teachers customized category titles.

Very few ninth-grade math sections used the default category titles as suggested in Gradebook. About 2 percent of the sections in this sample used exclusively default category titles—most often using two, three, or four of the default categories. In 98 percent of the sections, teachers either altered category titles or created new ones.

There were 709 unique category titles across the 1,804 sections in this analysis. To reduce often-repetitive and similar category titles we coded them into six “category families” (see Appendix B on p.13 for a description of our coding process and checking). Table 2 below shows the six category families and their relative prevalence.

We coded all 709 category titles into these six category families; they are mutually exclusive. We coded 43 percent of the category titles into the assessments category family, and 27 percent into the assignment category family, etc. Note that the percentages in the table sum to 100 percent (without rounding).

### Coding the category titles into families led us to four additional category title findings:

- **We could not differentiate between formative and summative assessments.** The Gradebook default categories separate tests and quizzes, and the CPS/CTU agreement on Gradebook usage requires the separation of summative and formative tests. Yet, in our coding, we often were unable to differentiate between tests and quizzes and between summative and formative. For example, teachers created

<table>
<thead>
<tr>
<th>Category Family</th>
<th>Definition</th>
<th>Percentage of Category Titles Coded into Each Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessments</td>
<td>Categories that evaluate a student’s knowledge of a topic. Quizzes, exams, etc.</td>
<td>43%</td>
</tr>
<tr>
<td>Assignments</td>
<td>Categories applied to work given in the day-to-day course of a class. Classwork, homework, bell ringers, etc.</td>
<td>27%</td>
</tr>
<tr>
<td>Behavior</td>
<td>Categories that evaluate a student’s actions in the class. Behavior, class participation, etc.</td>
<td>10%</td>
</tr>
<tr>
<td>Mastery-Based</td>
<td>Categories that follow the Common Core State Standards or general mathematics principles. Number sense, inequalities, etc.</td>
<td>7%</td>
</tr>
<tr>
<td>Weekly</td>
<td>Categories organized by week administered. Week 5–10, Week 30, etc. Typically the last week’s data applied to final grade.</td>
<td>3%</td>
</tr>
<tr>
<td>Other/Unclassifiable</td>
<td>Any category unable to be grouped into one of the category families above.</td>
<td>11%</td>
</tr>
</tbody>
</table>

**Note:** Aggregate values based on unique category records. N=709

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3 Chicago Public Schools (2017).
category titles such as “quizzes and tests,” “exams/quizzes,” “assessments (summative/formative)” and “quizzes, exams, projects, and other assessments.” As we continue to refine our work with Gradebook, we hope to develop stronger rubrics to differentiate between summative and formative assessments, as we believe that there are meaningful differences in how the two types of assessments are used. We return to this subject in the final section of this report.

- **We could not differentiate assignments into classwork and homework categories.** They were often combined in teachers’ category titles, such as “classwork and assignments,” and “classwork/homework assignments.” This category family contains 27 percent of all category titles.

- **The “mastery-based” category family was used relatively commonly.** Seven percent of unique category titles reflected specific learning standards being covered in class. Examples include: “real life diii/iv/v. apply and justify,” “communicate (ciii/iv/v) move and organize,” or more simply, “systems and equations.” This likely reflects that several CPS high schools have adopted standards- or competency-based grading, where grades are determined by students’ performance on assessments or other demonstrations of content mastery. The “weekly” category family contains category titles such as “Weeks 1-5” and “Weeks 5-10.” Presumably, these refer to content covered during the specified period and may reflect grades calculated by teachers outside of Gradebook for the named grading period.

- **We were unable to code 11 percent of category titles because we did not understand their meanings, or because their meanings crossed category families.** For example, “projects/labs/essays,” “direct learning,” and “quizzes, classwork, projects” were categories placed into the other/unclassifiable category family.

2. Most teachers used two or three grading category families.

Gradebook permits customization of category titles to suit teachers’ pedagogical preferences. The average number of category families used in ninth-grade math sections was 2.43; most teachers used two or three grading category families (see Figure 1). About 80 percent of sections used two or three grading categories families. Again, we see that few sections used the six default grading category titles. This appears to reflect teachers’ grading preferences and teaching and grading practices.

Note that teachers used a larger number of unique category titles—3.78 on average. The average number is reduced because we collapsed many similar sounding titles into the larger family. No doubt individual teachers could meaningfully differentiate similar sounding category titles, but we could not. See Appendix D on p.15 for more information.

**FIGURE 1**
Teachers Typically Used Two or Three Category Families

<table>
<thead>
<tr>
<th>Total Category Families</th>
<th>Number of Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>776</td>
</tr>
<tr>
<td>3</td>
<td>710</td>
</tr>
<tr>
<td>4</td>
<td>128</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: Category families sometimes contained multiple category titles; see Key Terms on p.2 for details. N = 1,804 sections
3. In sections that used mastery-based and weekly category families, almost all the final grade was determined by those category families. In other sections, assessments had the highest weighting.

Table 3 notes the relative usage of our five category families. The median percentile column shows the weight for grades in each category family in the middle of the distribution—one-half of sections had higher weightings and one-half had lower weightings. The 25th percentile is the point in the distribution where 25 percent of section had lower weightings and 75 percent had higher weightings. In the same vein, the 75th percentile is the point where 25 percent of sections had higher weightings and 75 percent had lower weightings.

In sections where teachers used mastery-based or weekly category families, nearly all the final grade was determined by tasks within these respective category families. This was likely due to mastery-based or weekly grading schemes being a different framework from which to approach grading—and if a teacher used a non-traditional scheme, they would consistently use that non-traditional scheme.

In sections that did not use mastery-based or weekly grading, assessments had the highest weighting in determining final grades, followed by assignments, and then behavior. As noted above, often we could not differentiate tests from quizzes, and summative assessments from formative assessments. Because of this difficulty, our median assessment category family weighting of 60.0 percent exceeded the CPS/CTU recommendation that no single category should exceed 50 percent of the total weighting. In future work, we hope to develop more precise rubrics to differentiate formative assessments from summative assessments.

**TABLE 3**

Typical Final Grade Weights, by Category Family

<table>
<thead>
<tr>
<th>Category Family</th>
<th>Median (50th Percentile Weight)</th>
<th>25th Percentile Weight</th>
<th>75th Percentile Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessments</td>
<td>60.0</td>
<td>50.0</td>
<td>70.0</td>
</tr>
<tr>
<td>Assignments</td>
<td>30.0</td>
<td>20.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Behavior</td>
<td>10.0</td>
<td>10.0</td>
<td>11.1</td>
</tr>
<tr>
<td>Other</td>
<td>25.0</td>
<td>10.5</td>
<td>50.0</td>
</tr>
<tr>
<td>Mastery</td>
<td>80.0</td>
<td>70.0</td>
<td>85.0</td>
</tr>
<tr>
<td>Weekly</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Note: Aggregate values based on unique section/category family/student records. N=86,533*
4. On average, all category families included many tasks; the exception was in the weekly category family, where typically only four tasks contributed to final grades.

Table 4 provides evidence that students completed multiple tasks within each category family, so that no single task played an outsized weight in determining the category scores and thus final scores. On average, there were about 11 tasks per semester in the assessments category family—approximately one assessment task every three weeks over the course of a full semester. There were about 28 tasks on average in the assignments category family.

The median percentile column shows number of tasks recorded in each category family in the middle of the distribution—one-half of sections had more tasks and one-half had fewer. The 25th percentile is the point in the distribution where 25 percent of section had fewer tasks and 75 percent had more. In the same vein, the 75th percentile is the point where 25 percent of sections had more tasks and 75 percent had fewer.

Teachers who used mastery-based grading assigned around 21 tasks for each semester in that category family, on average. Teachers who used weekly grading schemes tended to consistently use four tasks for final semester grades. The weekly category family is hard to interpret given that the category titles in this family varied greatly. For example, some were titled “weeks 1-5,” or “week 6” or “weeks 4-7.”

### Table 4
Typical Number of Tasks by Category Family

<table>
<thead>
<tr>
<th>Category Family</th>
<th>Median (50th Percentile Task Count)</th>
<th>25th Percentile Task Count</th>
<th>75th Percentile Task Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessments</td>
<td>11.0</td>
<td>8.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Assignments</td>
<td>28.0</td>
<td>16.0</td>
<td>46.0</td>
</tr>
<tr>
<td>Behavior</td>
<td>7.0</td>
<td>2.0</td>
<td>17.0</td>
</tr>
<tr>
<td>Other</td>
<td>14.0</td>
<td>6.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Mastery</td>
<td>21.0</td>
<td>14.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Weekly</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Note: Aggregate values based on unique section/category family/student records. N=86,533
5. Sixty-five percent of sections used the Gradebook default weighting algorithm.

Final grades were affected by two types of weightings. The first was the category (title or family) weighting. Gradebook assigns default weights to the six default categories, as follows: assignments, 40 percent; homework, 20 percent; class participation, 10 percent; quizzes, 10 percent; exams, 10 percent; and projects, 10 percent.

The second type of weighting occurs at the task level. Tasks within grading category titles may also be weighted differently from each other by assigning different total points possible to individual tasks. For example, one quiz may be worth 100 points, another 60, and a third 50.

These weightings may be combined in two different ways:

- “Total Points Logic ON.” Or
- “Total Points Logic OFF.”

The default setting for Total Points Logic is “ON.” This means that the task scores are aggregated to the category title score by dividing total points earned by total points possible (see Table 5). For example, if a teacher gave three tests (or tasks) with different points possible, the tests with more possible points would be more influential in determining the final category scores. Table 5 provides a specific example.

Using Total Points Logic (ON) this student’s category score would be 180 divided by 210=85.7 percent.

Total Points Logic (OFF) treats each test as if it had equal weight to the others regardless of differences in points possible. So, in the example shared in Table 5, it would average 80 percent, 92 percent, and 90 percent to result in a category score of 87.2 percent. Tests #1, #2, and #3 had equal influence in determining the final score, even though they had different possible points.

The category title weights (for example, exams being 10 percent of final grade) are then applied to these category scores to calculate the final grade. About 65 percent of sections in this sample used the default (Total Points ON) and 35 percent used Total Points Logic OFF. There is a subtle difference between the two, and our anecdotal reports suggest that it is not well understood by most administrators and teachers.

The example above shows a relatively small difference between the Total Points Logic options, but it is very possible that a student could earn a different final grade depending on whether the Total Points Logic option is either ON or OFF.

<table>
<thead>
<tr>
<th>TABLE 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Category Score Calculation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test</th>
<th>Points Earned</th>
<th>Points Possible</th>
<th>Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>80.0</td>
<td>100.0</td>
<td>80.0</td>
</tr>
<tr>
<td>#2</td>
<td>55.0</td>
<td>60.0</td>
<td>91.7</td>
</tr>
<tr>
<td>#3</td>
<td>45.0</td>
<td>50.0</td>
<td>90.0</td>
</tr>
<tr>
<td>Total</td>
<td>180.0</td>
<td>210.0</td>
<td>—</td>
</tr>
</tbody>
</table>

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6 The ASPEN system now used by CPS provides four optional weighting systems.
6. Students on the cusp between two grades were much more likely to receive the higher grade than the lower grade.

Our final finding is not related to category titles and category families, but rather, students’ final grades. Gradebook afforded us the ability to observe student’s final grade values, not just their final letter grade. Plotting all final grade values from our sample allowed us to ascertain grading patterns throughout CPS.

Figure 2 shows the distribution of final course scores from fall and spring semesters, combined. There were very few students on the left side of the grade distribution (below 60) and an even smaller number on the right side with scores exceeding 100. This is likely due to extra points and additional tasks.

In examining this figure, one is immediately drawn to the four “peaks” where there are very few students immediately to the left (those with lower scores) and a sharp decline in the number of students immediately to the right (those with higher scores).

These peaks occur at 60, 70, 80, and 90 points—the cutoffs between F and D, D and C, C and B, and B and A, respectively. Many students earned the fewest possible points that would earn a higher grade. In fact, the most common point score for a given grade was the minimum for that grade. Given the available data, we cannot determine how this is happening, but many students “on the border” were able to move up into the next higher letter grade.

There are many possible explanations—speculations, given our lack of hard data—for this frequent occurrence. One possibility is that scores on the cusp were “rounded up.” Or teachers may be providing students with extra opportunities to earn credits to move to a higher grade. Students, eager to pass or earn a higher grade, may be requesting extra credit tasks. Or teachers and students are working together to avoid failures and to earn higher grades. These practices would be in keeping with the CPS/CTU agreement that states: “To encourage student success, students shall be allowed the opportunity to recover and improve.”

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**FIGURE 2**

Students on Cusp Between Two Grades Were More Likely to Receive Higher Grade

*Distribution of fall and spring semester final grade scores*

Note: Fall and spring final grades. N=32,234

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Chicago Public Schools (2017).
Implications

In reviewing and analyzing Gradebook data, we were able to learn much about teacher grading practices in CPS. Before analyzing the data, we expected that most teachers were using the default, suggested CPS/CTU categories, a point that the data did not bear out. Most teachers heavily edited their Gradebook categories—changing the number of categories used, the names of those categories, and the weight of the category toward a student’s final grade. Ten percent of teachers rejected grading based on type of assignments altogether, instead opting for grading schemes based on math standards or when tasks were assigned.

After coding individual category titles into category families, we were able to gain insights into teachers’ grading practices and decisions that affected final grades. We found that while category titles in the assignment category family had the greatest number of tasks counting toward the final grade, assessment family categories typically had the most weight toward a student’s final grade. Additionally, we found that teachers in our sample typically did not make clear distinctions between formative and summative assessment categories in Gradebook, and they often created category titles that encompassed both types of assessments.

Finally, we were able to observe that teachers seem to be providing opportunities for students to improve their grades throughout the semester. A relatively small proportion of students had final grade scores below the 60 percent value, and many students received the higher of two letter grades when they were on the cusp between grades at the end of the semester.

This brief report analysis raises several key issues for further discussion:

- This analysis, together with our anecdotal conversations with current and former CPS educators, suggest that there is little formal guidance for the use of Gradebook and its successor, ASPEN.

Although there are pockets of expertise in CPS about the use of electronic grading systems, they are not widespread. This is perhaps one reason why we find such great variability in Gradebook usage in a single subject at one grade level.

- Users may be helped by greater clarification around grading practices between formative and summative assessments. In coding teacher-developed category titles associated with assessments, often we could not differentiate summative from formative assessments, and tests from quizzes. This strikes us as a critical issue since the two are different and serve different purposes. There is also the question of whether formative tests should even count in grades, as they can be intended as a learning tool only. This will become even more important as CPS begins to implement Skyline, which contains a wider range of assessment types. Teachers will need to decide whether and how to include different assessment types in ASPEN. They may also need guidance in making these decisions.

- Teachers using mastery-based grading may want to create their own best-practices community. The Gradebook data reveal great variability within our mastery-based category family, suggesting school-to-school differences in implementation. We often saw only one or two teachers at a school site using mastery-based grading, while at other sites a greater proportion of teachers used mastery-based grading. Given the growing popularity of standards-based grading, schools participating may learn best-practices from each other by discussing how they use Gradebook (now ASPEN).

- The weighting options and “Total Points Logic” are difficult to understand and to explain. Again, this topic deserves greater attention so that teachers understand the implications of their choices. This is even more important in ASPEN than in Gradebook, given the greater number of options available.
• Further investigation of “cusp” grade patterns would provide further insights into grading practices. Figure 2 on p.8 provides interesting evidence about grading practices. Do the four peaks reflect evidence that teachers are providing and students are requesting more opportunities for student success, as encouraged in the CPS/CTU Grading Standards? This topic deserves more conversation about how this is occurring and how more students can reach CPS’s “Bs or better” goal.

• Now is the time to update the CPS/CTU Grading Standards publication. Given the variability in grading, the rising popularity of mastery-based grading, and the coming introduction of Skyline, now may be a good time to revisit and revise Grading Standards and make it widely available through professional development experiences. This may provide the opportunity for more in-depth discussions on various types of assessments and their role in determining grades.

• Grading patterns in subjects beyond ninth-grade math should be examined. This investigation is restricted to ninth-grade math classes from several years ago. Now that ASPEN is well established and well known, CPS may want to expand this exploration to other grade levels and subjects, especially those where there may be concerns about student progress or levels of success.

Final Note
Gradebook provided teachers a great deal of latitude and flexibility in its use. We have noted several times how much variability there was in grading practices across math sections. We are not suggesting that greater consistency in grading practices is necessarily desirable. But it is likely that greater communication among administrators and teachers about Gradebook (now ASPEN) use could lead to common learnings. These could result in good practices that improve use, are easier for teachers, and facilitate communication among teachers, students, administrators, and parents.

References
Appendix A
Gradebook Database Tables

We used the records and file names in Table A.1 to re-create final student grades; Figure A.1 displays the connections across data sources.

### TABLE A.1
List of Gradebook Tables and Their Connections

<table>
<thead>
<tr>
<th>Table</th>
<th>File Name</th>
<th>Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Overrides</td>
<td>gbcourseoverrides</td>
<td>1,684</td>
</tr>
<tr>
<td>Category Groups</td>
<td>gbcatgroups</td>
<td>36,550</td>
</tr>
<tr>
<td>SS Assignment Links</td>
<td>ssassignmentlinks</td>
<td>173,973</td>
</tr>
<tr>
<td>Teacher ID Map</td>
<td>imsteacheridmap</td>
<td>21,799</td>
</tr>
<tr>
<td>Categories</td>
<td>gbcategories</td>
<td>3,479,287</td>
</tr>
<tr>
<td>Classes</td>
<td>gbclasses</td>
<td>714,024</td>
</tr>
<tr>
<td>Assignments</td>
<td>gbassignments</td>
<td>7,965,950</td>
</tr>
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<td>Grades</td>
<td>gbgrades</td>
<td>159,209,418</td>
</tr>
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<td>Course File</td>
<td>gbcoursefile</td>
<td>1,161</td>
</tr>
<tr>
<td>Student Overrides</td>
<td>gbstudentoverrides</td>
<td>1,420</td>
</tr>
<tr>
<td>Quarter 1 Report Card</td>
<td>reportcards_q1_2016_17_hs</td>
<td>546,440</td>
</tr>
<tr>
<td>Quarter 2 Report Card</td>
<td>reportcards_q2_2016_17_hs</td>
<td>566,735</td>
</tr>
<tr>
<td>Quarter 3 Report Card</td>
<td>reportcards_q3_2016_17_hs</td>
<td>529,411</td>
</tr>
<tr>
<td>Quarter 4 Report Card</td>
<td>reportcards_q4_2016_17_hs</td>
<td>434,647</td>
</tr>
</tbody>
</table>
FIGURE A.1
Connections for Analytic File

Legend

One-to-Many Join

One-to-One Join

Note: Data included here represent the data in tables shared with Consortium researchers; CPS data may contain additional variables.
Appendix B
Definitions and Examples of Terms Used throughout This Report

We use multiple terms throughout this report that have specific meanings that require explanation. Some of these terms come directly from Gradebook, and we have created others from analyzing the raw data in Gradebook. Table B.1 provides definitions and examples for our key terms.

<table>
<thead>
<tr>
<th>Term</th>
<th>As Defined By</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
</table>
| Default Category Title         | Gradebook           | Title or name given to a gradebook category. Can be either one of six default titles, or a teacher-created title. | Assignments  
Homework  
Class Participation  
Quizzes  
Exams  
Projects  
Unnamed Category 1  
Unnamed Category 2  
Unnamed Category 3 |
| Modified Category Title        | Gradebook           | Category names modified or created by teachers.                           | “In class learning”  
“Ticket to leave”  
“Formative: bell ringer and group work”  
“Math standard 3.2” |
| Category Family                | Consortium Researchers | High-level grouping of category titles. Categories were coded into category families by Consortium researchers | Assessments  
Assignments  
Behavior  
Mastery-Based  
Weekly  
Other/Unclassifiable |
| Task                           | Consortium Researchers | Work assigned under each category. Gradebook refers to these as “assignments.” To reduce confusion with the assignment category family, we refer to these as tasks. There are usually multiple tasks within each category family. | “Slope and graphing review”  
“Quiz 3- Word problems”  
“Math Binder”  
“Graphing lines in standard form hw”  
“Problem Set #5 – Parallel/ perpendicular lines” |
Initially, our team intended to use the default Gradebook category titles to perform this analysis. Once we received the Gradebook data from CPS, it became clear that few teachers (40 percent) used at least one of the default category titles with its default weight, and that to perform any meaningful analysis with categories we would need to create a taxonomy of category families. The initial set of math courses taken by first-time ninth-graders contained 1,100 unique category titles in addition to the six default titles. After we limited the set to algebra and geometry courses, 709 unique category titles remained, but all coding was done on the original set. We limited the analysis to the two most common ninth-grade math courses, Algebra and Geometry, after initial coding was finished.

First, we created a category coding scheme of three major category families: Assessments, assignments, and behavior. Where we observed teachers using math standards for category titles, we placed them into the mastery-based category. Similarly, where we observed teachers listing weeks of the course as category titles, we placed the category into the weekly family. All other category names that we could not group into one of the category families above were placed into “other/unclassifiable.”

Quality Assurance and Validation
The initial category coding was performed by Briana Diaz. After the initial round of category coding, John Easton and Silvana Friere each performed validation checks on approximately one-fourth to one-third of the categories, and their feedback was incorporated into the final coding rules. The data in this report reflects the data from the first round of validation. In summer 2021, our team worked with former K-12 teachers to perform another round of validation; the results of that work are forthcoming.

The current coding scheme is a work in progress and may change in the future. For example, we are attempting to split the assessments category family into two categories: formative and summative assessments. However, it remains to be determined if this dataset can support another layer of disaggregation.
Appendix D
Additional Tables

This appendix contains additional reference tables. Table D.1 displays the number of sections by the total number of category titles used. Table D.2 shows the pre-set default category titles and weights.

**TABLE D.1**
Total Category Titles by Sections

<table>
<thead>
<tr>
<th>Total Category Titles Used</th>
<th>Number of Sections</th>
<th>Percent of Total Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>82</td>
<td>4.5%</td>
</tr>
<tr>
<td>2</td>
<td>148</td>
<td>8.2%</td>
</tr>
<tr>
<td>3</td>
<td>514</td>
<td>28.5%</td>
</tr>
<tr>
<td>4</td>
<td>512</td>
<td>28.4%</td>
</tr>
<tr>
<td>5</td>
<td>334</td>
<td>18.5%</td>
</tr>
<tr>
<td>6</td>
<td>167</td>
<td>9.3%</td>
</tr>
<tr>
<td>7</td>
<td>37</td>
<td>2.1%</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>0.4%</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

*Note: Aggregate values based on unique section/category title/student records N=86,533*

**TABLE D.2**
Gradebook Category Default Titles and Weights

<table>
<thead>
<tr>
<th>Default Category Title Name</th>
<th>Default Category Title Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Exams</td>
<td>10%</td>
</tr>
<tr>
<td>Projects</td>
<td>10%</td>
</tr>
</tbody>
</table>
ABOUT THE AUTHORS

BRIANA DIAZ is a Research Analyst at the UChicago Consortium. Prior to joining the UChicago Consortium, Briana worked in New Orleans public education for nine years, serving as a middle- and high-school science teacher, school district data analyst and database architect, and policy researcher. Her research interests include educational accountability systems, district budgets and finance, and school leadership.

JOHN Q. EASTON is Senior Fellow at the UChicago Consortium. Until 2018 he served as Vice President, Programs at the Spencer Foundation in Chicago. At Spencer, he developed and led a grant program for research-practitioner partnerships. From June of 2009 through August 2014, he was Director of the Institute of Education Sciences in the U.S. Department of Education. Prior to his government service, Easton was Executive Director of the UChicago Consortium. He has been affiliated with the UChicago Consortium since its inception in 1990 and became its Deputy Director in 1997 and Executive Director in 2002. John served a term on the National Assessment Governing Board, which sets policies for the National Assessment of Educational Progress (NAEP). He is chair of the Illinois Workforce and Education Research Collaborative Advisory Board; a member of the Illinois Employment Security Advisory Board, Educational Testing Service External Research Panel, and the Chicago Public Schools' School Quality Report Card 3.0 Advisory Board.

This report reflects the interpretation of the authors. Although the UChicago Consortium’s Steering Committee provided technical advice, no formal endorsement by these individuals, organizations, or the full Consortium, should be assumed.
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OUR MISSION With the goal of supporting stronger and more equitable educational outcomes for students, the UChicago Consortium conducts research of high technical quality that informs and assesses policy and practice in the Chicago Public Schools. We seek to expand communication among researchers, policymakers, practitioners, families, and communities as we support the search for solutions to the challenge of transforming schools. We encourage the use of research in policy action and practice but do not advocate for particular policies or programs. Rather, we help to build capacity for systemic school improvement by identifying what matters most for student success, creating critical indicators to chart progress, and conducting theory-driven evaluation to identify how programs and policies are working.