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# How Teachers Use Data: Description and Differences Across PreK Through Third Grade

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## **Abstract**

The use of data to inform instruction has been linked to improved student outcomes, early identification of intervention needs, and teacher decision-making and efficacy. Additionally, data are used as a means of accountability within educational settings. However, little is known about data use practices among early grades teachers. The purpose of the current study is to describe the data use of PreK to third grade teachers and to investigate differences in data use and support across grade levels. Participants were 307 early childhood teachers in PreK and early elementary school. Analysis of survey data revealed, overall, most teachers across grade levels collected observational data and direct assessments and data were predominantly used to inform instruction and determine if students are ready to learn new skills. In general, teachers indicated that support for data use is available. Results also indicate significant variation in data types, use, and support across PreK to third grade.

**Keywords:** Teacher data use, Data use support, Data collection alignment, Data-based decision-making, Classroom observations, Parent-provided data

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There is growing awareness that data use can improve the quality of education and the intentional use of data is increasingly recognized as an important component of teachers' practices (Organization for Economic Cooperation & Development [OECD], 2012). Data can be useful in honing understanding of students' skills and needs to provide tailored and effective instruction, and to improve school performance and student learning over time and across grades. Additionally, data are commonly used as a means of accountability within educational settings for purposes of monitoring compliance and progress as well as allocating resources based on needs. Despite its potential for enhancing educational quality and influencing student outcomes, little is known about data use practices among early childhood teachers. Specifically, there is limited documentation regarding the data sources most commonly used by teachers, and the purposes for which they use data across the PreK to third grade continuum. This lack of information is somewhat surprising given the importance of understanding educational practices that lead up to and potentially influence students' third grade outcomes, which are associated with students' lasting outcomes, including later academic achievement, college enrollment and retention, rates of incarceration and high school dropout (Feister, 2013; Guo et al., 2015). More information is needed on teachers' current data use practices, along with the organizational supports (e.g., training and professional development) available to support teachers' use of data as students transition into school and advance across the early grades.

The purposes of the current survey-based study are to describe teacher data collection, data use, and available support for data use from PreK to third grade and to investigate differences across grade levels. We used teacher report to assess the types of data teachers collect, the purposes for which teachers use data, and the organizational supports available to support data use by teachers.

### **Importance of Data Use Across the PreK to Third Grade Continuum**

Student outcomes at the end of third grade are predictive of future academic success and associated with future wellbeing (Feister, 2013;

Guo et al., 2015). Given these lasting associations, there is much interest in providing high quality, aligned experiences across the transition into school and through the early grades to support student success. Data use by PreK through third grade teachers is one strategy that can be used to promote aligned and instructionally appropriate experiences for students and lead to improved or maintained child outcomes over time.

Aligning the type of data and methods of data use over time may enhance the benefits for students in the early grades. A recent study conducted in rural communities found data sharing on individual children between PreK and kindergarten teachers was positively associated with literacy skills in children at kindergarten entry (Garber et al., 2023). However, they found that only 32% of participating PreK teachers shared data as part of their transition practices. Garber et al. (2023) suggested that the lack of connections across data types and systems between PreK and kindergarten creates difficulties for teachers to share individualized data. Transition practices as children enter school and progress through the early grades that include data sharing between teachers on individual student progress and needs may contribute to positive student outcomes over time, including improved 3rd grade outcomes.

In addition to promoting student outcomes, understanding data use practices in the early grades is highly relevant given that the collection and reporting of various data sources is a significant part of the educational infrastructure. It is now commonplace for teacher data use to be embedded in educational policy and established best practice. Professional organizations such as the National Association of School Psychologists (NASP), the Council for Exceptional Children (CEC), and National Association for the Education of Young Children (NAEYC) promote data use through best practices guidelines. For example, the CEC standards require the use of assessment for data-based decision making. Similarly, NAEYC (2019) standards require that early childhood teacher candidates understand and use child observation, documentation, and assessment.

## ***Conceptual Framework for Teacher Data Use***

The articulation of a framework around which data use practices can be organized is useful for advancing research and aligning findings with practice and policy opportunities. In this study, we build from Schildkamp et al. (2017) framework for investigating teacher data use practices. Specifically, we propose including data types, purposes, and organizational support as important aspects of data use among teachers.

### *Data Types*

Teachers collect many data sources from students in their classrooms. Sun et al. (2016) conducted a review of research on the types and purposes of data used by teachers and identified seven types: (a) short, formative assessments; (b) statewide standardized test scores; (c) classroom observations; (d) attendance; (e) demographics; (f) instructional strategies; and (g) growth reports. However, this study did not include PreK, nor did it differentiate across grade levels.

### *Data Use Purposes*

The current study explored the data use of early childhood teachers for purposes of accountability, school development, and instruction (Schildkamp et al., 2017).

### *Accountability*

Understanding data use is significant because it is associated with accountability systems. Data are used to inform parents and other community members about student progress and school performance (Diamond & Spillane, 2004). Teachers are also accountable to school, district, and state administrators to report on their classroom performance (Coburn & Talbert, 2006). In some cases, the accountability systems and their implications may be considered “high stakes.” Certain uses of achievement test results are termed high stakes if they carry serious consequences for students or for educators (American Education Researchers Association, 2000). For example, Head

Start Performance Standards require funded preschool programs to use child assessment data and measures of classroom quality to inform instructional decisions (Head Start Performance Standards, 2016). For older students, federal policies such as the No Child Left Behind Act (NCLB; 2002) and Every Student Succeeds Act (ESSA; 2015) require schools to collect and report student assessment scores. These policies often mean that low assessment scores may result in federal intervention, including reduction in funding for underperforming programs. States also have accountability policies related to student assessment and outcomes. For example, Ohio's Third Grade Reading Guarantee (2021) requires students to achieve a minimum reading assessment score to be eligible for promotion to fourth grade. The use of data for purposes of accountability in the early grades, including PreK, is understudied.

### *School Development*

Data use for school development refers to schools using data to improve school performance, and often involves data collection by teachers to feed into school systems' efforts. To this end, data-based decision making has been embedded in educational systems and structures (Mandinach, 2012). For example, a defining feature of multi-tiered systems of support (MTSS), a commonly used student support framework in schools, is continuous improvement (i.e., school development) driven by data (American Institutes for Research [AIR], n.d.-a). Within MTSS, teams (including teachers) collect and analyze data to diagnose problems or gaps, select strategies (e.g., curriculum changes) to address these challenges, and evaluate the success of each strategy. The Centers on MTSS includes data use as one of their five essential components (AIR, n.d.-b). In another example, Nebraska's Reading Improvement Act (2018) requires school districts to administer an approved reading assessment three times during the school year to all students in kindergarten through third grade. Assessment results are used to identify students in need of targeted interventions and then to evaluate the interventions' progress toward bringing all students to grade-level proficiency. However, information is limited regarding teachers' use of these data, and data-based decision-making processes they use, during PreK through third grade.

### *Instruction*

Repeated child assessments of performance, and the use of data to inform and influence instruction (including supplemented or individualized instruction), facilitates student achievement (Fuchs & Fuchs, 2002). The intentional use of data to inform instruction has been linked to improved student outcomes, early identification of intervention needs, and improved teacher decision-making and efficacy (Atkins- Burnett et al., 2014; Datnow et al., 2007). One recent large-scale study (deMonsabert et al., 2022) of early childhood educators found that most teachers reported using assessment data to inform instruction. Although this study compared data use across early childhood settings (e.g., Head Start, PreK, childcare), neither information about data use in elementary schools nor alignment with early childhood practices were provided. A study is needed that looks teacher data use across PreK and the early elementary grades. School Organizational Support School organizational support (e.g., professional development) is a potential enabler of data use by teachers (Schildkamp et al., 2017); conversely, the lack of supports may be considered a barrier. There is currently little guidance provided to teachers on structures and processes for implementing continuous data collection and using data (Zweig et al, 2015), despite evidence suggesting that many teachers lack the skills and knowledge to use data effectively (e.g., Marsh et al., 2006). Teachers have been found to collect and use multiple types of data but receive little to no preservice or in-service professional development for data use (deMonsabert et al., 2022). The lack of knowledge and skill regarding data use, as well as limited professional development opportunities, suggest a need for enhanced and intentional support to promote teacher use of data (Mandinach & Jimerson, 2016).

NAEYC (2020) has published a position statement that includes guidelines for developmentally appropriate data use practices when working with children from birth through the primary grades (i.e., age 8). Recommended data use practices are those that are “ongoing, strategic, reflective, and purposeful,” and that provide information about progress toward goals set with family input (p. 19). Recommendations also suggest that data be collected within a system that helps educators make sense of and use data, suggesting the importance of

professional development to promote teacher data use. Though these guidelines *apply* to PreK through third grade students, little is known about how they are *implemented* in PreK and early elementary school. More research is needed to understand current levels of organizational support and areas of training need for PreK to third grade teachers regarding data collection and use.

### ***Gaps in Data Use and Research Questions***

Despite increased awareness of the significance of data, its prominence in the educational infrastructure, and its potential application to support educational outcomes and student progress, little is known about data use in early childhood classrooms. Research is needed to better understand early childhood teachers' current data use practices, including types and purposes of data used as well as the organizational facilitators provided to promote teacher data use. Research on data use by PreK teachers is particularly lacking and it is unclear how the types of data collected by teachers and their data use practices vary across the PreK through third grade continuum.

This study is guided by three research questions: (1) What types of data do PreK through third grade teachers collect and are there differences by grade level? (2) How do teachers use data for accountability, school development, and instruction and does use vary by grade level? and (3) What organizational supports for data use are available to PreK through third grade teachers and does support vary by grade level?

## **Method**

### ***Participants***

Participants were 307 teachers enrolled in a larger classroom observation study in preschool and early elementary schools in rural and urban communities in the Midwest region of the United States. Teachers participated in one of three cohorts between 2018 and 2020. Primary data collection occurred prior to COVID-19 school closures in the spring of 2020. However, five teachers (1.6%) provided data after



school closures imposed by COVID-19. See Table 1 for teacher demographic information. Teachers were mostly women and most identified as white non-Hispanic. Teachers were similar on most demographic characteristics; however, PreK teachers were significantly *more* likely than kindergarten to third grade teachers and third grade teachers were significantly *less* likely than PreK to second grade teachers to have a state early childhood education certificate/ endorsement.

**Table 1** Teacher demographics

	Total (N = 307) %
Teacher gender	
Female	97.0
Male	3.0
Teacher grade level	
Preschool	18.4
Kindergarten	21.6
1st grade	27.7
2nd grade	17.1
3rd grade	15.2
Teacher race/ethnicity	
Black	1.0
Hispanic	2.0
Other	0.7
White	96.4
Highest level of education	
Associate's degree	0.7
Bachelor's degree	49.5
Master's degree	47.2
Education specialist/professional diploma	2.3
Other	0.3
Teaching certificate	
No	1.3
Yes	98.7
State ECE certificate/endorsement	
No	57.4
Yes	42.6
Classroom composition	
Number of students in class	M = 19.52 (SD = 3.79)
% Hispanic/Latino	M = 18.96 (SD = 20.17)
% White	M = 59.55 (SD = 29.93)
% Black	M = 14.53 (SD = 20.96)
% ELL*	M = 21.26 (SD = 21.99)
% FRL	M = 62.44 (SD = 30.58)

*ELL* students who speak a language other than English, *FRL* students eligible for free and reduced-price lunch

\*Significant difference between PreK and K, 1st, 2nd, and 3rd grade ( $p = .024$ )

## ***Setting***

Participants were recruited from 64 schools/agencies in 20 rural and two urban communities in one mid-western state. Rural versus urban status was defined using the National Center for Education Statistics (NCES) Office of Management and Budget locale codes. School districts with NCES locale codes of *city* or *suburb* were categorized as urban. Districts with local codes of *town* or *rural* were categorized as rural. School districts were identified and recruited into the study based on the following eligibility criteria: (a) 40% or more of students within the district were eligible for free and reduced-price lunch, and (b) the district provided public preschool services. For school districts with more than one primary school, Title I schools were selected to participate in the study. Two Head Start programs operated by community agencies were also included to increase the number of rural participants. See Table 1 for the participating teachers' classroom composition. Relative to other grades, PreK classrooms had a significantly higher number of students who spoke a language other than English. This is likely due to PreK eligibility criteria that favored English language learners. Schools were located in geographically diverse locations throughout one Midwestern state.

## ***Measures and Procedures***

The survey used for this study was part of a larger researcher-developed measure designed to assess teachers' practices. Additional items were used to collect information on teacher demographics. The survey was adapted from the U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service's National Educational Technology Trends Teacher Survey (Bakia et al., 2008). Some items based on the Schildkamp et al. (2017) framework were selected and used to address each main research question. Each set of items was structured and scored differently. To assess the types of data teachers collected (research question 1), six dichotomous items were administered. Teachers were provided with a list of potential high quality data sources aligned with NAEYC (2020) recommendations and asked to indicate (yes or no) whether they collected each type of data. To assess the purposes for which teachers

used data (research question 2), eight items rated on a 4-point Likert-type scale (never to once a week or more) were used. Teachers were provided with a list of potential data use purposes and asked to indicate how often they used data for each purpose. Two items assessed accountability, four assessed instructional purposes, and two captured school development. To assess the support teachers received for using data, three items rated on a 5-point Likert-type scale (strongly disagree to strongly agree) were collected. Teachers were provided with statements about receiving data use support and asked to indicate how strongly they agreed with each statement. Surveys were administered electronically via a study website and were collected in the spring of each cohort year. The survey included the same set of questions for all teachers regardless of grade level. Item relevance varied by grade level, but the use of identical items for all participants allowed for a consistent description of results across grades.

### ***Data Analysis***

Analyses were performed within the IBM SPSS Statistics Version 29 software environment. Descriptive statistics (means, standard deviations, frequencies, percentages) were computed to describe teacher data use practices from PreK to third grade. Chi-square tests of independence for dichotomous items (addressing Research Question 1) and one-way analyses of variance (ANOVAs) for Likert-type items (addressing Research Questions 2 and 3) were performed to investigate omnibus differences in data use across grade levels. Post hoc pairwise grade comparisons were computed for significant omnibus associations. The unadjusted significance level was set at  $\alpha = .05$  and the Benjamini-Hochberg correction was applied to the post hoc comparisons to control the false discovery rate.

### **Results**

#### ***RQ1: What Types of Data Do PreK Through Third Grade Teachers Collect and Do Those Types Differ by Grade Level?***

See Table 2 for types of data collected by grade and omnibus tests of significance indicating whether there was an overall association of

**Table 2** Number and percentage of teachers endorsing types of data collected by grade

Data types	Across grades <i>n</i> (%)	PreK <i>f</i> (%)	K <i>f</i> (%)	1st <i>f</i> (%)	2nd <i>f</i> (%)	3rd <i>f</i> (%)	$\chi^2$ (4)	<i>p</i>
Observations	294 (95.8%)	57 (100%)	60 (89.6%)	82 (97.6%)	52 (98.1%)	43 (93.5%)	10.92	.027
Direct assessments*	263 (85.7%)	37 (64.9%)	59 (88.1%)	78 (92.9%)	47 (88.7%)	42 (91.3%)	25.43	< .001
Portfolio/work sampling	233 (75.9%)	42 (73.7%)	53 (79.1%)	71 (84.5%)	37 (69.8%)	30 (65.2%)	7.89	.096
Teacher ratings of child	164 (53.4%)	33 (57.9%)	35 (52.2%)	44 (52.4%)	30 (56.6%)	22 (47.8%)	1.33	.857
Parent ratings of child*	53 (17.3%)	22 (38.6%)	11 (16.4%)	7 (8.3%)	6 (11.3%)	7 (15.2%)	24.33	< .001
Other	22 (7.2%)	3 (5.3%)	6 (9.0%)	5 (6.0%)	6 (11.3%)	2 (4.3%)	2.74	.602

*n* number of teachers endorsing item, % percentage of teachers endorsing item,  $\chi^2$  chi-square test for association of grade on data type

\*Significant post-hoc differences between PreK and K, PreK and 1st, PreK and 2nd, and PreK and 3rd grade

grade on each data type. Teachers were provided with a list of data types and asked to indicate (yes or no) if they collect each type of data. Teachers reported collecting a variety of data sources. Most teachers across grade levels collected observational data (96%) and direct assessments (86%). Less commonly collected were portfolio/ work samples (76%) and teacher ratings of child behavior and skills (53%). The least likely data to be collected were parent ratings of child behavior and skills, with only 17% of teachers reporting collecting parent ratings.

No significant differences were found between kindergarten, first, second, or third grade teachers' reports of data types. However, post-hoc pairwise comparisons revealed significant differences between PreK and each of the other grades in the types of data teachers collected. PreK teachers were significantly *more* likely to collect *parent ratings of child behavior and skills* compared to kindergarten, first, second, and third grade teachers. Nearly 40% of PreK teachers reported collecting parent ratings relative to only 16% of kindergarten teachers, 8% of first, 11% of second, and 15% of third grade teachers. PreK teachers were significantly *less* likely to *collect direct assessments of children's skills* compared to kindergarten, first, second, and third grade teachers. Although 65% of PreK teachers reported collecting direct assessments, that figure is still lower than the 88% of kindergarten, 93% of first, 89% of second, and 91% reported by third grade teachers. Although there was a significant association of grade on *observations* overall, no pairwise grade comparisons were significant after adjusting for the multiple comparisons. Interestingly all (100%) PreK teachers reported collecting observations. This was the only measure endorsed by all teachers at any grade level.

Observations, however, were the most reported type of data collected by teachers across grade levels. No significant differences between grade levels were found in use of portfolios or teacher rating of child skills.

***RQ2: How Do Teachers Use Data for Accountability, School Development, and Instruction and Does Use Vary by Grade Level?***

Table 3 reports data use by purpose and grade, and provides omnibus tests of significance indicating whether there was an overall association of grade on each data use purpose. Aggregating across grades, teachers reported using data most frequently for instructional purposes to determine if their class or individual students were ready to learn new skills ( $M = 3.69$ ;  $SD = 0.60$ ). They least frequently used data for accountability purposes to demonstrate progress/outcomes to school/district administration ( $M = 2.42$ ;  $SD = 0.67$ ). PreK teachers reported overall lower rates of data use across all purposes relative to the overall mean. However, in general, teachers across all grade levels reported the same top four data use purposes and in the same rank order. Data use for the purpose of instruction characterized the top responses by teachers across grades levels. On average, the highest rated data use purpose across teachers within each grade was to *determine if class or students were ready to learn new skills*. The second highest rated purpose was to *determine child's response to instruction*, followed by *discuss child's progress with a colleague/specialist* rated third, and to *evaluate promising practices* rated fourth. First grade teachers had a slightly different rank order with *determine child's response to instruction* ( $M = 3.51$ ;  $SD = 0.77$ ) ranked below *discuss child's progress with a colleague/specialist* ( $M = 3.52$ ;  $SD = 0.67$ ).

No significant differences were found between kindergarten, first, second, or third grade teachers' reports of data use by purpose. Post-hoc pairwise comparisons identified significant differences between PreK and other grades. Relative to kindergarten, first, second, and third grade teachers, PreK teachers less frequently used data to: (a) *Determine whether the class or individual children were ready to move on to new skills*; (b) *Discuss child's progress with colleague/specialist*; and (c) *Demonstrate progress/outcomes to administrators*. There

**Table 3** Average data use by purpose across grades

Use of data during school year to:	Total M (SD)	PreK M (SD)	K M (SD)	1st M (SD)	2nd M (SD)	3rd M (SD)	F	p
<b>Accountability</b>								
Inform parents about children's progress	2.68 (0.67)	2.55 (0.69)	2.64 (0.67)	2.75 (0.66)	2.83 (0.70)	2.57 (0.62)	F(4, 301) = 1.80	.128
Demonstrate progress/outcomes to administration*	2.42 (0.67)	2.07 (0.49)	2.51 (0.61)	2.52 (0.69)	2.55 (0.77)	2.42 (0.66)	F(4, 300) = 5.39	< .001
<b>Instruction</b>								
Determine whether class/students ready to move on to new skills*	3.69 (0.60)	3.39 (0.82)	3.75 (0.47)	3.78 (0.52)	3.72 (0.60)	3.78 (0.47)	F(4, 300) = 4.80	< .001
Determine child's response to instruction	3.51 (0.75)	3.25 (0.95)	3.61 (0.65)	3.51 (0.77)	3.66 (0.59)	3.54 (0.69)	F(4, 301) = 2.68	.032
Estimate whether prepared next grade	2.70 (0.81)	2.60 (0.76)	2.82 (0.80)	2.68 (0.80)	2.72 (0.91)	2.65 (0.82)	F(4, 298) = 0.63	.642
Discuss child's progress with a colleague/specialist*	3.37 (0.74)	3.00 (0.83)	3.36 (0.67)	3.52 (0.67)	3.45 (0.77)	3.43 (0.69)	F(4, 299) = 4.80	< .001
<b>School development</b>								
Evaluate promising practices	3.12 (0.91)	2.94 (1.00)	3.15 (0.90)	3.25 (0.84)	3.02 (0.98)	3.15 (0.87)	F(4, 296) = 1.14	.340
Inform curriculum changes	2.67 (1.08)	2.54 (1.15)	2.82 (1.07)	2.70 (1.07)	2.51 (1.03)	2.74 (1.06)	F(4, 301) = 0.88	.476

Items were rated on a scale of 1 to 4 with 1 = Never; 2 = A few times a year; 3 = Once or twice a month; 4 = Once a week or more. F = F-test for evaluating omnibus association of grade on data use

\*Significant post-hoc differences between PreK and K, PreK and 1st, PreK and 2nd, and PreK and 3rd grade

was a significant overall association of grade on the frequency teachers used data to *determine a child's response to individual instruction*, but no pairwise grade comparisons were significant after adjusting for the multiple comparisons. No grade level differences in data use purposes were reported by teachers for *evaluate promising practices*, *estimate whether prepared for next grade*, *inform curriculum changes*, or *inform parents about children's progress*.

***RQ3: What Organizational Supports for Data Use are Available to PreK Through Third Grade Teachers and Does Support Vary by Grade Level?***

See Table 4 for teachers' ratings of data use support by grade and omnibus tests of significance indicating whether there was an overall association of grade on support for each data use. On average across items, teachers agreed that they received support for data use. Specifically, they agreed that they received support for using data to *understand students' learning and instructional needs* ( $M = 3.97$ ;  $SD = 0.83$ ), *inform their classroom instruction* ( $M = 3.92$ ;  $SD = 0.89$ ), and *guide program planning and reporting* ( $M = 3.86$ ;  $SD = 0.89$ ). Post-hoc pairwise comparisons indicated that PreK teachers reported significantly *lower* ratings of support for using data to *inform classroom instruction* relative to kindergarten, first, and second grade teachers, and significantly *lower* ratings of support to *guide program planning and reporting* relative to kindergarten and first grade teachers.

## **Discussion**

Data gathered from and about students are part of the fabric of the educational system. Data use is associated with student outcomes and can improve the quality of education (Atkins-Burnett et al., 2014; OECD, 2012). In educational settings, data can be used for purposes of promoting instruction, for school development, and for accountability with related implications for educational funding (Gardner, 2010). This study aimed to explore how teachers across the early childhood continuum from PreK to third grade collect and use data, and identify enablers of data use. The study provides insight into what data

**Table 4** Average ratings of support for data use across grades

Support received for using data to:	Total M (SD)	PreK M (SD)	K M (SD)	1st M (SD)	2nd M (SD)	3rd M (SD)	F	p
Understand students' learning and instructional needs	3.97 (0.83)	3.67 (0.90)	4.02 (0.79)	4.07 (0.78)	4.04 (0.87)	4.00 (0.76)	F(4, 295) = 2.29	.060
Inform classroom instruction*	3.92 (0.89)	3.51 (0.98)	3.99 (0.75)	4.12 (0.77)	3.96 (0.90)	3.96 (1.01)	F(4, 301) = 4.43	.002
Guide program planning and reporting**	3.86 (0.89)	3.51 (0.96)	4.00 (0.82)	3.95 (0.82)	3.88 (1.01)	3.89 (0.85)	F(4, 296) = 2.83	.025

Items were rated on a scale of 1 to 5 with 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree. F = F-test for evaluating omnibus association of grade on support

\*Significant post-hoc differences between PreK and K, PreK and 1st, and PreK and 2nd Grades

\*\*Significant post-hoc differences between PreK and K, and PreK and 1st Grade



teachers collect, why teachers collect it, and how they are supported by organizations in data collection and data use. Though PreK to third grade covers a developmental period up to age 8 (and is thus considered “early childhood”), the unique priorities, needs and targets within and across these grades must be recognized. Some variation in types and purposes of data across developmental periods is expected and perhaps appropriate. Understanding the similarities and differences in data use across grades comprising the early childhood period may inform how practices might be aligned to improve student outcomes at the end of third grade.

Overall, findings indicate that data on students, including both observational and direct assessments, are being collected by teachers across PreK to third grade. These findings are consistent with reports from Sun et al. (2016) regarding types of data collected by teachers. However, interesting differences emerged regarding the data sources that are collected and used across grades. PreK teachers reported less use of standardized assessments and more use of work samples, though over half of elementary teachers also reported use of work samples/portfolios. A notable finding is that limited data are collected from parents. When parent data are collected, they are more likely to be collected from parents in PreK than first, second, and third grade.

In general, data are being used for a variety of purposes. Data are predominantly used to inform instruction and determine if students are ready to learn new skills consistently. These results are encouraging and suggest the teachers in this study were using data formatively to appropriately scaffold student instruction. Teachers, on average, were least likely to use data for accountability purposes to report information to administrators. Teachers also reported low rates of data use to inform curriculum changes and school development. This result is not surprising because curriculum decisions are not often made by individual teachers, but instead are made at the building or district level. Additionally, PreK teachers reported data were being used internally to inform their own instruction rather than for sharing with colleagues or demonstrating progress to their school or district, which was more likely to be reported by kindergarten to third grade teachers. This may indicate a lack of alignment in data use practices between PreK and elementary school, wherein PreK teachers may be provided relatively less time with peers (e.g., professional learning communities) to discuss student data.

In general, teachers agreed with statements indicating the availability of organizational supports for promoting their data use. However, PreK teachers reported less support for using data to guide instruction and for guiding program planning and reporting than early elementary teachers. These findings are consistent with past research that shows teachers receive little to no pre-service or in-service professional development for data use (deMonsabert et al., 2022). Support for data use must be individualized to the unique needs of teachers at each grade level and aligned to developmentally appropriate grade level expectations and needs. Teacher data use is most effective when part of a system that provides training and support related to methods for incorporating data into teacher practice (Grabarek & Kallemeyn, 2020). Given the emphasis on data-based decision making (Schildkamp et al., 2017) and increased attention to providing multi-tiered systems of support, it is surprising that teachers do not strongly endorse receiving data-use support. The method and types of support for data use, if currently offered to teachers, need to be examined. Provision of organizational supports, including training and professional development around data use as well as other resources/tools to support data use, is a clear area of need.

Significant variation across grade levels was found in teacher responses. Although aligned data practices could be one avenue for supporting optimal outcomes for all students, different learning standards across PreK to third grade must be considered in planning for alignment and data sharing. Often PreK learning standards, though related, are developed independently from content standards for kindergarten through third grade (National Center on Early Childhood Quality Assurance, 2016). Importantly, teachers reported that student data are being collected from PreK to third grade, and the availability of data suggests there is potential for data sharing across grade levels. Linked data systems might be one method for the exchange of data between grades. This study did not investigate methods for sharing data across grades, but it is an area worthy of future exploration.

The current findings suggest there are opportunities to promote consistency in use of developmentally appropriate data use practices throughout the primary grades, defined as practices that are “ongoing, strategic, reflective and purposeful” (NAEYC, 2020). The NAEYC recommendations also call for family input, including using parents as informants on child progress. Our findings showed that few teachers

reported gathering data from parents across PreK to third grade, but even fewer teachers reported it in the early elementary grades relative to their PreK counterparts.

### ***Strengths, Limitations and Future Research Directions***

This study has several strengths. Specifically, the study assessed perspectives of teachers working in rural and urban educational settings to capture variability in practices and supports. Teachers worked in schools with variations in student populations and distribution of dual language learners. Schools in the study included a significant number of students from low SES households. This study also included teachers across the PreK through third grade continuum, which is a unique perspective relative to the literature focusing on either PreK, or the early grades, but not both. Finally, this study contributed a multi-component perspective on data use through its focus on type of data collected, multiple data use purposes, and needs for organizational support to promote data application and use.

As with most studies, limitations of this study also exist. Data were collected in a single Midwestern state which limits generalizability of findings. The study relied on self-reported data from teachers and the measure has not been validated to observations of teacher practice or record reviews. Future research should include a combination of self-report and observational data to provide a more accurate picture of teachers' data use practices. Our measure was not directly aligned with recommendations for developmentally appropriate data use practices nor did it explore all enablers and barriers related to data use beyond organizational features such as characteristics of the teachers (e.g., disposition and experience with data) or specific characteristics of the data (e.g., accessibility and quality). Future research should include an expanded measure to explore these constructs. Future studies could also include parent perspectives on school data use and communication about data collection. Additional methods should also be incorporated; qualitative reports from teachers about their lived experiences using data including their perceived value of different data types and uses, feasibility of incorporating data use into their daily practices, and supports needed to use data more regularly to inform instruction, school development and promote accountability would be helpful to inform data policies and practices.

## ***Conclusion and Implications***

Findings from this study suggest that early childhood teachers are collecting and using important sources of data to guide instruction, ensure accountability and inform school development. Results also indicate variation in use of data across the PreK to third grade continuum. These variations are important and reiterate that teachers must collect the appropriate type of data to support variable grade-level instruction and content standards, while simultaneously collecting data for accountability and school development purposes. Future work should identify data use practices across PreK to third grade, determine points of overlap across the continuum, and pinpoint important points of distinction so that a seamless and complementary system of data use practices can be implemented to support student outcomes. To capture the unique and informed perceptions of parents, methods for including the perspectives of families in data-based decision making also must be specified. Support and training of educational staff in effective data use is essential.

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