



U.S. DEPARTMENT OF EDUCATION

**Teachers' Use of Student Data
Systems to Improve Instruction
2005 to 2007**

Teachers' Use of Student Data Systems to Improve Instruction: 2005 to 2007

PREPARED BY:

Lawrence Gallagher
Barbara Means
Christine Padilla

SRI International

PREPARED FOR:

U.S. Department of Education
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KEY FINDINGS

The following findings are based on analyses of national survey data from district technology coordinators and teachers from 2005 and 2007:

- There was a significant increase in teacher-reported access to electronic student data systems between 2005 and 2007—from 48 percent to 74 percent.
- Even so, teachers are more likely to report having electronic access to students' grades and attendance than to achievement data: Only 37 percent of all teachers reported having electronic access to achievement data for the students in their classrooms in 2007.
- Teachers express a desire for more professional development around the use of data, and those teachers who do feel better-than-average support from their colleagues and schools for working with data are more likely to use student data for instructional purposes.

INTRODUCTION

The collection, analysis, and use of education data are central to the improvement of student outcomes envisioned by *No Child Left Behind (NCLB)*. Over the past six years, meeting the data requirements of *NCLB* and adapting or acquiring electronic data systems capable of generating the required student data reports have consumed much of the attention of district and state assessment and technology offices. The assumption of current policymakers is that the use of data from student data systems will lead to positive impacts on instruction and student achievement. But an examination of current practice suggests that the use of electronic student data systems and instructional decision-making are not fully integrated. Data-informed decision-making goes beyond the use of an electronic data system; it includes the adoption of a continuous improvement strategy that includes a set of expectations and practices for the ongoing examination of student data to ascertain the effectiveness of educational activities and, subsequently, to refine programs and practices to improve outcomes for students. If data are to influence the quality of the instruction that students receive, teachers who work with students day-to-day need access to timely information relevant to instructional decisions and the skills necessary to make sense of student data reports. Many district and school leaders are working to inspire and support teachers' involvement in data-informed decision-making. Their efforts, combined with supportive education policies and improved data systems, are aimed at promoting data use practices at the school and classroom levels.

The current brief is the second in a two-part series examining teachers' access to and use of data from student data systems. The first brief indicated that about half of all teachers (48 percent) reported having access to a student data system in 2004–05, but teachers did not necessarily have

appropriate data or tools they needed to make good use of student data in planning and individualizing instruction.¹

What is data-informed educational decision-making?

In an education context, data-informed decision-making is the analysis and use of student data and information concerning education resources and processes to inform planning, resource allocation, student placement, and curriculum and instruction. The practice entails regular data collection and ongoing implementation of an improvement process.

What is a student data system?

An electronic information system to assist in the organization and management of student data. Data systems consist of hardware and software that provide many different functions to users, such as storing current and historical data, rapidly organizing and analyzing data, and developing presentation formats or reporting interfaces.

PURPOSE OF THE BRIEF

Using data from national surveys of teachers and school districts, this brief documents the results of efforts to promote data-informed decision-making within schools. Estimates of the prevalence of K–12 teachers’ access to and use of electronic student data systems at two time points (school years 2004–05 and 2006–07) are provided. Specifically, the brief addresses three research questions:

- How broadly are student data systems being implemented in districts and schools?
- How prevalent are supports for data use and tools for generating and acting on data?
- How are school staff using student data systems?

DATA SOURCES

This brief reports on analyses of survey data from the U.S. Department of Education’s National Educational Technology Trends Study (NETTS), which examines the implementation of the Enhancing Education Through Technology Program as authorized by under the *No Child Left Behind Act of 2001*. The primary data used in this brief consist of survey responses from:

¹ The first brief, *Teachers’ Use of Student Data Systems to Improve Instruction*, is available at <http://www.ed.gov/rschstat/eval/tech/teachers-data-use/teachers-data-use-intro.html> (last accessed June 26, 2008).

- 1,028 district technology directors surveyed during spring 2005 and spring 2007, and
- 6,017 teachers surveyed during fall 2005 and 1,779 teachers surveyed in spring 2007.

The teachers were clustered in schools sampled from the districts participating in a NETTS district survey.² Both district and teacher respondents were asked to report on activities during the 2003–04 and 2006–07 school years.

Teachers were sampled from 975 schools within the districts selected for the NETTS district survey.³ Higher-poverty⁴ schools were oversampled to obtain more precise data about their technology use. Response rates were 94 percent and 99 percent for the district surveys in 2007 and 2005, respectively, and 85 percent and 82 percent for the teacher surveys in the same years. Sampling weights were applied to the teacher data to obtain nationally representative estimates.

The survey data are part of a larger study that is documenting the availability of electronic student data systems, their characteristics, and the prevalence and nature of data-informed decision-making in districts and schools. Case study findings from this larger data collection effort that have yet to be published are used to help interpret survey results.

² The NETTS district sample of 1,039 districts was nationally representative with respect to poverty status, student enrollments, and location (urban or rural status). The 60 largest urban school districts across the country were selected with certainty (i.e. included in the sample from the outset). Districts composed entirely of special education schools and vocational-technical schools, as well as independent charter schools that are their own districts, were excluded from the district sampling frame because of their dissimilarity to “typical” districts. To obtain the NETTS teacher survey sample, schools were selected from the district survey sample. Teachers were selected from the sampled schools (schools were stratified by poverty and grade level). Although the sampling process was sequential, entities at each level were selected at random (i.e., teachers were randomly selected from staff rosters from each of the schools in the sample).

³ To be eligible for the teacher samples in 2007 and 2005, a teacher had to be teaching at the same school in the school year prior to survey administration (i.e., teachers new to the school were excluded). Teachers who did not teach core academic subjects also were omitted from the sample. The final teacher sample in 2007 consisted of 1,779 teachers from 865 schools. The larger sample of 6,017 teachers in 2005 was designed to provide robust, school-level estimates of technology use.

⁴ For schools, “higher poverty” was defined as above a specified cutoff in terms of the percentage of students who were eligible for the free or reduced-price lunch program. The dividing line between higher-poverty and lower-poverty schools was selected to ensure that for each school type (elementary, middle, or high school), there would be the same number of teachers in the higher-poverty and the lower-poverty groups, as reported in the National Center for Education Statistics Common Core of Data (CCD). Elementary schools with 29.7 percent of their students eligible for free or reduced-price lunches were classified as higher poverty. For middle and high schools, the poverty thresholds were 24.3 percent and 15.9 percent, respectively.

FINDINGS

Content of Electronic Student Data Systems

As of 2006–07, nearly all school districts maintain at least some student data electronically.

Based on all districts responding to the 2006–07 NETTS district survey, the most frequent types of electronic data maintained by districts were attendance (94 percent), grades (91 percent), and student demographics (90 percent). Large majorities of districts also maintained other types of administrative data such as special education information (89 percent) and course enrollment histories (86 percent) (see Exhibit 1). These proportions are similar to those reported in 2004–05, except for attendance data, which was significantly⁵ higher in 2005 (99 percent).

⁵ In this brief the word “significant” should be interpreted as “statistically significant.” The term “statistically significant” means that the observed difference in a pair of values is not likely due to random variation in the sample. The annotations $p < .05$, $p < .01$, etc., indicate the probability that these differences are due to random chance (i.e., less than a 5 percent probability, a 1 percent probability, etc.). When differences are not marked with an asterisk, we cannot reliably rule out the possibility that they are due to random variation in the sample. This brief uses the standard convention of * $p < .05$, ** $p < .01$, *** $p < .001$, and **** $p < .0001$.

Exhibit 1

Types of Student Data Stored Electronically, 2004–05 and 2006–07

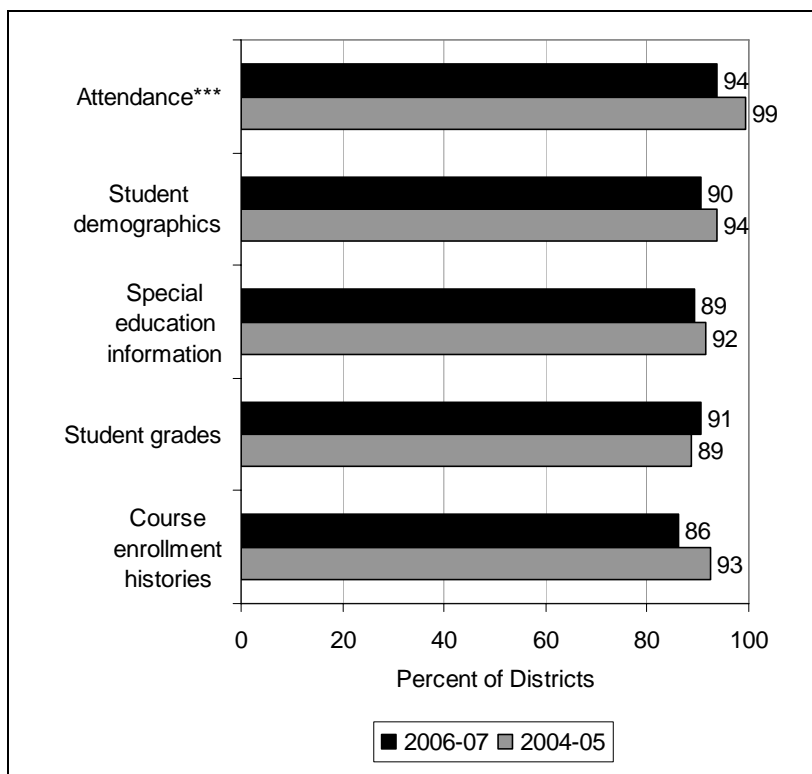


Exhibit reads: In the 2006–07 school year, 94 percent of districts stored attendance data in electronic form, compared with 99 percent of districts in 2004–05.

Note: Asterisks indicate a statistically significant change from 2005 to 2007 (***) $p < .001$.

Source: NETTS district survey, 2005 and 2007.

The 2007 district survey asked respondents to provide information on additional data stored electronically. Exhibit 2 includes seven items not part of Exhibit 1, along with information on whether or not districts store the data electronically in the same format for three years or longer. As shown in Exhibit 2, fewer districts maintain data in the same format over time, thereby limiting opportunities for longitudinal analyses. Exhibit 3 includes the types of achievement data that districts stored electronically in 2006–07.

Exhibit 2

Types of Student Status Data That Districts Stored Electronically in 2006–07

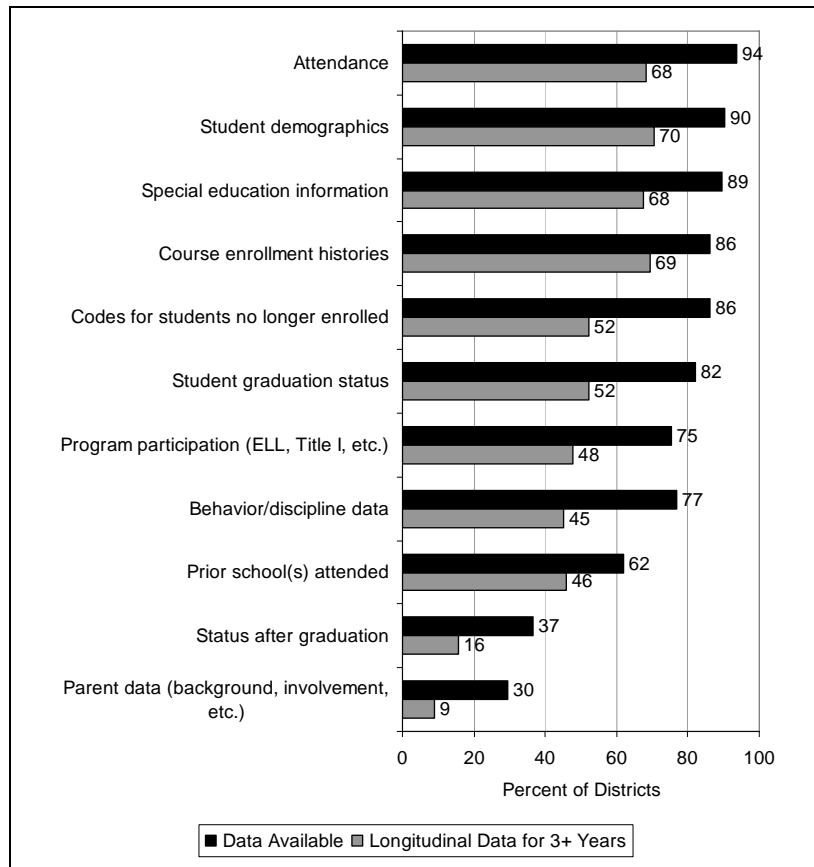


Exhibit reads: In the 2006–07 school year, 94 percent of districts stored attendance data in electronic form and 68 percent stored attendance data in the same format for three years or longer.

Source: NETTS district survey, 2007.

The 2007 survey also asked districts to provide more detail on the types of student achievement data stored electronically. The most frequent types of such data maintained in electronic form were student grades (91 percent) and scores on state tests (84 percent). The maintenance of longitudinal data was lower across all types of achievement data (Exhibit 3).

Exhibit 3

Types of Student Achievement Data That Districts Stored Electronically in 2006–07

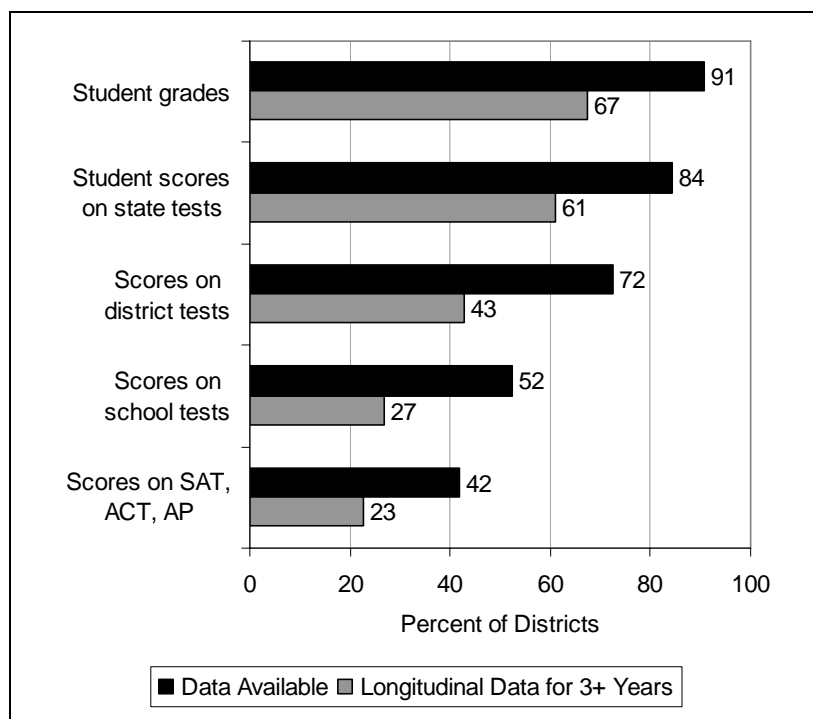


Exhibit reads: In the 2006–07 school year, 91 percent of districts stored student grades in electronic form and 67 percent had this kind of data stored in the same format for three years or longer.

Source: NETTS district survey, 2007.

Teacher Access to an Electronic Student Data System

When asked whether the district allows teachers to access data from an electronic data system on the students they teach, 91 percent of districts said that teachers had access to at least a limited set of data on their students.

While the vast majority of districts grant teachers at least limited access to data about the students in their classrooms, only 8 percent of districts reported that their teachers had access to all of the system’s data on their students.⁶ Another 38 percent said that teachers had access to “most” of their students’ data (Exhibit 4). The percentage of teachers who have access to at least

⁶ Use of the term “all” in the survey item meant that districts would have to consider non-achievement data, possibly including information of a sensitive nature or protected by privacy legislation.

a limited set of district data mirrors the percentage of districts granting access—the 91 percent of districts providing teacher access to data account for 91 percent of teachers nationwide.

Exhibit 4

Percentage of Districts Granting Teachers Access to Their Students' Data, by Degree of Access in 2006–07

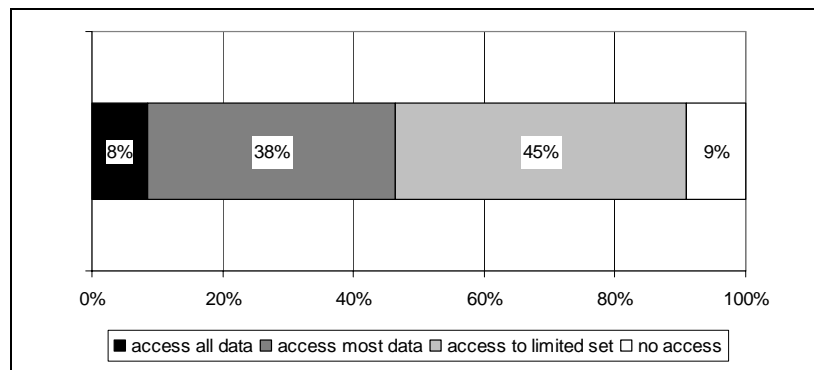


Exhibit reads: In 2006–07, 8 percent of districts reported that teachers had access to all the data on students in their classroom contained in the district’s electronic data system.

Source: NETTS district survey 2007.

In 2007, districts were asked to report the degree of data they make available to individual teachers. The choices ranged from “all student data” to “no student data.” As in 2005, we found differences between teacher-reported access to student data and the access that districts reported teachers have (Exhibit 5). For example, 78 percent of teachers in districts reporting that teachers have access to all or most student data reported having such access, whereas 56 percent of teachers in districts that reported allowing no teacher access reported having access to individual student data. One of the reasons that teachers reported higher levels of access than districts is because teachers included access to student-level data from electronic student data systems other than the districts’ data system (e.g., the state, their school, commercial vendors).⁷

⁷ The district survey asks specifically about access that individual teachers have to student-level data through the *district’s* data system, while the teacher survey asks if teachers had access to *one or more* electronic student data systems that provided them with student data. One of the reasons that teachers reported higher levels of access has to do with the fact that they are also including access to student-level data from sources other than the district electronic data system. In another item on the teacher survey not reported in the brief, teachers were asked the source of the student-level data provided to them and they indicated what some of those other sources are: 17 percent (state), 33 percent (school), 2 percent (other)—this information was verified in case study work for this evaluation.

Exhibit 5

Teacher-reported Access to Data, by District-reported Categories of Teacher Access to Data in 2006–07

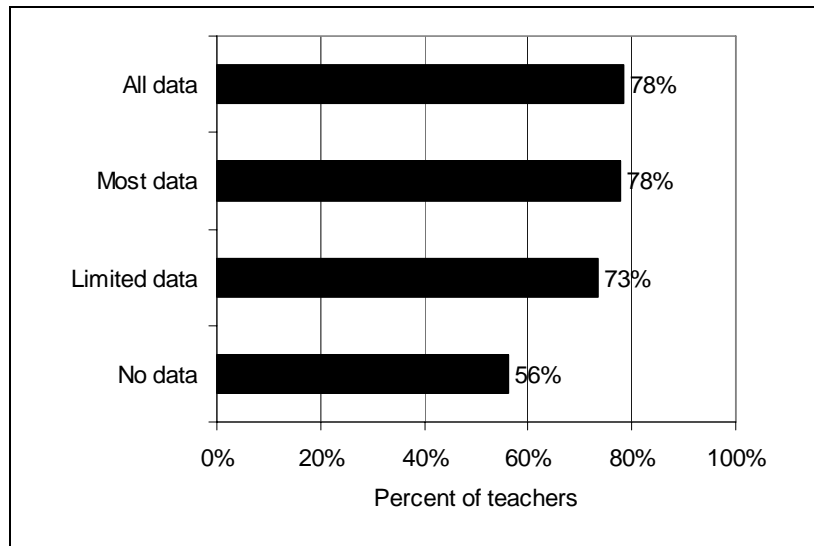


Exhibit reads: In the 2006–07 school year, 78 percent of teachers in districts that report giving all teachers access to data actually report having access to data. Fifty-six percent of teachers in districts reporting no teacher access to student data report having access to data.

Source: NETTS district and teacher survey, 2007.

Case study research on student data system use within districts documents a range of opinions concerning the desirability of giving teachers direct access to student data systems. Privacy issues, teacher burden and ability to accurately interpret data have been cited as concerns (U.S. Department of Education, 2008).

Teacher-reported access to an electronic student data system increased significantly, from 48 percent in 2005 to 74 percent in 2007.

The percentage of teachers reporting access to an electronic student data system grew significantly between 2005 and 2007, rising from 48 percent in 2005 to 74 percent in 2007 (Exhibit 6). The growth in teacher access was statistically significant within all three school levels (elementary, middle, high school). In 2007, elementary school teachers were less likely than middle school teachers to report having access to a student data system; the difference between elementary and high school teachers in reported access was not significant.

Exhibit 6

Percentage of Teachers Reporting Access to a Student Data System, by School Level and Survey Year: 2005 and 2007

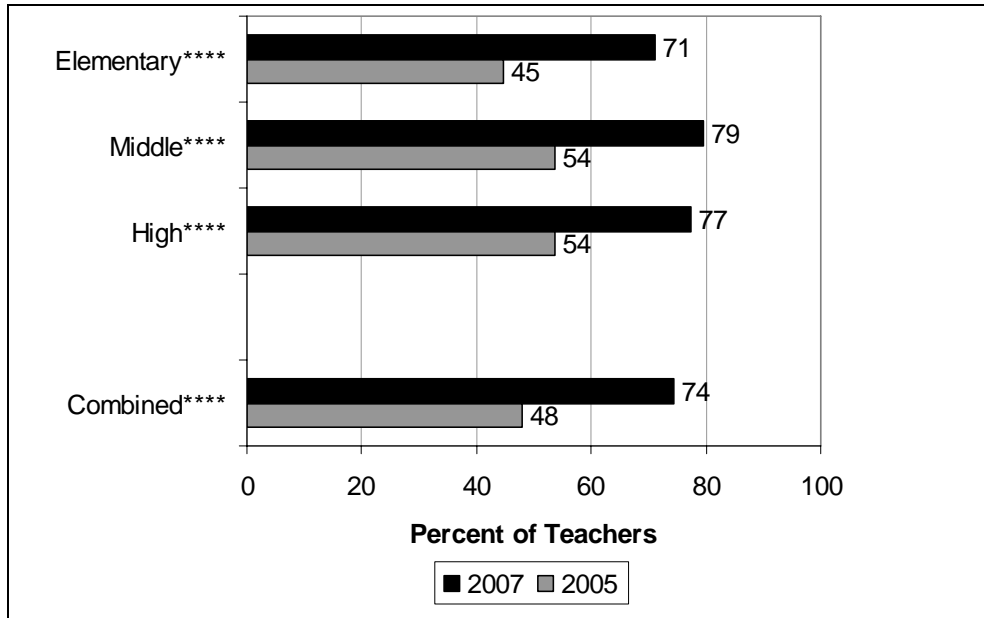


Exhibit reads: In 2007, 71 percent of elementary school teachers reported having access to a student data system, compared with 45 percent in 2005.

Note: Asterisks indicate a statistically significant change from 2005 to 2007 (**** $p < .0001$).

Source: NETTS teacher survey, 2005 and 2007.

As Exhibit 7 shows, teachers in higher-poverty schools were at least as likely as those in lower-poverty schools to have access to an electronic student data system. In fact, among elementary school teachers, those in higher-poverty schools were more likely to report access to a student data system in 2006–07 (76 percent) than teachers in lower-poverty schools (67 percent). School poverty level was not a significant predictor of overall access for middle and high school teachers. School poverty did not significantly predict access to any of the particular types of data asked about on the survey or any of the systems described in the remainder of this report.

Exhibit 7

Percentage of Teachers Reporting Access to a Student Data System, by School Poverty in 2007

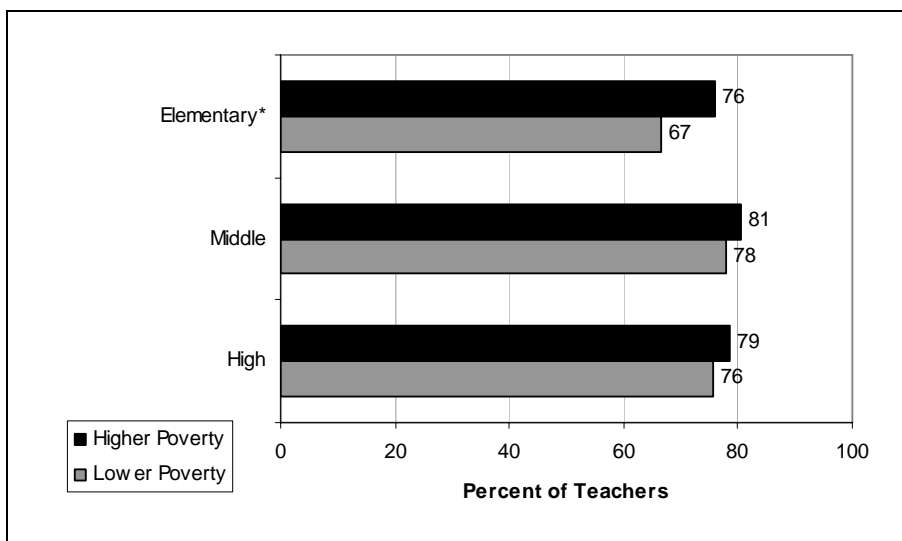


Exhibit reads: In 2007, 76 percent of elementary school teachers in higher-poverty schools reported having access to a student data system, compared with 67 percent in lower-poverty schools.

Note: Asterisk indicates a statistically significant change from 2005 to 2007 (* $p < .05$).

Source: NETTS teacher survey, 2007.

About half of teachers (49 percent) with data system access report that the system provides them with achievement data on their current students.

To make instructional decisions informed by data, teachers need access to achievement data (and preferably longitudinal records of achievement) for the students they are teaching currently. The significant increase in teachers' access to student data systems has yet to provide teachers with ready access to this kind of information. The only two types of data that a majority of teachers with access to a student data system reported having available to them were class attendance (74 percent and 72 percent respectively for 2007 and 2005) and course grades (67 percent and 64 percent in 2007 and 2005, respectively).

Approximately half (49 percent) of teachers with access to a student data system (or 37 percent of all responding teachers) reported in the 2007 survey that they had access to standardized test scores for their current set of students (see Exhibit 8). This access level is a significant improvement over the 38 percent of teachers with system access (or 19 percent of all teachers) who reported this kind of access in 2005. The only other significant change in data access concerned estimations of achievement of adequate yearly progress (AYP): while 18 percent of teachers with access to a student data system in 2005 could look up this information, only 11

percent of such teachers in 2007 reported having access to information about the likelihood of their school making AYP.

Exhibit 8

Teacher-reported Categories of Data and Tools Available to Them: 2005 and 2007

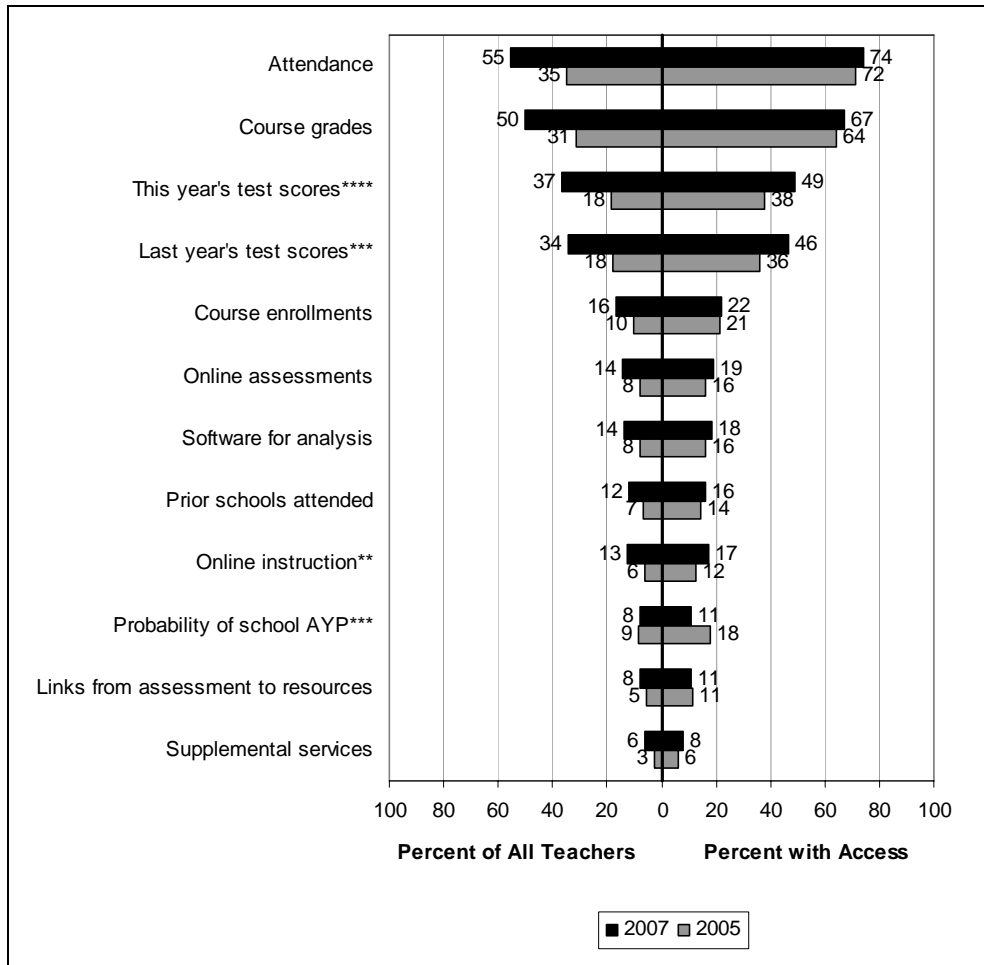


Exhibit reads: Of the teachers who reported having access to a student data system in 2007, 74 percent indicated that they had access to attendance data compared to 72 percent in 2005. Overall, 55 percent of all teachers reported having electronic access to attendance data in 2007, compared with 35 percent of all teachers in 2005.

Note: Asterisks indicate a statistically significant changes from 2005 to 2007 (**p<.01, ***p < .001, ****p<.0001).

Source: NETTS teacher survey, 2005 and 2007.

In both years, relatively few teachers reporting they had access to a student data system indicated that it included course enrollment histories for their students (around 22 percent) or provided information on students' participation in supplemental education programs such as tutoring (around 8 percent).

Even though nearly three quarters of all teachers (74 percent) reported having access to student data systems in 2007, the proportion of teachers with data system access who also have tools for making instructional decisions informed by data remains below 20 percent.

Data systems can help promote data-informed decision-making by providing tools to help teachers improve decisions about instructional practice. Some of these resources include online assessments, formative assessment results linked to curriculum guides and instructional materials, and model lesson plans. Only a small proportion of the teachers in 2007 reported that the student data system incorporated online assessments (19 percent of teachers with data access, or 14 percent of all teachers), included access to software that they could use to analyze and interpret student test scores (18 percent of teachers with data access, or 14 percent of all teachers), or provided links to instructional resources tailored to student learning needs (11 percent of teachers with data access, or 8 percent of all teachers). These proportions changed little between the 2005 and 2007 survey administrations for teachers with access to data. However, because the proportion of teachers with access to data increased so dramatically between the 2005 and 2007 surveys, the percentage of all teachers with access to some of these resources increased between survey administrations.

How Teachers Use Electronic Student Data Systems

The majority of teachers with access to a student data system continue to use these systems to provide information to parents (68 percent), and track individual student test scores and monitor student progress (65 percent, respectively).

Of those teachers who reported having access to a student data system on the 2007 survey, 91 percent said that they had used the system for at least one of the functions listed in Exhibit 9. The most frequent use of a student data system is to inform parents about their students' progress; 68 percent of the teachers who have used student data systems have done so for this purpose. Similarly, 65 percent of the teachers who reported having used a student data system in 2006-07 said that they had used it to track individual students' test scores. About 44 percent of the system-using teachers reported having used the data systems to examine test scores for a class of students.

While teachers with access to electronic data systems reported using most of the functions of a student data system with approximately the same frequency in 2007 as they did in 2005, there was one function that showed a significant decline in use. In 2007, 43 percent of teachers with data access said that they had used a student data system to inform changes to their curriculum, compared with 49 percent of teachers in 2005.

Exhibit 9

Percentage of Teachers Who Reported Using a Student Data System at Least a Few Times a Year for a Specific Function: 2005 and 2007

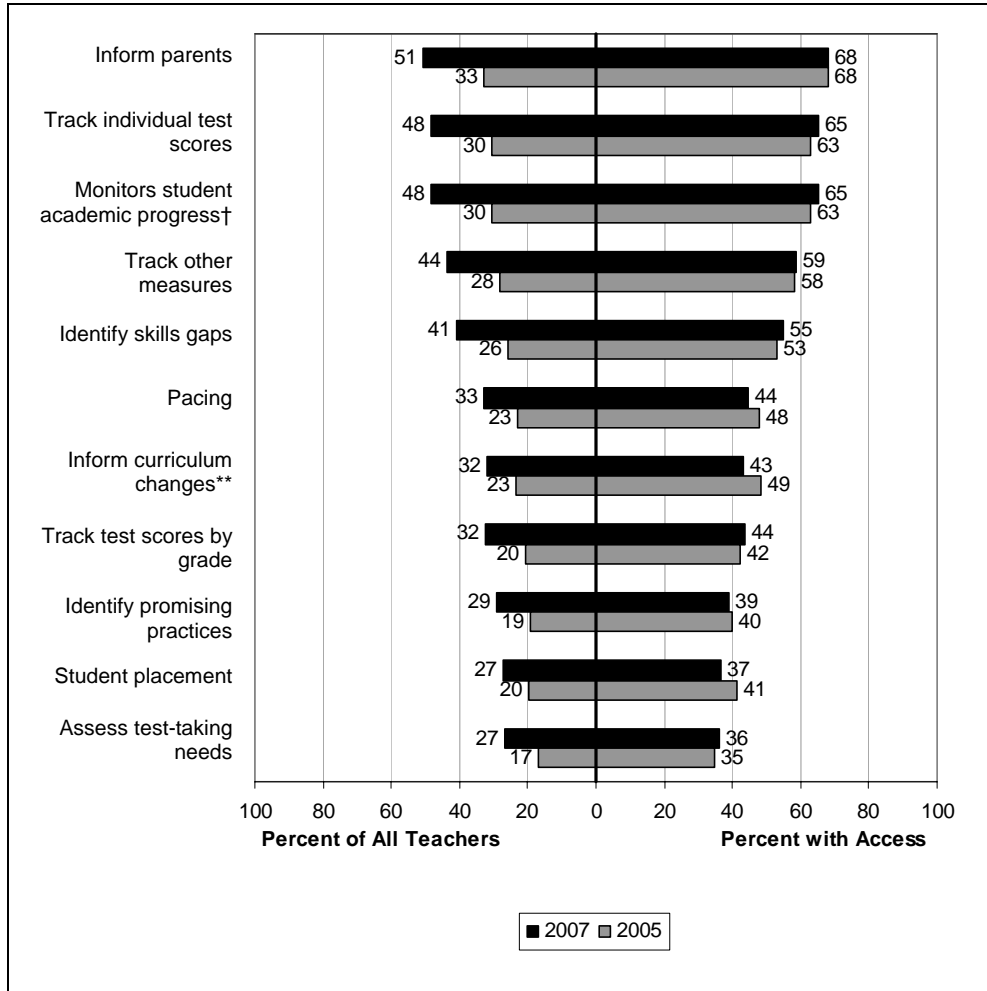


Exhibit 7 reads: Of the teachers who reported access to a student data system, 68 percent in both 2007 and 2005 said they used the data system to inform parents (or 51 percent of all teachers in 2007, compared with 33 percent of all teachers in 2005).

Note: Asterisks indicate a statistically significant change from 2005 to 2007 (**p<.01).

† indicates that the wording of this item changed from “estimated whether your students would make adequate yearly progress (AYP)” in 2005 to “estimate whether your students are making adequate progress” in 2007. These two items are not directly comparable.

Source: NETTS teacher survey, 2005 and 2007.

Teacher reported use of student data systems generally does not vary by grade level or subject area, except for informing parents and instructional pacing.

Using five teacher grade-subject categories elementary generalist (“all elementary”), middle-high school English, middle-high school mathematics, middle-high school science, and middle-high school history, analysts found statistically significant differences in the prevalence of just two of the 11 student data system uses examined on the 2007 survey. As shown in Exhibit 10, there were differences in:

- *Informing parents.* Among teachers with access to a student data system, there were differences across teacher groups in the proportion using the data system to inform parents about student progress. Elementary school teachers (63 percent) were least likely to use a student data system to inform parents, while middle and high school science teachers (81 percent) and middle and high school English teachers (77 percent) appeared to be most likely to use a student data system to keep parents informed. Case study data suggest that this difference may reflect the greater body of informal observations and assessments of an individual student typically available to elementary school teachers.
- *Pacing.* Among teachers with access to a data system, there were differences across teacher groups in the proportion using student data to help determine how to pace instruction. Elementary school teachers (47 percent) appeared to be most likely to report using a student data system to help in pacing instruction, and middle and high school social studies teachers appeared least likely (31 percent) to report doing so, and this difference is statistically significant.

The differences between elementary and middle-high school mathematics teachers in using student data systems to identify skill gaps reported in 2004–05 disappeared by 2006–07.

Exhibit 10

Percentage of Teachers Who Reported Using an Electronic Student Data System at Least a Few Times a Year for a Specific Function, by Teaching Area and Year: 2005 and 2007

System Use	All teachers		All Elementary		M/H English		M/H History		M/H Math		M/H Science	
	'05	'07	'05	'07	'05	'07	'05	'07	'05	'07	'05	'07
Inform parents	68	68	64	63 ^{ab}	74	77 ^a	76	74	67	66	68	81 ^b
Track individual test scores	63	65	63	63	61	66	64	67	67	72	55	68
Track other measures	58	59	61	57	58	62	67	56	45	55	50	65
Identify skill gaps	53	55	59	58	47	43	47	46	40	58	44	54
Monitoring student progress †	35	64	37	67	34	54	28	53	38	60	32	66
Inform curriculum changes	49	43**	49	43	52	43	54	42	41	42	50	40
Pacing	48	44	52	47 ^c	52	36	38	31 ^c	39	44	41	47
Track test scores by grade	42	44	42	42	42	41	47	41	37	52	43	47
Student placement	41	37	39	34	39	37	45	30	53	46	33	44
Identify promising practices	40	39	40	41	44	31	42	33	33	35	44	43
Assess test-taking needs	35	36	33	36	48	36	38	26	27	38	37	37

Exhibit reads: Among teachers who reported using a student data system in 2007, 63 percent of elementary teachers used a data system to inform parents about student progress, while 77 percent of middle or high school English teachers and 81 percent of middle or high school science teachers used a data system to inform parents. These differences were statistically significant.

Note: Asterisks indicate a statistically significant change from 2005 to 2007 (**p<.01).

2007 table values that share a common superscript a, b, or c are statistically significantly different from one another (p < .01).

† The wording of this item changed from “estimated whether your students would make adequate yearly progress (AYP)” in 2005 to “estimate whether your students are making adequate progress” in 2007. As a result, this use is not directly comparable from 2005 to 2007.

Source: NETTS teacher survey, 2005 and 2007.

Support for Using Electronic Student Data Systems

The most common supports for teachers’ learning to use an electronic student data system come from their schools and not through formal coursework.

Roughly 60 percent of teachers with access to electronic student data systems reported having received professional development on this topic at their school. A similar proportion reported having been encouraged by their principal’s support for data-informed decision-making (Exhibit 11). In contrast, less than 10 percent of teachers with access to data systems reported having had formal coursework on the use of student data systems.

A quarter (25 percent) of teachers who had access to student data systems said that they had received support from a consultant or mentor-teacher skilled in data analysis to help them use student data to guide decisions about instruction. About one-eighth (12 percent) of teachers with access to a data system reported having had paid time set aside for examining student data and

using data to make decisions about practice. (This would include time during the regular school day or regular professional development days covered by their salary, as well as any summer or after-school sessions for which they received a stipend.) This is a statistically significant decline in the proportion of teachers with data system access reporting paid time for data use from the 16 percent reported in the 2005 survey.

Exhibit 11

Teachers Indicating Support for Using Student Data to Guide Instruction, by Source of Support: 2005 and 2007

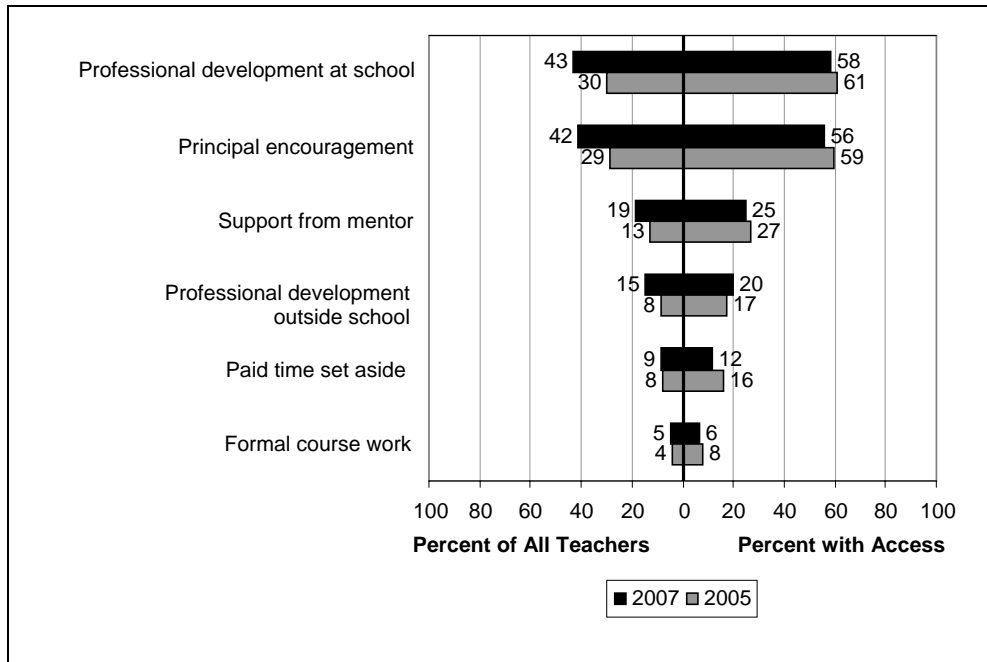


Exhibit reads: Of the teachers who reported access to a student data system, 58 percent in 2007 said that they had received support to use student data to guide decisions about instruction from professional development provided at their school, whereas 61 percent of teachers reported this kind of support in 2005 (or 43 percent of all teachers in 2007 compared to 30 percent of all teachers in 2005).

Source: NETTS teacher survey, 2005 and 2007.

Teacher reports of their receipt of professional development on the use of student data systems and of data to inform instruction can be compared to district respondents' reports of provision of professional development. Seventy-three percent of all districts indicated that they supported professional development in the past 12 months to "help teachers and administrators in data-driven decision making" (Exhibit 12). Districts paid for some of this professional development with federal funds. The Enhancing Education Through Technology (EETT) program, authorized by Title II, Part D, of the *Elementary and Secondary Education Act of 1965 (ESEA)*, as amended by the *No Child Left Behind Act of 2001 (NCLB)*, provides formula grants to states for promoting the use of educational technology to improve student achievement. Thirteen percent of districts

reported using EETT funds to support professional development on data-informed decision making (12 percent using EETT formula grants, and 3 percent using EETT competitive grants).

Exhibit 12

District Support for Professional Development in Data-informed Decision-making in 2006–07

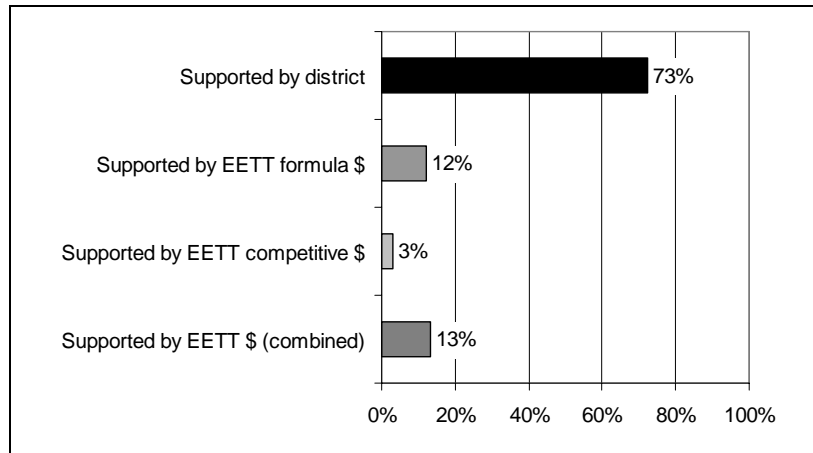


Exhibit reads: In 2006–07, 73 percent of districts reported providing professional development to help teachers and administrators in data-informed decision making.

Source: NETTS district survey, 2007.

While teachers express overall confidence in their ability to use an electronic student data system, the availability of support from the district or school for using a data system appears more variable.

New to the 2007 survey was a block of questions asking teachers to reflect on their use of an electronic student data system using a 5-point Likert response scale.⁸ For some of these items, agreement with the statement would indicate a high degree of confidence in their ability to use a student data system or the perception of strong support for using one. For other items, such as “I have trouble finding information,” disagreeing with the statement would indicate a positive attitude. The latter items are indicated with (R) and for both types of items the percentage of teachers indicating a positive attitude is shown to the right of the vertical center line in Exhibit 13.

The items were grouped into two scales. Items in the first scale—confidence in using a student data system—ask teachers to indicate their ability to perform various tasks connected with data system use. Research on teachers’ integration of technology into instruction has found that

⁸ A Likert response scale asks the teacher to respond to a statement by selecting one of five categories: strongly disagree, disagree, neither disagree nor agree, agree, or strongly agree.

teacher confidence in specific areas predicts their likelihood of using technology in related ways (Russell, Bebell, O’Dwyer, & O’Connor, 2003). The expectation that similar relationships would emerge for teachers’ use of data and student data systems motivated construction of a scale of survey items dealing with teachers’ self-confidence regarding various aspects of data use. The internal reliability of the teacher confidence scale was .76.⁹

Exhibit 13

Teacher Reflections on Personal Confidence and Institutional Support for Using Electronic Student Data Systems in 2006–07

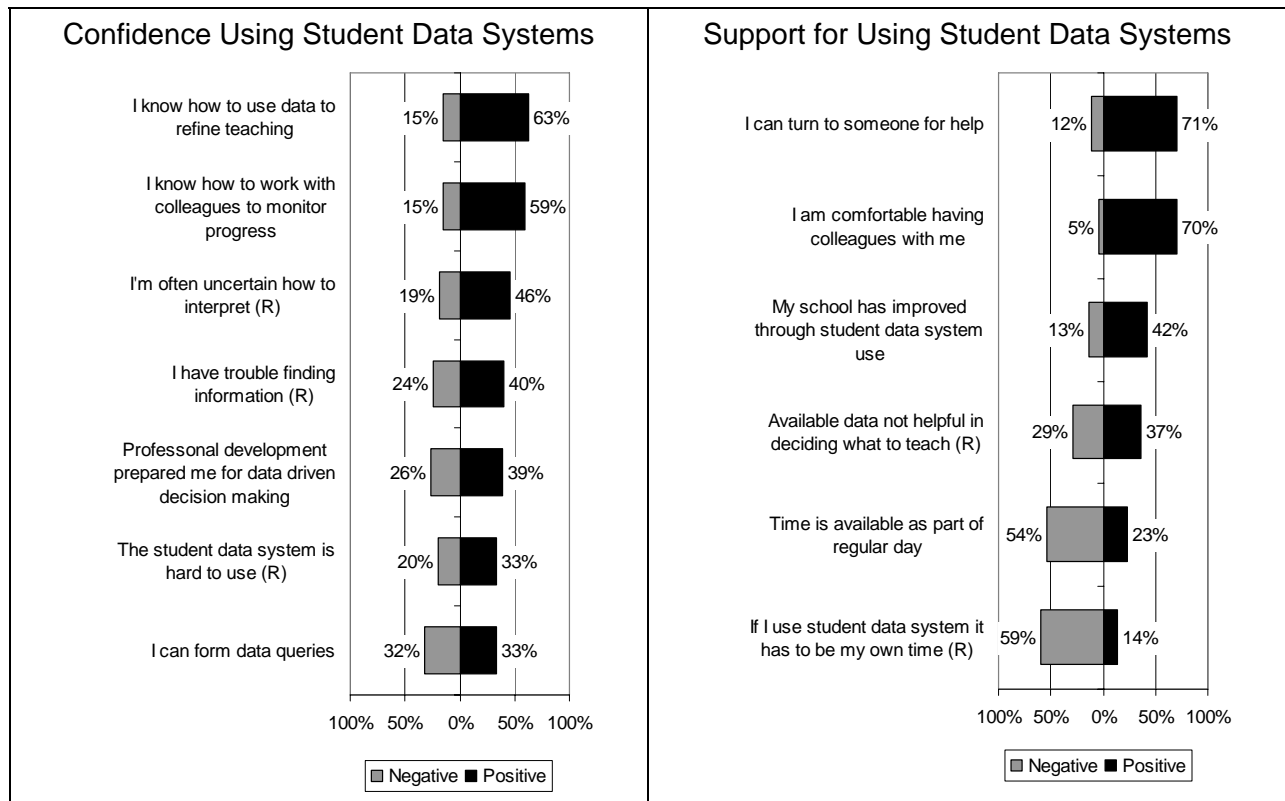


Exhibit reads: Among teachers who reported access to a student data system in 2006–07, 15 percent said that they did not know how to use data to refine their teaching, while 63 percent said that they did know how to do this (the remaining 22 percent were neutral); 12 percent indicated that they do not have someone to turn to when they need help making sense of data from the system, whereas 71 percent indicated they did have this kind of support (the remaining 17 percent were neutral).

Source: NETTS teacher survey, 2007.

⁹ The internal reliability of a scale is a measure of how consistently the questions in that scale refer to the same underlying idea (in this case, *confidence* or *institutional support*), and is expressed as a number ranging from 0 (no consistency among questions) to 1 (perfect consistency or essentially identical questions). Scales with higher reliability are able to measure finer-grained distinctions in levels of the underlying idea than are scales with lower reliability.

The second scale—institutional support—indicates the degree to which teachers feel supported by colleagues in their data use and are allotted time to use a student data system (internal reliability = .61). This scale provides an overall measure of the degree of support that teachers believe they have for using student data and student data systems.

For six of the seven statements pertaining to confidence in using a student data system, a higher percentage of teachers responded positively than responded negatively with respect to their ability to use data to improve their practice. For example, 63 percent of teachers claimed that they knew how to use data from a student data system to refine their teaching, and only 15 percent disagreed with this statement. For the seventh statement, teachers were evenly divided with approximately one-third of teachers agreeing and one-third disagreeing with the statement “I can form data queries.”¹⁰

When asked about various forms of support for data use, teachers were more mixed in their responses. More than 70 percent of teachers agreed with statements such as “There is someone I can turn to when I need help making sense of data from the data system” or “I am comfortable having my colleagues with me when I examine performance data for my students.” More teachers expressed positive than negative attitudes in response to statements such as “My school has been improved through the regular use of student data” (42 percent agreement, 12 percent disagreement) and “The student data available on the system are not really that helpful in deciding what or how to teach” (29 percent agreement, 37 percent disagreement). A clear majority of teachers noted that school time was generally not available for using a data system. Only 23 percent of teachers agreed with the statement “Time for using the data system is available when needed as part of the regular school day,” while 54 percent disagreed with that statement. Similarly, 59 percent of teachers agreed that “If I want to use the student data system, usually I have to do it on my own time,” while only 14 percent disagreed with that statement.

Teachers’ use of electronic student data systems is significantly associated with both expressed confidence and with their perceived support for system use.

There are clear and statistically significant associations between whether teachers use a student data system in various ways and their degree of confidence and support (Exhibit 14). After forming the overall confidence and support scales described above, analysts divided the teachers into two groups, those scoring above the median and those scoring below the median score. For every listed use of a student data system, teachers were significantly more likely to report having used the data system for that function if they were either of higher confidence or felt higher support levels.

¹⁰ Case study work suggests that some districts do not believe it is a good practice to have teachers forming their own data queries.

Exhibit 14

Percentage of Teachers Using an Electronic Student Data System at Least a Few Times a Year for a Specific Function, by Level of Confidence and Support in 2006–07

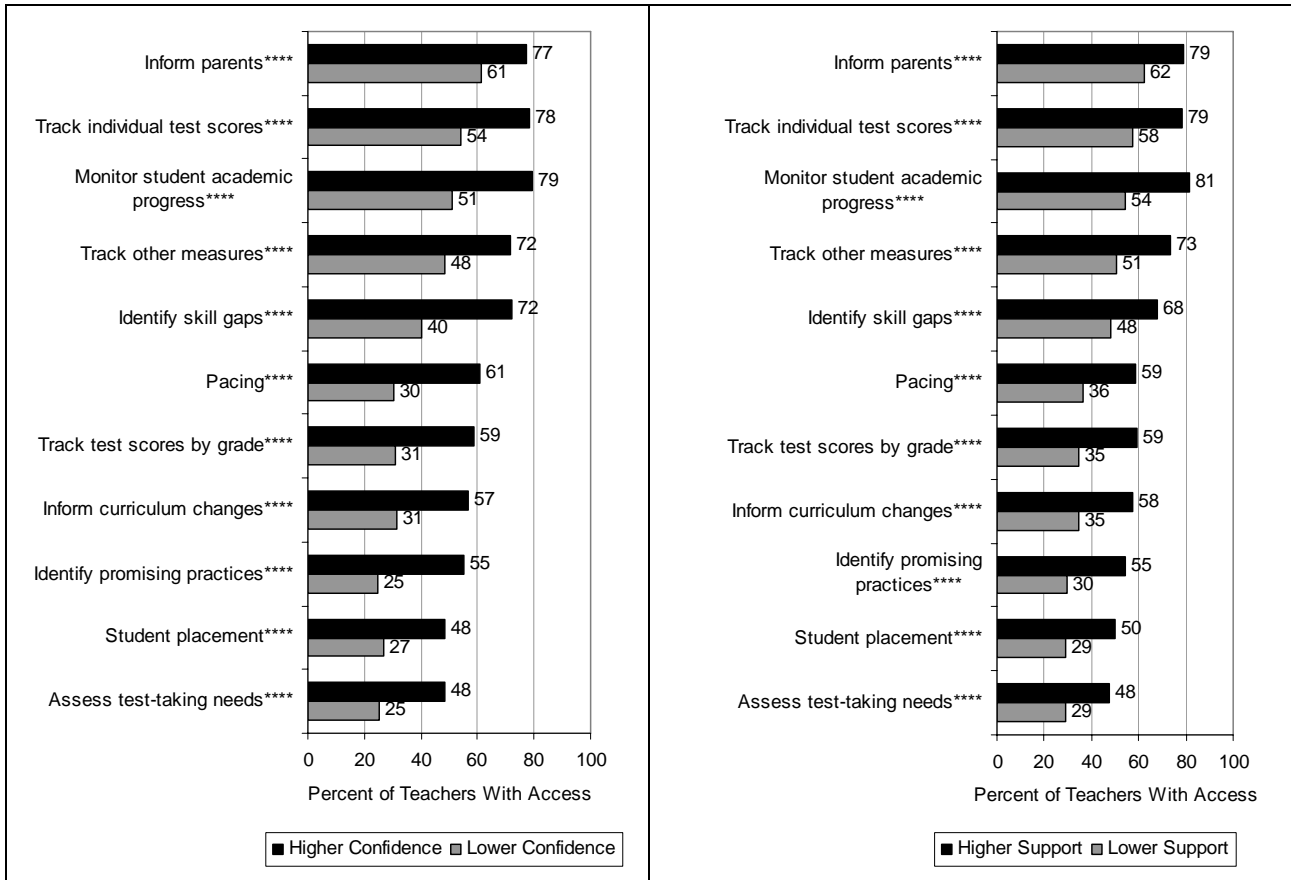


Exhibit reads: Among teachers who reported access to a student data system in 2006–07, 77 percent with high confidence levels said they used system data to inform parents of student progress, while 61 percent with lower confidence levels said that they did so. In addition, 79 percent of teachers who reported receiving higher support levels to use data said they used system data to inform parents, while 62 percent with lower support levels said that they did so. Both differences were statistically significant.

Note: Asterisks indicate statistically significant differences between teachers with higher and lower levels of confidence and support (****p<.0001).

Source: NETTS teacher survey, 2007.

A majority of teachers believe they could benefit from further professional development on the topics of (1) developing diagnostic assessments (58 percent)¹¹ and (2) adjusting their instructional content and approach based on data (55 percent).

The 2007 survey asked teachers with access to a student data system whether they could benefit from seven forms of professional development related to data-informed instruction and using a data system (see Exhibit 15). The most common forms of professional development sought were developing diagnostic assessments and adjusting instruction based on diagnostic data. The least sought after professional development was techniques for collaborating with colleagues.

Exhibit 15

Teacher Perceptions of Potential Benefit From Different Forms of Professional Development in 2006–07

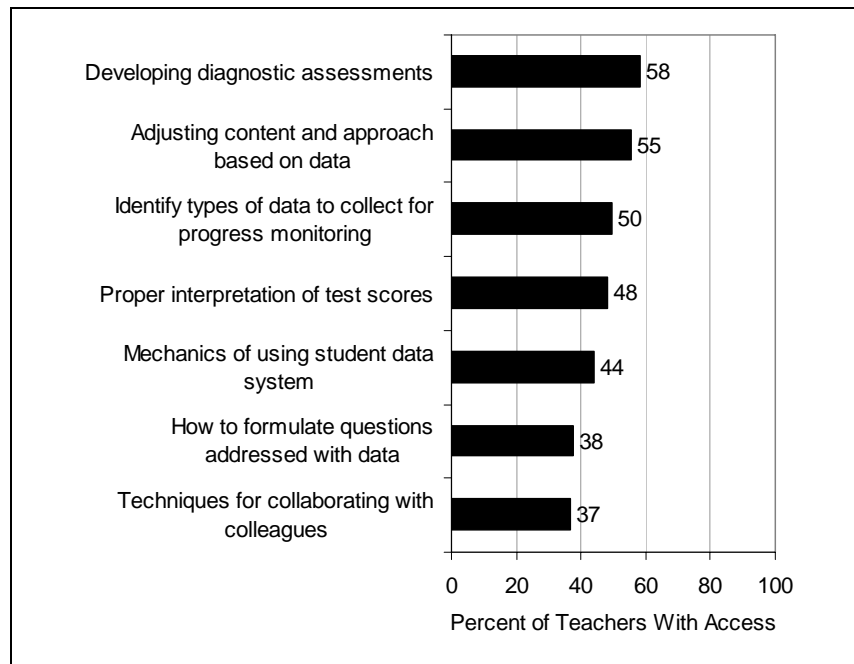


Exhibit reads: Among teachers who reported access to a student data system in 2006–07, 58 percent said that they could benefit from additional professional development in developing diagnostic assessments, while only 37 percent said they could benefit from further professional development on techniques for collaborating with colleagues.

Source: NETTS teacher survey, 2007.

¹¹ Diagnostic assessments refer to the informal tools used by teachers as part of their formative assessment process to help them evaluate individual student progress as well as the class as a whole.

The degree to which teachers felt they could benefit from further professional development depended on whether they were a higher-confidence or a lower-confidence teacher (Exhibit 16). As might be expected, lower-confidence teachers were more likely to believe they could benefit from further professional development, and this contrast was statistically significant for four of the seven listed forms of training.

Exhibit 16

Teacher Perceptions of Potential Benefit From Different Forms of Professional Development, by Personal Confidence in Using an Electronic Student Data System in 2006–07

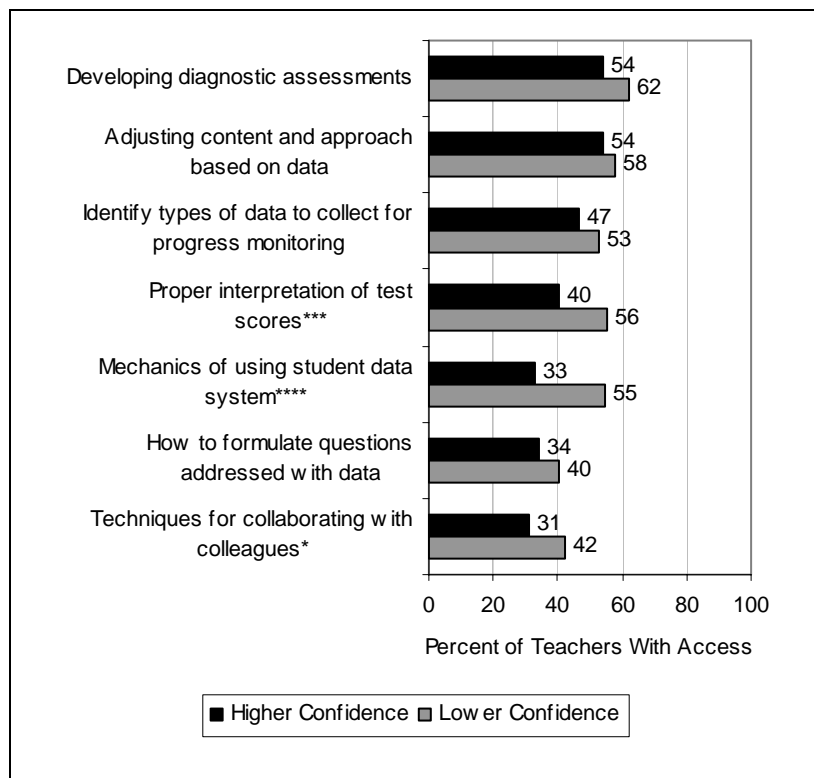


Exhibit reads: Among teachers who reported access to a student data system in 2006–07, 54 percent of higher-confidence teachers said that they could benefit from additional professional development in how to develop diagnostic assessments, compared with 62 percent of lower-confidence teachers.

Note: Asterisks indicate a statistically significant difference between teachers with higher confidence in using a student data system and teachers with lower confidence (* $p < .05$, *** $p < .001$, **** $p < .0001$).

Source: NETTS teacher survey, 2007.

The degree of perceived institutional support for data use did not predict teachers’ endorsement of further professional development. Only one form of professional development—how to formulate questions with data—varied significantly with the degree of institutional support, with higher-supported teachers more likely to want this form of professional development (42

percent) when compared to lower-supported teachers (34 percent). It may be that the higher-supported teachers were more aware of an area in which their skills could be improved or that teachers receiving less support did not believe they would have the opportunity to apply this skill in their districts, as observed in case study schools.

Teachers in schools that did not make adequate yearly progress (AYP) the year before the survey were more likely to believe that they could benefit from additional professional development.

The *NCLB* legislation explicitly calls on schools failing to make AYP to use data in their school improvement process. For this reason, schools failing to make AYP could be expected to place more emphasis on using student data systems. For six of the seven types of training addressed by the NETTS survey, a significantly higher percentage of teachers in schools not meeting AYP indicated that they would benefit from additional professional development when compared with teachers in schools making AYP (Exhibit 17).

Exhibit 17

Teacher Perceptions of Potential Benefit From Different Forms of Professional Development, by School AYP Status in 2006–07

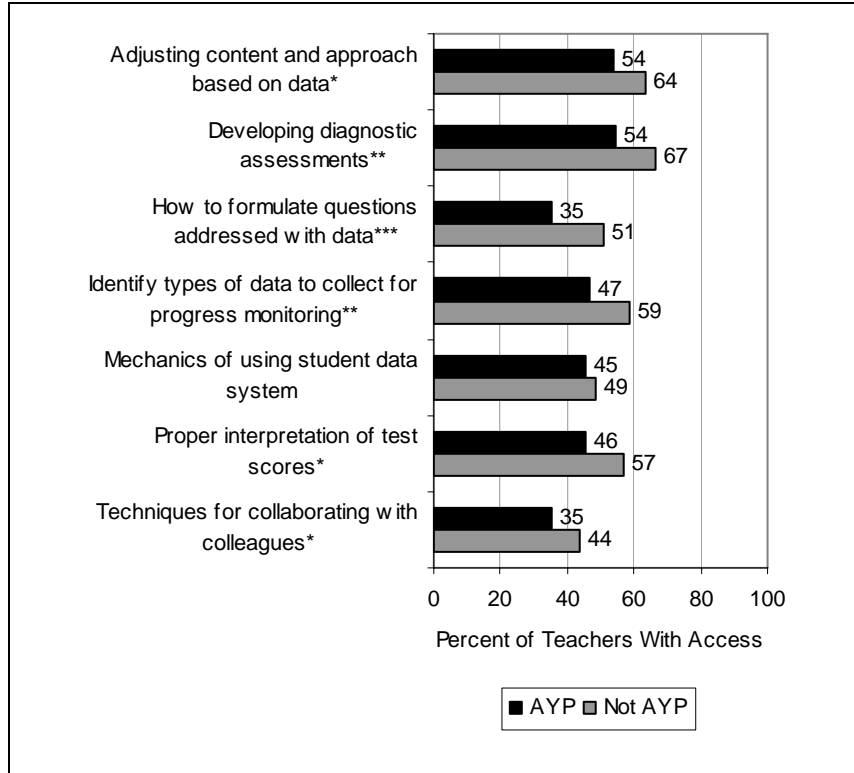


Exhibit reads: Among teachers that reported access to a data system in 2006–07, 54 percent of teachers in schools making AYP indicated that they could benefit from additional professional development in how to develop diagnostic assessments for their class, compared with 67 percent of teachers in schools not making AYP.

Note: Asterisks indicate a statistically significant difference between teachers in schools making AYP and those in schools not making AYP (* $p < .05$, ** $p < .01$, *** $p < .001$).

Source: NETTS teacher survey, 2007.

SUMMARY

The availability and use of electronic student data systems for instructional improvement are rapidly changing, as illustrated by the data reported in this brief. Federal, state, and district efforts to promote the use of data to improve instruction and student achievement are being accompanied by changes in teacher access to student data systems and data use.

Nearly three-quarters of all teachers reported having access to an electronic student data system in school year 2006–07 compared with half of teachers reporting access two years earlier—nearly a 50 percent increase between the two survey administrations. Such rapid change in a two-year period is notable for American education, but a significant proportion of teachers still do not have access to the data necessary for making instructional decisions. Only half of teachers with access to a student data system report that it provides them with achievement data for the students in their classroom, or only 37 percent of teachers as a whole have achievement data for their current students from the data system. Fewer still have access to achievement information more recent than the scores on the prior spring’s state test or to longitudinal views of student achievement over multiple years. The only data that a majority of teachers reported having available to them in 2007 were class attendance and course grades (74 percent and 67 percent, respectively, of teachers with data access).

A majority of teachers with access to a student data system reported having received professional development on data system use and having support from their principal for data use activities. Teachers who felt that they had more support for data use were more likely to report having actually used the student data system for a variety of purposes.

Of those teachers who reported having access to a student data system, a majority reported making use of it for keeping parents informed, monitoring student academic progress, and tracking individual test scores. Teachers who expressed confidence in their ability to use data and student data systems and those who felt well supported by their colleagues in this endeavor were likely to report making additional uses of data, such as identifying student skill gaps, informing changes to the curriculum, and identifying promising practices.

Teachers express the desire for more professional development in using data—particularly for training in how to develop diagnostic assessments and how to adjust instruction based on diagnostic data.

In addition to the need for improved access to the kinds of data that teachers can use to inform instruction and to more professional development, teachers need time to devote to examining data and making plans on the basis of that data: lack of time set aside for these activities was cited as a barrier in both 2005 and 2007. Less than one-sixth of teachers with access to student data systems report that they have had paid time set aside for data use. For the most part, teachers continue to be expected to use the data system as an extra activity, either conducted on their own time or substituted for other activities during their regular planning period.

In brief, the prevalence and use of student data systems in schools have increased rapidly since the first round of NETTS surveys in 2005, but the need still exists for a more systemic approach to implementing the use of data as a central part of instructional decision-making.

REFERENCES

- Russell, M., Bebell, D., O'Dwyer, L., & O'Connor, K. (2003). Examining teacher technology use. *Journal of Teacher Education*, 54(4), 297–310.
- U.S. Department of Education. (2008). *Implementing Data-Informed Decision Making in Schools: Teacher Access, Supports, and Use*. Washington, D.C.: Office of Planning, Evaluation and Policy Development.



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