IES Institute of Education Sciences

STUDY BRIEF
January 2021

Regional Educational Laboratory Central
At Marzano Research

# How Nebraska Teachers Use and Perceive Summative, Interim, and Formative Data

**Teachers have access to more data than ever before, including summative (state-level), interim (benchmark-level), and formative (classroom-level) data. Yet research on how often and why teachers use each type of data is scarce. The Nebraska Department of Education partnered with the Regional Educational Laboratory Central to conduct a study of teachers and principals in 353 Nebraska schools to learn about teachers' use and perceptions of summative, interim, and formative data and inform a state-level professional learning plan to support teachers' data use. The results indicated that 29 percent of teachers did not use summative data, 21 percent did not use interim data, and 6 percent did not use formative data. Among teachers who reported using each type of data, teachers used formative data almost weekly and interim data about monthly to tailor instruction, identify instructional content, recommend additional student support, and group students. Teachers used summative, interim, and formative data least often in discussions about student learning with principals, colleagues, parents, and students. Teachers with 12 or fewer years of experience in education reported using formative data more often than did teachers with 22 or more years of experience. Teachers' perceived competence in using data, their attitudes toward data, and their perceptions of organizational supports for using data (professional learning, principal leadership, and computer systems) were each positively associated with their use of data to inform instruction. When teachers reported greater perceived competence in using data, more positive attitudes toward data, or more organizational supports for using data, they more often used formative and interim data to inform instruction. Teachers with a more-advanced degree (education specialist or doctoral degree) reported feeling more competent in using data and having more positive attitudes toward data than did teachers with a bachelor's degree.**

## Why this study?

Under the Every Student Succeed Act of 2015, state education agencies have shifted from using a single, summative measure of student learning to using multiple assessment measures in an effort to form a more complete and accurate picture of student learning. This comprehensive approach typically consists of summative (state-level), interim (benchmark-level), and formative (classroom-level) assessments that provide teachers with different types of data to understand what students know and are able to do and where they need to grow.[1]

To support teachers' data use, the Nebraska Department of Education developed the Nebraska Student-Centered Assessment System, which identifies summative, interim, and formative assessments as measures of student learning.[2] This system is intended to support teachers in using multiple assessments to measure what students know and need to learn and adjust instruction to help students stay on track with state content standards. Given

1. Marsh, J. A., Pane, J. F., & Hamilton, L. S. (2006). *Making sense of data-driven decision making in education: Evidence from recent RAND research* (OP-170-EDU). RAND Corporation. https://www.rand.org/pubs/occasional_papers/OP170.html.
2. Nebraska Department of Education. (2018). Nebraska Student-Centered Assessment System (Legislative Policy Brief). https://cdn.education.ne.gov/wp-content/uploads/2018/02/NSCAS-Policy-Brief-FEB18.pdf.

their investment in the system, Nebraska Department of Education leaders were committed to developing a state-level professional learning plan to support its use. The leaders partnered with the Regional Educational Laboratory Central to conduct a study that examined how teachers used and perceived three types of data—summative, interim, and formative—that were at the core of Nebraska's multiple-assessment approach.

## What was studied and how?

This study addressed five research questions to understand Nebraska teachers' use of summative, interim, and formative data as well as their perceptions of and attitudes toward data:

1. How do Nebraska teachers report using summative, interim, and formative data?
2. Are Nebraska principals' attitudes about data and perceptions of teachers' data use similar to teachers' reports of their own attitudes and data use?
3. How does teachers' use of data relate to teachers' perceived competence in using data, attitudes toward data, and perceptions of organizational supports for using data?
4. How do teachers' use of data, perceived competence in using data, attitudes toward data, and perceptions of organizational supports for using data vary by teacher characteristics?
5. How do teachers' use of data, perceived competence in using data, attitudes toward data, and perceptions of organizational supports for using data vary based on Nebraska school accountability classifications (that is, excellent, great, good, and needs improvement) for the 2018/19 school year?

Nebraska Department of Education leaders administered the Teacher Data Use Survey[3] in March 2019 and received responses from 3,572 teachers and 171 principals across 353 schools.[4] The survey measured teachers' instructional actions with summative, interim, and formative data; their perceived competence in using data; their attitudes toward data; and their perceptions of organizational supports for using data. Additional data sources for addressing the research questions included administrative data from the Nebraska Department of Education, such as school accountability classification (excellent, great, good, or needs improvement)[5] and teachers' highest degree earned, subject taught (core or noncore), and years of experience in education.

To address the first two research questions, the study team calculated means and standard deviations of teacher and principal survey responses. For the remaining research questions, the study team used analytical models that accounted for the likelihood that teachers in the same schools were more similar to one another than to teachers in other schools. The analyses controlled for teacher characteristics, including highest degree earned, years of experience, special education endorsement, and teaching assignment in a core subject. For research question 3 only associations that were significant at $p < .01$ or better are discussed in the report. For research questions 4 and 5 regression-adjusted means were used to describe differences between groups of teachers with particular characteristics. All statistically significant differences between subgroups that were 0.25 or larger are reported.

## Findings

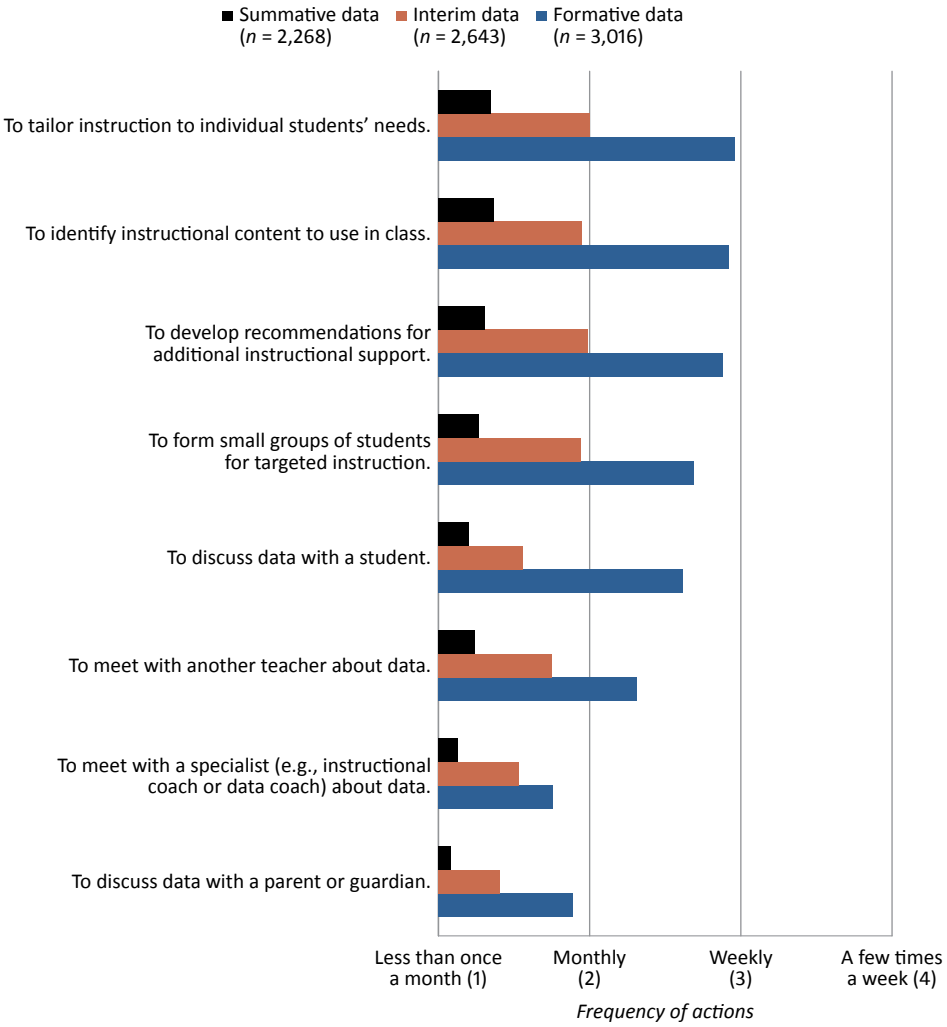
- **Not all Nebraska teachers used summative, interim, and formative data to inform instruction, but teachers who did use data used formative data more often than summative and interim data.** About 29 percent of teachers reported that they did not use summative data, 21 percent reported that they did not use interim

3. The Teacher Data Use Survey is available at https://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=2461.
4. Respondents represented 34.5 percent of teachers and 48.4 percent of principals who were sent the survey. Nonresponse weights were applied to generate findings that were likely representative of the educators originally surveyed.
5. The Nebraska Department of Education classifies schools to target resources and supports to schools most in need of improvement.

data, and 6 percent reported that they did not use formative data. Among teachers who reported using each type of data, teachers used formative data almost weekly and interim data about monthly to inform a variety of instructional actions (figure 1). The means for teachers' instructional actions with formative data corresponded to weekly or almost weekly for tailoring instruction to individual students' needs (2.96), identifying instructional content (2.92), developing recommendations for additional instructional support (2.88), and grouping students for targeted instruction (2.69). In comparison, the means for teachers' taking these instructional actions with interim data corresponded to monthly or almost monthly, and summative data less than once a month. Teachers used the three types of data least often for discussions with students, other teachers, instructional specialists, and parents or guardians.

- **Principals had more positive perceptions of and attitudes toward data than teachers did.** Both principals and teachers perceived summative data to be less useful than interim and formative data for informing teacher practice. However, principals' mean rating of summative data (2.35 on a four-point scale in which 1 indicated not useful, 2 indicated somewhat useful, 3 indicated useful, and 4 indicated very useful) was more positive

**Figure 1. Teachers took instructional actions with formative data more often than with interim and summative data, 2019**




Note: Frequency of actions with summative data was measured on a scale in which 1 = one or two times a year, 2 = a few times a year, 3 = monthly, and 4 = weekly. To make visual comparisons using the same survey scale, ratings for summative data were recoded to the interim and formative response scale. A rating of 4 (weekly) on the summative scale was recoded as a 3 (weekly or almost weekly) on the interim/formative scale, a rating of 3 (monthly) was recoded as a 2 (once or twice a month), and a rating of 2 or 1 was recoded as a 1 (less than once a month).

Source: Authors' analysis of 2019 data from the Teacher Data Use Survey administered by the Nebraska Department of Education.

than somewhat useful, and teachers' mean rating (1.83) was less positive than somewhat useful. Principals' perceptions of interim data represented a mean rating of useful to very useful to inform teacher practice (3.42). On the other hand, teachers' perceptions of interim data corresponded to a mean rating of somewhat useful to useful to inform practice (2.61). Principals' attitudes toward data were more positive than were teachers' attitudes on statements about liking to use data; believing that students benefit when instruction is informed by data; believing that using data helps them be better educators; and finding data useful, important to educational practice, and helpful in planning instruction. Principals' ratings were also more positive than teachers' ratings on items about principals discussing data with teachers, principals creating protected time for using data, teachers having the proper technology for using data, and computer systems providing access to data.

- **Teachers' self-reported use of data was positively associated with their perceived competence in using data, their attitudes toward data, and their perceptions of organizational supports for using data.** Teachers' perceived competence in using data and their perceptions of organizational supports for using data were statistically significantly and positively associated with teachers' reported use of summative, interim, and formative data. Teachers who reported greater perceived competence in using data or more organizational supports for using data also reported taking more frequent instructional actions informed by summative, interim, and formative data. Teachers' attitudes toward data were statistically significantly and positively associated with only their reported use of formative data (not summative or interim data). That is, when teachers reported having more positive attitudes toward data, they indicated that they more often used formative data to inform instruction.
- **Teachers' highest degree earned was positively associated with their perceived competence in using data and their attitudes toward data.** Teachers with a more-advanced degree reported greater perceived competence in using data than did teachers with a bachelor's degree. Teachers with a more-advanced degree also reported statistically significantly more positive attitudes toward data.
- **Teachers with 12 or fewer years of experience in education reported using formative data more often than did teachers with 22 or more years of experience.** Teachers' responses for frequency of summative and interim data use were more similar across the years of experience categories.
- **Teachers working in schools with different accountability classifications had similar survey responses.** Teachers' responses for frequency of data use, perceived competence in using data, attitudes toward data, and organizational supports were similar across schools classified as excellent, great, good, or needs improvement.

## Implications

Nebraska education leaders might consider providing professional learning to support teachers in discussing data with colleagues, rather than using data alone, to address problems of practice and inform instructional decision-making. Resources such as *Five Steps for Structuring Data-Informed Conversations and Action in Education* might help teachers and principals engage more frequently and purposefully in data conversations that inform instruction.[6]

By measuring teacher data competence, Nebraska education leaders could determine whether teachers' perceived competence in using data reflects their actual proficiency. Measuring teachers' actual competence in using data might reveal any differences between teachers who hold more-advanced and those who hold less-advanced degrees. Education leaders could use this information to develop a data-informed professional learning plan that focuses on areas in which teachers need to improve the most.

To inform state-level professional learning plans for teachers' data use, education leaders could conduct research on how Nebraska teachers understand the intended purposes for using summative and interim data and how this understanding shapes their use and perceptions of the usefulness of those data.

6. Kekahio, W., & Baker, M. (2013). *Five steps for structuring data-informed conversations and action in education* (REL 2013–001). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Pacific. https://eric.ed.gov/?id=ED544201.

This brief was prepared for the Institute of Education Sciences (IES) under Contract ED-IES-17-C-0005 by the Regional Educational Laboratory Central administered by Marzano Research. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government. The full report is available on the Regional Educational Laboratory website at http://ies.ed.gov/ncee/edlabs.

Wilkerson, S. B., Klute, M., Peery, B., & Liu, J. (2021). *How Nebraska teachers use and perceive summative, interim, and formative data* (REL 2021–054). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central.