



How Do They Measure Up? School Leaders' Opinions of Knowles Science Teaching Foundation Fellows

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FOREWORD

Since 2002, the Knowles Science Teaching Foundation (KSTF) has invested heavily in highly talented individual teachers as a means to improve math and science education in the United States. This investment is geared toward four overarching goals:

- to develop exceptional high school science and math teachers;
- to develop those teachers as leaders in and for the profession;
- to develop knowledge about teaching and learning, giving primacy to knowledge generated by teachers of and for their own practice;
- to develop a national network of leading STEM teachers dedicated to improving math and science education in the United States.

We refer to these four goals as our cornerstones, as they undergird everything we do.

Thanks to a generous endowment from Harry and Janet Knowles, KSTF has been able to use the first decade of our existence to clarify our purpose, and refine and test the design of our Programs. Self-reported information from Fellows has been and will always be a crucial source of data for us; however, we recognize that self-reported data alone will not allow us to accurately assess whether or not we are meeting our four cornerstone goals. This report is a first step toward understanding how other stakeholders perceive KSTF Fellows and thus provides us with a more nuanced and more fully developed picture of the impact of our programs, particularly the extent to which we are meeting our first two cornerstone goals.

For this study, we worked with Horizon Research, Inc. (HRI) to design a survey of Fellows' principals or other school leaders. The questions were intended to parallel questions from the National Survey of Science and Mathematics Education, also designed and administered by HRI, which were asked of Fellows themselves (see KSTF report ER032014-02 *Standing Out in Their Field: A Comparison of the Knowles Science Teaching Foundation Fellows to Teachers Nationally* for results.)

With regards to our first cornerstone goal, the findings described in this report suggest that school leaders do perceive Fellows to be exceptional teachers. When asked to compare a Fellow as a classroom teacher with other teachers of similar experience, teaching the same grade/subject, more than 87% of the respondents indicated that the Fellow they worked with was in the top 25%. Over half of the respondents rated the Fellow in the top 5%.

While these findings are generally very positive, a deeper dive into the details has given us much to consider and provoked new questions for us to explore further. One area for which Fellows received somewhat lower (although still positive ratings) involved differentiation: 82% of respondents rated Fellows with a 4 or 5 when it comes to differentiating with respect to readiness, interest or learning profile and 79% gave a rating of 4 or 5 with respect to differentiating with respect to language proficiency or other special needs. As the authors of the report point out, this result is hardly surprising given the difficulty of effective differentiation. When we compare more Senior Fellows (those awarded the Fellowship in 2008 and earlier) with current Teaching Fellows (those awarded the Fellowship between 2009 and 2013), we see a clear difference in how school leaders perceive their proficiency in differentiation. This finding raises an important set of questions for us: is the difference due to more years of classroom experience, individual and/or contextual differences, program changes that KSTF has made over the years, or some combination of all of these things?

The findings in this report also indicate that we are making good progress on our second cornerstone goal of developing teachers as leaders. When asked to compare a Fellow as a classroom teacher with other teachers of similar experience, teaching the same grade/subject, more than 80% of the respondents indicated that the Fellow they worked with was in the top 25%. 35% rated the Fellow in the top 5%. Somewhat surprisingly, the ratings for Senior Fellows (82% rated in the top 25%) were not markedly higher than for the current Teaching Fellows (78% rated in the top 25%). This

finding also suggests new areas of exploration for us. We've made a number of program changes over the years, increasing our focus on building leadership capacity in Fellows. So a need for further investigation is called for in order to understand how Fellows enact leadership in their schools and beyond, and the extent to which KSTF Programs have contributed to that leadership.

This report will, we hope, provide the broader education field with a snapshot of who KSTF Fellows are and what their potential is, and has already provided KSTF with data that will allow us to continue to improve our Programs and heighten their impact.



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INTRODUCTION

As part of the Knowles Science Teaching Foundation's (KSTF's) ongoing efforts to evaluate its Teaching Fellowship program, KSTF contracted Horizon Research, Inc. (HRI) to administer a survey to principals, or their designees, of schools in which Fellows teach. The survey was developed by KSTF, with input by HRI, and asked school leaders to rate the Fellow on a number of dimensions, including several aspects of teaching (e.g., knowledge of content, knowledge of how to teach the content) and leadership activities outside the classroom (e.g., serving as a formal coach or mentor to other teachers, designing curriculum/instructional materials). They were also asked how confident they were in their ratings, and the extent to which various data sources (e.g., student work, student performance on state tests) contributed to their ratings. The resulting data shed light on the success of the Teaching Fellowship program from the point of view of school leaders. The full questionnaire can be found in Appendix A.

KSTF provided HRI with a list of 165 Fellows and Senior Fellows for whom KSTF had principal contact information. Surveys were administered online from March 3 through March 24, 2014. In addition to the initial survey invitation, HRI sent two follow-up emails to non-responding school leaders. HRI received survey responses for 113 Fellows for a response rate of 68 percent.¹ Of those who responded, the vast majority were principals or assistant principals. A small proportion of surveys were completed by department chairs or lead teachers (see Table 1).

Table 1
Position of Survey Respondent

	Percent of Respondents [†]
Principal	72
Assistant Principal	14
Department Chair	8
Leader Teacher/Coach	2
Other	9

[†]Percentages add to more than 100 as respondents could select more than one position.

HRI compared the demographics of schools² from which a response was received to those from which no response was received to look for evidence of possible non-response bias (e.g., that the ratings are not representative of the work of all Fellows because respondents are more likely to work in schools with fewer students eligible for free/reduced-price lunch). Overall, these data, shown in Tables 2–5, indicate that schools from which a response was received are fairly similar to schools from which a response was not received.

For example, the average size of responding schools was 1,100 students, compared to about 1,300 students in non-responding schools (see Table 2). Students in both sets of schools are evenly divided

¹A small number of schools contain multiple Fellows. In these schools, the principal was asked to complete a separate survey for each Fellow. Consequently, the response rate is calculated as the number of Fellows for whom a survey was completed divided by the total number of eligible Fellows about whom a survey response was sought. For two Fellows, the principal indicated that the Fellow was no longer employed at the school; these cases are not included in the denominator of the response rate calculation.

²Demographic data on the schools was provided to HRI by KSTF. However, the data for a number of schools were incomplete. Thus, for each school characteristic the tables include the number of schools for which data were available.

in terms of sex; the majority of students in both sets of schools are white, and about a third are eligible for free/reduced-price lunch (see Table 3).

Table 2 Size of Schools with Fellows		
	N	Average Number of Students
Responding Schools	106	1,100
Non-Responding Schools	46	1,314

Table 3 Demographic Data for Schools with Fellows		
	Average Percent of Students	
	Responding Schools	Non-Responding Schools
Sex ($N_r=86$, $N_{nr}=37$) [†]		
Female	50	50
Male	50	50
Race/Ethnicity ($N_r=95$, $N_{nr}=43$)		
White	52	56
Latino/Hispanic	20	18
African American or Black	17	13
Asian/Pacific Islander	8	8
American Indian or Alaskan Native	1	2
Two or More Races	3	2
Not Reported	0	0
Free/Reduced-Price Lunch Eligible ($N_r=103$, $N_{nr}=45$)	34	32
[†] N_r refers to the number of schools that responded to the survey, and N_{nr} refers to the number of schools that did not respond to the survey, for which demographic data were provided to HRI.		

The two sets of schools are also similar in terms of location and school type (see Table 4). Roughly 4 in 10 schools are located in the western United States. The remaining schools are fairly evenly split across the Midwest, Northeast, and South. Half are in cities and the vast majority are public schools; about two-fifths of the schools receive Title I funding. Non-responding schools are somewhat more likely to have higher student-teacher ratios; a similar percent of schools are above and below the national average (65 percent with above average ratios compared to 50 percent of responding schools).

Table 4
Characteristics of Schools with Fellows

	Percent of Schools	
	Responding Schools	Non-Responding Schools
Region ($N_r=108$, $N_{nr}=46$) [†]		
West	44	43
Northeast	17	26
Midwest	20	15
South	19	15
Locale ($N_r=98$, $N_{nr}=46$)		
City	50	50
Suburb	27	39
Rural	18	11
Town	5	0
School Type ($N_r=107$, $N_{nr}=46$)		
Public	80	83
Private	9	11
Charter	10	7
Title I ($N_r=87$, $N_{nr}=39$)		
No	55	56
Yes	45	44
Student-Teacher Ratio ($N_r=74$, $N_{nr}=34$)		
Above National Average	50	65
At National Average	7	3
Below National Average	43	32

[†] N_r refers to the number of schools that responded to the survey, and N_{nr} refers to the number of schools that did not respond to the survey, for which demographic data were provided to HRI.

The remainder of this report is organized by school leaders' ratings of: (1) Fellows as classroom teachers, (2) Fellows' leadership outside the classroom, and (3) Fellows as compared to other teachers of the same subject with similar experience. Findings presented in the report across all Fellows; data are reported by subject (mathematics vs. science) and cohort year (2008 and earlier vs. 2009 and later) of the Fellows in Appendices B and C, respectively. However, due to the small sample sizes, caution should be taken in interpreting the disaggregated data—apparent differences will likely not be statistically significant.

THE FELLOWS AS CLASSROOM TEACHERS

The survey asked a number of questions to gauge school leaders' familiarity with the Fellows, including:

1. The number of years they have worked with or supervised the Fellow;
2. Their perceived familiarity with the Fellow's classroom teaching;
3. How many times they observed the Fellow's classroom, formally and informally; and
4. The approximate date of the most recent observation.

Given the relative inexperience of many Fellows, it is not surprising that roughly two-thirds of school leaders have worked with their Fellow in a professional capacity for two years or fewer; about

a quarter have worked with the Fellow for less than one year (see Table 5). Nonetheless, 77 percent indicated being very familiar (a rating of 4 or 5 on a 5-point scale) with the Fellow’s classroom teaching (see Table 6).

Table 5 Years Spent Working with or Supervising Fellow	
	Percent of Respondents
Less than 1 year	27
1 year	7
2 years	34
3 years	12
4 years	5
5 years	7
6+ years	8

Table 6 School Leader Familiarity with Fellow’s Classroom Teaching	
	Percent of Respondents
[1 of 5] Not at All	1
[2 of 5]	4
[3 of 5] Somewhat	19
[4 of 5]	32
[5 of 5] To a great extent	45

School leaders were asked to provide the number of formal and informal observations conducted of the Fellow’s classroom teaching. Given that Fellows tend to be relatively new to the classroom, and that in many districts principals are required to observe teachers only a few times per year, it is not surprising that roughly two-thirds of school leaders have formally observed their Fellow’s classroom teaching three times or fewer (see Table 7). However, informal observations are much more common; all school leaders indicated conducting at least one informal observation, and 1 in 10 have conducted 21 or more informal observations over the span of the Fellow’s time at the school.

Table 7 Number of Times School Leaders Have Observed Their Fellow’s Classroom Teaching			
	Percent of Respondents		
	Formal Observations	Informal Observations	Total Observations
0 times	13	0	0
1 time	16	3	2
2 times	19	15	3
3 times	15	4	4
4 times	12	8	10
5 times	5	13	7
6-10 times	16	26	30
11-20 times	3	20	22
21 times or more	0	11	23

As can be seen in Table 8, 84 percent of respondents conducted an observation of the Fellow's class less than three months before completing the survey. The other school leaders last conducted an observation between 3 and 6 months prior to responding to the survey, or during the previous academic year.

	Percent of Respondents
Less than 3 months ago	84
Between 3 and 6 months ago	11
During the 2012-13 academic year	5
Prior to the 2012-13 academic year	0

To examine how school leaders view the teaching abilities of Fellows they supervise, they were asked to rate each Fellow at their school on 22 dimensions of teaching (e.g., demonstrating knowledge of the content and discipline they teach) on a five-point scale ranging from "Inadequate" to "Outstanding." School leaders were also given the option to choose "Cannot Rate"; leaders selecting this option are not included in the analysis of that dimension.

Overall, school leaders rated Fellows highly, with very few assigning a rating of "3" or below on the scale for most dimensions (see Table 9). Fellows were rated very highly on demonstrating knowledge of the content and discipline taught and a commitment to teaching, with 9 out of 10 survey-takers giving a rating of "Outstanding." Among the other highly rated dimensions were reflecting on and improving teaching, growing and developing professionally, and participating as a colleague in a professional community. High ratings on these five dimensions suggest that school leaders see Fellows as highly skilled teachers devoted to continual self-improvement.

Although generally positive, school leaders tended to rate Fellows lower on a few items, including the two items on motivating students (raising students' interest in or motivation for learning mathematics or science, motivating students to learn) and the two items on differentiating instruction (differentiating instruction based on student readiness, interest, or learning profile; differentiating instruction based on students' language proficiency or other special needs). Given how new Fellows are to the classroom, this pattern of ratings is not surprising. Selection criteria for the Fellowship include deep content knowledge and a commitment to continually improving as a teacher. Further, differentiating instruction and motivating all learners is extremely challenging and takes even the best teachers time to learn how to do it effectively.

Table 9
School Leader Ratings of Fellows on Various Aspects of Classroom Teaching

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Demonstrating knowledge of the content and discipline s/he teaches	111	0	0	3	7	90
Demonstrating commitment to teaching	113	0	0	3	10	88
Growing and developing professionally	113	0	0	4	17	80
Participating as a colleague in a professional community	113	0	0	1	21	78
Reflecting on and improving teaching	113	0	0	4	19	78
Serving as a role model for students	113	0	2	4	19	76
Building positive relationships with administrators	113	0	0	4	27	70
Building positive relationships with other teachers	113	0	1	5	24	70
Organizing students to work together	111	0	4	4	24	68
Providing challenging, non-routine tasks or problems	113	0	2	6	27	65
Using productive questioning and discussion techniques	112	0	2	6	30	62
Using innovative curriculum and instructional materials	112	1	3	7	28	62
Demonstrating knowledge of how to teach the content to his/her students	112	2	1	5	33	59
Incorporating real world applications	111	0	2	8	31	59
Raising students' mathematics or science achievement	103	1	2	7	35	55
Demonstrating knowledge of his/her students' interests, skills and knowledge	112	0	4	5	35	55
Using technology to enhance instruction	111	0	3	8	35	54
Raising students' interest in or motivation for learning mathematics or science	106	1	3	6	39	52
Designing informative student assessments	109	1	1	6	41	51
Motivating students to learn	113	1	4	4	40	51
Differentiating instruction based on student readiness, interest, or learning profile	109	0	2	16	40	42
Differentiating instruction based on students' language proficiency or other special needs	95	0	4	17	44	35

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate."

FELLOWS' LEADERSHIP OUTSIDE THE CLASSROOM

School leaders were asked to indicate their familiarity with the Fellow's professional work outside the classroom. As can be seen in Table 10, about a third of respondents indicated being very familiar (a rating of 4 or 5 on a 5-point scale) with the Fellow's work outside class; half indicated being somewhat familiar.

	Percent of Respondents
[1 of 5] Not at All	4
[2 of 5]	14
[3 of 5] Somewhat	50
[4 of 5]	26
[5 of 5] To a great extent	6

To examine how school leaders view the leadership abilities of Fellows they supervise, they were asked to rate each Fellow at their school on eight leadership activities (e.g., serving as an informal resource to other teachers in the school or district). A number of things stand out about the data, which are shown in Table 11. It is clear from these data that school leaders recognize the Fellows as adding value to the school and/or district beyond what the Fellows accomplish in their own classrooms. These results are even more impressive given that the Fellows tend to be newer teachers. Although the leadership ratings tend not to be as high as the teaching ratings, and a greater number of leaders indicated that they could not rate their Fellows on some of the leadership dimensions, the Fellows appear to be quickly taking on leadership roles in their schools.

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Serving as an informal resource to other teachers in your school or district	102	1	1	10	31	57
Serving on school/district committees	88	1	3	16	32	48
Leading or facilitating professional development workshops or seminars for other teachers	65	3	0	20	32	45
Sharing ideas or resources from KSTF experiences with other teachers in your school or district	86	0	3	5	48	44
Designing curriculum/instructional materials	107	1	0	8	49	42
Leading or facilitating teacher study groups	81	1	2	12	44	40
Serving as a formal coach or mentor to other teachers	77	3	3	14	43	38
Observing other teachers and providing feedback	73	0	4	19	44	33

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate." The total number of school leaders who responded to this series is 112.

COMPARISONS TO OTHER TEACHERS

To gauge school leaders' overall impressions, the last section of the survey asked them indicate how their Fellow compared to other teachers the respondent has known who had similar experience and taught the same grade/subject as a classroom teacher, a professional colleague, and a teacher leader. The six response options ranged from "Very Poor (Bottom 5%)" to "Exceptional (Top 5%)." An option of "Cannot Rate" was also provided. In addition, school leaders were asked how confident they were in their ratings.

Overall, school leaders rated Fellows very highly (see Table 12). About 9 in 10 school leaders rated their Fellow in the top 25 percent or better as classroom teachers and professional colleagues, with over half selecting a rating of exceptional. Over 8 in 10 rated their Fellow in the top 25 percent or better as teacher leaders.

	N [‡]	Percent of Respondents				
		Poor (Bottom 25%)	Fair (Top 75%)	Good (Top 50%)	Very Good (Top 25%)	Exceptional (Top 5%)
		1	2	3	4	5
As a classroom teacher	112	2	3	8	29	58
As a professional colleague	112	0	2	5	40	53
As a teacher leader	105	0	6	13	46	35

[†]No respondents selected "Very Poor (Bottom 5%)."
[‡]The number of cases varies because of the different number of school leaders selecting "Cannot Rate." The total number of school leaders who responded to this series is 112.

As can be seen in Table 13, schools leaders expressed a great deal of confidence in their ratings. Nearly all indicated they were "Very" or "Mostly" confident.

	Percent of Respondents (N=112)
Not at All	0
Weakly	1
Somewhat	2
Mostly	24
Very	73

When asked what data sources they considered in making their ratings,³ the vast majority of leaders indicated that they relied on classroom observations to a great extent (see Table 14). Feedback from

³In addition to the closed-ended items, school leaders were presented with the opportunity to write in other data sources they considered; 41 provided a response. The three most common write-in responses were: conversations with the Fellow, either informally or in coaching sessions (10 leaders); knowledge of the Fellow's work in professional development sessions (7 leaders); and student feedback (5 leaders). If KSTF chooses to administer a version of this survey in the future, it may want to add items related to these data sources to this series.

other administrators and teachers, as well as performance on non-teaching tasks at the school were also relied upon heavily. Interestingly, student performance on state tests, especially value-added types of measures, did not appear to heavily influence leaders' ratings.

Table 14
Data Sources School Leaders Considered in Making Their Ratings

	Percent of Respondents (N=112)				
	Not at all		Somewhat		To a great extent
	1	2	3	4	5
Classroom observation	0	0	4	23	73
Feedback from other administrators	4	1	13	41	41
Performance on other tasks for the school (committees, coaching, etc.)	5	2	12	44	38
Feedback from other teachers	4	0	20	38	38
Student work	3	1	23	47	26
Feedback from parents	14	2	21	38	26
Materials submitted as part of annual performance review or other teacher portfolio	52	0	6	16	26
Student performance on state tests	23	7	18	29	22
Average student growth on state tests (value added measures or growth percentiles)	40	7	16	24	13

SUMMARY

Overall, school leaders rated Fellows very highly on a number of dimensions related to teaching, including demonstrating knowledge of the content taught, demonstrating a commitment to teaching, growing professionally, participating as a colleague in a professional community, reflecting on and improving teaching, and serving as a role model for students. Although still positive, ratings tended to be somewhat lower for motivating students to learn and differentiating instruction. This finding is not surprising given the relative inexperience of Fellows and the difficulty of these aspects of teaching.

School leaders also had favorable impressions of Fellows' leadership, including the Fellows' serving as an informal resource for other teachers, serving on school/district committees, leading or facilitating professional development, designing curriculum/instructional materials, and sharing ideas and resources from KSTF with other teachers. This last aspect is particularly interesting as it shows a direct influence of KSTF beyond the Fellows' own classrooms, and one that can be directly attributed to KSTF.

Also impressive is that the vast majority of school leaders responding to the survey rated the Fellows in the top 25 percent of teachers in terms of classroom practice, being a professional colleague, and being a teacher leader. In addition, school leaders expressed a high degree of confidence in their ratings of the Fellows.

APPENDIX A: KSTF 2014 SCHOOL LEADER SURVEY

Background Information

1. Which of the following describe your position? (Select all that apply.)

- Principal
- Assistant principal
- Department chair
- Lead teacher or coach
- Other (please specify: _____)

2. How long have you worked with or supervised this KSTF Fellow?

- less than 1 year
- 1 year 2 years
- 3 years 4 years
- 5 years 6 years
- 7 years 8 years
- 9 years 10 years
- 11+ years

3. How familiar are you with this KSTF Fellow's classroom teaching?

- Not at all
- [2 of 5]
- Somewhat
- [4 of 5]
- To a great extent

4. How many times have you observed this KSTF Fellow's classroom teaching?

- a. Formal Observations_____
- b. Informal Observations_____

5. When was the last time you observed this KSTF Fellow's classroom teaching?

- Less than 3 months ago
- Between 3 and 6 months ago
- During the 2012–13 academic year
- Prior to the 2012–13 academic year

Teacher Rating

6. Please rate this KSTF Fellow's knowledge/performance in each of the following categories.

[Response options: Inadequate, [2 of 5], [3 of 5], [4 of 5], Outstanding, Cannot Rate]

- a. Demonstrating knowledge of the content and discipline s/he teaches
- b. Demonstrating knowledge of how to teach the content to his/her students

- c. Demonstrating knowledge of his/her students' interests, skills and knowledge
- d. Using technology to enhance instruction
- e. Using innovative curriculum and instructional materials
- f. Incorporating real world applications
- g. Providing challenging, non-routine tasks or problems
- h. Differentiating instruction based on student readiness, interest, or learning profile
- i. Differentiating instruction based on students' language proficiency or other special needs
- j. Designing informative student assessments
- k. Organizing students to work together
- l. Using productive questioning and discussion techniques
- m. Motivating students to learn
- n. Raising students' mathematics or science achievement
- o. Raising students' interest in or motivation for learning mathematics or science
- p. Reflecting on and improving teaching
- q. Participating as a colleague in a professional community
- r. Growing and developing professionally
- s. Demonstrating commitment to teaching
- t. Building positive relationships with other teachers
- u. Building positive relationships with administrators
- v. Serving as a role model for students

Leadership Rating

7. How familiar are you with this KSTF Fellow's other professional work outside his or her classroom?

- Not at all
- [2 of 5]
- Somewhat
- [4 of 5]
- To a great extent

8. Please rate this KSTF Fellow's knowledge/performance in each of the following categories. [Response options: Inadequate, [2 of 5], [3 of 5], [4 of 5], Outstanding, Cannot Rate]

- a. Serving as a formal coach or mentor to other teachers
- b. Designing curriculum/instructional materials
- c. Leading or facilitating teacher study groups
- d. Observing other teachers and providing feedback
- e. Serving on school/district committees
- f. Leading or facilitating professional development workshops or seminars for other teachers
- g. Serving as an informal resource to other teachers in your school or district
- h. Sharing ideas or resources from KSTF experiences with other teachers in your school or district

Overall Rating

9. Among teachers you have known with a similar amount of experience who have taught the same grade/subject, how would you rate this KSTF Fellow overall: [Response options: Exceptional (top 5%), Very Good (top 25%), Good (top 50%), Fair (top 75%), Poor (bottom 25%), Very poor (bottom 5%), Cannot Rate]
- As a classroom teacher
 - As a professional colleague
 - As a teacher leader
10. How confident are you in the rating you assigned to this KSTF Fellow?
- Very
- Mostly
- Somewhat
- Weakly
- Not at all
11. Please indicate the extent to which each data source contributed to your rating. [Response options: Not at all, [2 of 5], Somewhat, [4 of 5], To a great extent]
- student work
 - student performance on state tests
 - average student growth on state tests (value added measures or growth percentiles)
 - performance on other tasks for the school (committees, coaching, etc.)
 - feedback from parents
 - feedback from other teachers
 - feedback from other administrators
 - materials submitted as part of Annual performance review or other teacher portfolio
 - classroom observation
 - other _____
12. To receive your honorarium check, please enter your home mailing address below. Note that this information will be separated from your survey answers prior to any analysis of the data and will not be used for any other purpose.
- Name:
- Address line 1:
- Address line 2:
- City:
- State:
- ZIP Code:

APPENDIX B: SURVEY DATA BY SUBJECT TAUGHT

Table B-1 Position of Survey Respondent		
	Percent of Respondents [†]	
	Science (N=73)	Mathematics (N=40)
Principal	73	70
Assistant Principal	12	18
Department Chair	10	5
Leader Teacher/Coach	1	3
Other	10	8

[†]Percentages within each subject add to more than 100 as respondents could select more than one position.

Table B-2 Years Spent Working with or Supervising Fellow		
	Percent of Respondents	
	Science (N=73)	Mathematics (N=40)
Less than 1 year	27	28
1 year	4	13
2 years	32	38
3 years	14	8
4 years	7	3
5 years	7	8
6+ years	10	5

Table B-3 School Leader Familiarity with Fellow's Classroom Teaching		
	Percent of Respondents	
	Science (N=73)	Mathematics (N=40)
[1 of 5] Not at All	0	3
[2 of 5]	3	5
[3 of 5] Somewhat	15	25
[4 of 5]	33	30
[5 of 5] To a great extent	49	38

Table B-4
Number of Times School Leaders Have Formally Observed Their Fellow's Classroom Teaching

	Percent of Respondents	
	Science (N=73)	Mathematics (N=40)
0 times	16	8
1 time	15	18
2 times	18	23
3 times	12	20
4 times	12	13
5 times	5	5
6-10 times	16	15
11-20 times	4	0
21 times or more	0	0

Table B-5
Number of Times School Leaders
Have Informally Observed Their Fellow's Classroom Teaching

	Percent of Respondents	
	Science (N=73)	Mathematics (N=40)
0 times	0	0
1 time	4	0
2 times	14	18
3 times	5	3
4 times	7	10
5 times	15	10
6-10 times	29	20
11-20 times	16	28
21 times or more	10	13

Table B-6
Number of Times School Leaders Have Observed Their Fellow's Classroom Teaching in Total

	Percent of Respondents	
	Science (N=73)	Mathematics (N=40)
0 times	0	0
1 time	3	0
2 times	4	0
3 times	3	5
4 times	5	18
5 times	10	3
6-10 times	33	25
11-20 times	25	18
21 times or more	18	33

Table B-7
Approximate Date of Last Observation

	Percent of Respondents	
	Science (N=73)	Mathematics (N=40)
Less than 3 months ago	81	90
Between 3 and 6 months ago	14	5
During the 2012–13 academic year	5	5
Prior to the 2012–13 academic year	0	0

Table B-8
School Leader Ratings of Fellows on Various Aspects of Classroom Teaching: Science

	N [†]	Percent of Respondents				
		Inadequate		Outstanding		
		1	2	3	4	5
Demonstrating knowledge of the content and discipline s/he teaches	71	0	0	4	8	87
Demonstrating knowledge of how to teach the content to his/her students	72	3	0	4	35	58
Demonstrating knowledge of his/her students' interests, skills and knowledge	72	0	4	3	32	61
Using technology to enhance instruction	72	0	1	6	35	58
Using innovative curriculum and instructional materials	72	1	3	4	26	65
Incorporating real world applications	73	0	3	4	26	67
Providing challenging, non-routine tasks or problems	73	0	3	5	22	70
Differentiating instruction based on student readiness, interest, or learning profile	70	0	3	14	37	46
Differentiating instruction based on students' language proficiency or other special needs	60	0	3	15	47	35
Designing informative student assessments	71	1	1	3	39	55
Organizing students to work together	71	0	3	3	24	70
Using productive questioning and discussion techniques	72	0	1	4	29	65
Motivating students to learn	73	1	3	1	42	52
Raising students' mathematics or science achievement	65	2	2	5	35	57
Raising students' interest in or motivation for learning mathematics or science	66	2	3	2	36	58
Reflecting on and improving teaching	73	0	0	4	15	81
Participating as a colleague in a professional community	73	0	0	1	16	82
Growing and developing professionally	73	0	0	5	11	84
Demonstrating commitment to teaching	73	0	0	3	11	86
Building positive relationships with other teachers	73	0	1	4	23	71
Building positive relationships with administrators	73	0	0	3	25	73
Serving as a role model for students	73	0	3	1	19	77

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate."

Table B-9
School Leader Ratings of Fellows on Various Aspects of Classroom Teaching: Mathematics

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Demonstrating knowledge of the content and discipline s/he teaches	40	0	0	0	5	95
Demonstrating knowledge of how to teach the content to his/her students	40	0	3	8	30	60
Demonstrating knowledge of his/her students' interests, skills and knowledge	40	0	5	10	40	45
Using technology to enhance instruction	39	0	5	13	36	46
Using innovative curriculum and instructional materials	40	0	3	13	30	55
Incorporating real world applications	38	0	0	16	39	45
Providing challenging, non-routine tasks or problems	40	0	0	8	35	58
Differentiating instruction based on student readiness, interest, or learning profile	39	0	0	18	46	36
Differentiating instruction based on students' language proficiency or other special needs	35	0	6	20	40	34
Designing informative student assessments	38	0	0	11	45	45
Organizing students to work together	40	0	5	5	25	65
Using productive questioning and discussion techniques	40	0	3	10	33	55
Motivating students to learn	40	0	8	8	35	50
Raising students' mathematics or science achievement	38	0	3	11	34	53
Raising students' interest in or motivation for learning mathematics or science	40	0	3	13	43	43
Reflecting on and improving teaching	40	0	0	3	25	73
Participating as a colleague in a professional community	40	0	0	0	30	70
Growing and developing professionally	40	0	0	0	28	73
Demonstrating commitment to teaching	40	0	0	3	8	90
Building positive relationships with other teachers	40	0	0	8	25	68
Building positive relationships with administrators	40	0	0	5	30	65
Serving as a role model for students	40	0	0	8	18	75

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate."

Table B-10
School Leader Familiarity with Fellow's Work Outside the Classroom

	Percent of Respondents	
	Science (N=73)	Mathematics (N=40)
[1 of 5] Not at All	1	8
[2 of 5]	15	13
[3 of 5] Somewhat	51	50
[4 of 5]	26	25
[5 of 5] To a great extent	7	5

Table B-11
School Leader Ratings of Fellows on Various Aspects of Teacher Leadership: Science

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Serving as a formal coach or mentor to other teachers	50	4	2	14	38	42
Designing curriculum/instructional materials	69	1	0	9	45	45
Leading or facilitating teacher study groups	52	2	2	10	46	40
Observing other teachers and providing feedback	48	0	4	17	50	29
Serving on school/district committees	61	2	5	16	30	48
Leading or facilitating professional development workshops or seminars for other teachers	45	4	0	18	27	51
Serving as an informal resource to other teachers in your school or district	67	1	1	7	28	61
Sharing ideas or resources from KSTF experiences with other teachers in your school or district	60	0	5	3	43	48

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate." The total number of school leaders who responded to this series is 72.

Table B-12
School Leader Ratings of Fellows on Various Aspects of Teacher Leadership: Mathematics

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Serving as a formal coach or mentor to other teachers	27	0	4	15	52	30
Designing curriculum/instructional materials	38	0	0	8	55	37
Leading or facilitating teacher study groups	29	0	3	17	41	38
Observing other teachers and providing feedback	25	0	4	24	32	40
Serving on school/district committees	27	0	0	15	37	48
Leading or facilitating professional development workshops or seminars for other teachers	20	0	0	25	45	30
Serving as an informal resource to other teachers in your school or district	35	0	0	14	37	49
Sharing ideas or resources from KSTF experiences with other teachers in your school or district	26	0	0	8	58	35

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate." The total number of school leaders who responded to this series is 40.

Table B-13
School Leader Overall Ratings of Fellows as Classroom Teachers[†]

	Percent of Respondents	
	Science (N=72)	Mathematics (N=40)
Poor (Bottom 25%)	3	0
Fair (Top 75%)	1	5
Good (Top 50%)	8	8
Very Good (Top 25%)	31	28
Exceptional (Top 5%)	57	60

[†]No respondents selected "Very Poor (Bottom 5%)."

Table B-14
School Leader Overall Ratings of Fellows as Professional Colleagues[†]

	Percent of Respondents	
	Science (N=72)	Mathematics (N=40)
Poor (Bottom 25%)	0	0
Fair (Top 75%)	3	0
Good (Top 50%)	3	10
Very Good (Top 25%)	46	30
Exceptional (Top 5%)	49	60

[†]No respondents selected "Very Poor (Bottom 5%)."

Table B-15
School Leader Overall Ratings of Fellows as Teacher Leaders^{†, ‡}

	Percent of Respondents	
	Science (N=67)	Mathematics (N=38)
Poor (Bottom 25%)	0	0
Fair (Top 75%)	4	8
Good (Top 50%)	12	16
Very Good (Top 25%)	42	53
Exceptional (Top 5%)	42	24

[†]No respondents selected "Very Poor (Bottom 5%)."
[‡]School leaders selecting "Cannot Rate" are not represented in this table. The total number of school leaders who responded to this series is 112.

Table B-16
School Leader Confidence in Rating

	Percent of Respondents	
	Science (N=72)	Mathematics (N=40)
Not at all	0	0
Weakly	1	0
Somewhat	0	5
Mostly	24	25
Very	75	70

Table B-17
Data Sources School Leaders Considered in Making Their Ratings: Science

	Percent of Respondents (N=72)				
	Not at all		Somewhat		To a great extent
	1	2	3	4	5
Student work	3	0	24	46	28
Student performance on state tests	43	7	15	25	10
Average student growth on state tests (value added measures or growth percentiles)	51	4	17	19	8
Performance on other tasks for the school (committees, coaching, etc.)	4	1	14	38	43
Feedback from parents	15	3	19	35	28
Feedback from other teachers	3	0	24	35	39
Feedback from other administrators	6	0	14	38	43
Materials submitted as part of annual performance review or other teacher portfolio	24	8	18	28	22
Classroom observation	0	0	4	25	71

Table B-18
Data Sources School Leaders Considered in Making Their Ratings: Mathematics

	Percent of Respondents (N=40)				
	Not at all		Somewhat		To a great extent
	1	2	3	4	5
Student work	3	3	23	50	23
Student performance on state tests	35	8	18	23	18
Average student growth on state tests (value added measures or growth percentiles)	40	10	18	18	15
Performance on other tasks for the school (committees, coaching, etc.)	8	3	8	55	28
Feedback from parents	13	0	23	43	23
Feedback from other teachers	8	0	13	45	35
Feedback from other administrators	3	3	10	48	38
Materials submitted as part of annual performance review or other teacher portfolio	23	5	18	33	23
Classroom observation	0	0	3	20	78

APPENDIX C: SURVEY DATA BY COHORT YEAR

Table C-1
Position of Survey Respondent

	Percent of Respondents [†]	
	2008 and Earlier (N=32)	2009 and Later (N=81)
Principal	84	67
Assistant Principal	13	15
Department Chair	0	11
Leader Teacher/Coach	0	2
Other	6	10

[†]Percentages within each subject add to more than 100 as respondents could select more than one position.

Table C-2
Years Spent Working with or Supervising Fellow

	Percent of Respondents	
	2008 and Earlier (N=32)	2009 and Later (N=81)
Less than 1 year	3	37
1 year	3	9
2 years	25	37
3 years	13	11
4 years	9	4
5 years	22	1
6+ years	25	1

Table C-3
School Leader Familiarity with Fellow's Classroom Teaching

	Percent of Respondents	
	2008 and Earlier (N=32)	2009 and Later (N=81)
[1 of 5] Not at All	0	1
[2 of 5]	3	4
[3 of 5] Somewhat	25	16
[4 of 5]	9	41
[5 of 5] To a great extent	63	38

Table C-4
Number of Times School Leaders Have Formally Observed Their Fellow's Classroom Teaching

	Percent of Respondents	
	2008 and Earlier (N=32)	2009 and Later (N=81)
0 times	16	12
1 time	9	19
2 times	13	22
3 times	9	17
4 times	13	12
5 times	16	1
6-10 times	22	14
11-20 times	3	2
21 times or more	0	0

Table C-5
Number of Times School Leaders
Have Informally Observed Their Fellow's Classroom Teaching

	Percent of Respondents	
	2008 and Earlier (N=32)	2009 and Later (N=81)
0 times	0	0
1 time	0	4
2 times	6	19
3 times	6	4
4 times	0	11
5 times	16	12
6-10 times	25	26
11-20 times	28	17
21 times or more	19	7

Table C-6
Number of Times School Leaders Have Observed Their Fellow's Classroom Teaching in Total

	Percent of Respondents	
	2008 and Earlier (N=32)	2009 and Later (N=81)
0 times	0	0
1 time	0	2
2 times	3	2
3 times	0	5
4 times	6	11
5 times	3	9
6-10 times	31	30
11-20 times	16	25
21 times or more	41	16

Table C-7
Approximate Date of Last Observation

	Percent of Respondents	
	2008 and Earlier (N=32)	2009 and Later (N=81)
Less than 3 months ago	69	90
Between 3 and 6 months ago	19	7
During the 2012–13 academic year	13	2
Prior to the 2012–13 academic year	0	0

Table C-8
School Leader Ratings of Fellows on Various Aspects of Classroom Teaching: 2008 and Earlier

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Demonstrating knowledge of the content and discipline s/he teaches	31	0	0	0	3	97
Demonstrating knowledge of how to teach the content to his/her students	31	0	3	0	23	74
Demonstrating knowledge of his/her students' interests, skills and knowledge	31	0	3	3	26	68
Using technology to enhance instruction	31	0	0	6	26	68
Using innovative curriculum and instructional materials	31	0	0	6	19	74
Incorporating real world applications	30	0	0	3	30	67
Providing challenging, non-routine tasks or problems	32	0	0	3	16	81
Differentiating instruction based on student readiness, interest, or learning profile	29	0	0	10	45	45
Differentiating instruction based on students' language proficiency or other special needs	28	0	0	7	54	39
Designing informative student assessments	31	0	0	0	29	71
Organizing students to work together	31	0	3	0	26	71
Using productive questioning and discussion techniques	32	0	3	6	22	69
Motivating students to learn	32	0	3	3	28	66
Raising students' mathematics or science achievement	30	0	0	7	33	60
Raising students' interest in or motivation for learning mathematics or science	31	0	0	6	26	68
Reflecting on and improving teaching	32	0	0	3	16	81
Participating as a colleague in a professional community	32	0	0	0	25	75
Growing and developing professionally	32	0	0	0	19	81
Demonstrating commitment to teaching	32	0	0	0	13	88
Building positive relationships with other teachers	32	0	0	6	28	66
Building positive relationships with administrators	32	0	0	3	28	69
Serving as a role model for students	32	0	0	3	16	81

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate."

Table C-9
School Leader Ratings of Fellows on Various Aspects of Classroom Teaching: 2009 and Later

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Demonstrating knowledge of the content and discipline s/he teaches	80	0	0	4	9	88
Demonstrating knowledge of how to teach the content to his/her students	81	2	0	7	37	53
Demonstrating knowledge of his/her students' interests, skills and knowledge	81	0	5	6	38	51
Using technology to enhance instruction	80	0	4	9	39	49
Using innovative curriculum and instructional materials	81	1	4	7	31	57
Incorporating real world applications	81	0	2	10	31	57
Providing challenging, non-routine tasks or problems	81	0	2	7	31	59
Differentiating instruction based on student readiness, interest, or learning profile	80	0	3	18	39	41
Differentiating instruction based on students' language proficiency or other special needs	67	0	6	21	40	33
Designing informative student assessments	78	1	1	8	46	44
Organizing students to work together	80	0	4	5	24	68
Using productive questioning and discussion techniques	80	0	1	6	34	59
Motivating students to learn	81	1	5	4	44	46
Raising students' mathematics or science achievement	73	1	3	7	36	53
Raising students' interest in or motivation for learning mathematics or science	75	1	4	4	44	45
Reflecting on and improving teaching	81	0	0	4	20	77
Participating as a colleague in a professional community	81	0	0	1	20	79
Growing and developing professionally	81	0	0	5	16	79
Demonstrating commitment to teaching	81	0	0	4	9	88
Building positive relationships with other teachers	81	0	1	5	22	72
Building positive relationships with administrators	81	0	0	4	26	70
Serving as a role model for students	81	0	2	4	20	74

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate."

Table C-10
School Leader Familiarity with Fellow's Work Outside the Classroom

	Percent of Respondents	
	2008 and Earlier (N=32)	2009 and Later (N=81)
[1 of 5] Not at All	6	2
[2 of 5]	6	17
[3 of 5] Somewhat	47	52
[4 of 5]	31	23
[5 of 5] To a great extent	9	5

Table C-11
School Leader Ratings of Fellows on Various Aspects of Teacher Leadership: 2008 and Earlier

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Serving as a formal coach or mentor to other teachers	27	0	0	7	56	37
Designing curriculum/instructional materials	31	0	0	6	39	55
Leading or facilitating teacher study groups	27	0	0	7	48	44
Observing other teachers and providing feedback	25	0	0	20	32	48
Serving on school/district committees	27	0	0	15	22	63
Leading or facilitating professional development workshops or seminars for other teachers	21	0	0	19	33	48
Serving as an informal resource to other teachers in your school or district	29	0	0	7	24	69
Sharing ideas or resources from KSTF experiences with other teachers in your school or district	24	0	0	0	46	54

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate." The total number of school leaders who responded to this series is 31.

Table C-12
School Leader Ratings of Fellows on Various Aspects of Teacher Leadership: 2009 and Later

	N [†]	Percent of Respondents				
		Inadequate			Outstanding	
		1	2	3	4	5
Serving as a formal coach or mentor to other teachers	50	4	4	18	36	38
Designing curriculum/instructional materials	76	1	0	9	53	37
Leading or facilitating teacher study groups	54	2	4	15	43	37
Observing other teachers and providing feedback	48	0	6	19	50	25
Serving on school/district committees	61	2	5	16	36	41
Leading or facilitating professional development workshops or seminars for other teachers	44	5	0	20	32	43
Serving as an informal resource to other teachers in your school or district	73	1	1	11	34	52
Sharing ideas or resources from KSTF experiences with other teachers in your school or district	62	0	5	6	48	40

[†]The number of cases varies because of the different number of school leaders selecting "Cannot Rate." The total number of school leaders who responded to this series is 81.

Table C-13
School Leader Overall Ratings of Fellows as Classroom Teachers[†]

	Percent of Respondents	
	2008 and Earlier (N=31)	2009 and Later (N=81)
Poor (Bottom 25%)	0	2
Fair (Top 75%)	0	4
Good (Top 50%)	6	9
Very Good (Top 25%)	26	31
Exceptional (Top 5%)	68	54

[†]No respondents selected "Very Poor (Bottom 5%)."

Table C-14
School Leader Overall Ratings of Fellows as Professional Colleagues[†]

	Percent of Respondents	
	2008 and Earlier (N=31)	2009 and Later (N=81)
Poor (Bottom 25%)	0	0
Fair (Top 75%)	0	2
Good (Top 50%)	6	5
Very Good (Top 25%)	42	40
Exceptional (Top 5%)	52	53

[†]No respondents selected "Very Poor (Bottom 5%)."

Table C-15
School Leader Overall Ratings of Fellows as Teacher Leaders^{†,‡}

	Percent of Respondents	
	2008 and Earlier (N=31)	2009 and Later (N=74)
Poor (Bottom 25%)	0	0
Fair (Top 75%)	3	7
Good (Top 50%)	10	15
Very Good (Top 25%)	52	43
Exceptional (Top 5%)	35	35

[†]No respondents selected "Very Poor (Bottom 5%)."
[‡]School leaders selecting "Cannot Rate" are not represented in this table. The total number of school leaders who responded to this series is 112.

Table C-16
School Leader Confidence in Rating

	Percent of Respondents	
	2008 and Earlier (N=31)	2009 and Later (N=81)
Not at all	0	0
Weakly	0	1
Somewhat	3	1
Mostly	16	27
Very	81	70

Table C-17
Data Sources School Leaders Considered in Making Their Ratings: 2008 and Earlier

	Percent of Respondents (N=31)				
	Not at all		Somewhat		To a great extent
	1	2	3	4	5
Student work	3	3	13	58	23
Student performance on state tests	26	13	23	29	10
Average student growth on state tests (value added measures or growth percentiles)	32	16	16	26	10
Performance on other tasks for the school (committees, coaching, etc.)	0	0	13	42	45
Feedback from parents	0	3	16	58	23
Feedback from other teachers	0	0	19	48	32
Feedback from other administrators	3	0	10	52	35
Materials submitted as part of annual performance review or other teacher portfolio	16	16	29	16	23
Classroom observation	0	0	3	32	65

Table C-18
Data Sources School Leaders Considered in Making Their Ratings: 2009 and Later

	Percent of Respondents (N=81)				
	Not at all		Somewhat		To a great extent
	1	2	3	4	5
Student work	2	0	27	43	27
Student performance on state tests	46	5	14	22	14
Average student growth on state tests (value added measures or growth percentiles)	53	2	17	16	11
Performance on other tasks for the school (committees, coaching, etc.)	7	2	11	44	35
Feedback from parents	20	1	22	30	27
Feedback from other teachers	6	0	20	35	40
Feedback from other administrators	5	1	14	37	43
Materials submitted as part of annual performance review or other teacher portfolio	26	4	14	35	22
Classroom observation	0	0	4	20	77

ABOUT KSTF

The Knowles Science Teaching Foundation (KSTF) was established by Janet H. and C. Harry Knowles in 1999 to increase the number of high quality high school science and mathematics teachers and ultimately, improve math and science education in the United States. KSTF operates three programs that build national capacity for improving STEM teaching, leading, and learning: Teaching Fellows, Senior Fellows, and Research & Evaluation. To date, KSTF has supported more than 250 Fellows in 42 states.

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