



SMU | ANNETTE CALDWELL SIMMONS
SCHOOL OF EDUCATION & HUMAN DEVELOPMENT

RESEARCH IN MATHEMATICS EDUCATION

STEM Academy for Science Teachers and Leaders: Participation Interest Survey February 2018

RESEARCH IN
MATHEMATICS
EDUCATION

STEM Academy for Science Teachers and Leaders: Participation Interest Survey February 2018

Elizabeth Lynn Adams • Cassandra Hatfield • Leanne R. Ketterlin-Geller
Southern Methodist University

Spring 2018

Published by

Southern Methodist University
Department of Education Policy & Leadership
Simmons School of Education & Human Development
PO Box 750114
Dallas, TX 75275-0114
Contact information: rme@smu.edu

This research was supported by The Texas Instruments Foundation; GT00317. Opinions expressed herein do not necessarily reflect those of The Texas Instrument Foundation or individuals within.

Copyright © 2018. Southern Methodist University. All rights reserved. This publication, or parts thereof, may not be used or reproduced in any manner without written permission.

SMU will not discriminate in any employment practice, education program or educational activity on the basis of race, color, religion, national origin, sex, age, disability or veteran status.

ii This report is for internal use only. Please contact lkgeller@smu.edu before sharing.

This document is available in alternative formats upon request.

Abstract

The STEM Academy for Science Teachers and Leaders program is designed to impact 70 percent of middle school science teachers in Dallas ISD by the third year of implementation (Perry et al., 2017). After meeting program goals for recruitment in Year 1, the program experienced challenges during recruitment in Year 2. A need existed to identify teachers' and school leaders' perceptions when deciding whether to participate in the program. In response to this need, middle school science teachers and school leaders took a survey measuring their knowledge of and engagement in the program's recruitment process. Results indicated that almost half of teachers (41%) were not aware of the program. For teachers who were aware of the program, half of teachers already had master's degrees or were currently enrolled in a master's degree program (50%), suggesting that course credit was not an effective incentive for participation. These findings informed changes to the communication strategy and incentives included in the recruitment plan and the program more broadly. Only 17 science teachers from 16 of 40 middle schools completed this survey; therefore, these findings are not generalizable to all other middle school science teachers in the school district, but rather represent a subset of teachers' perceptions.

Table of Contents

Overview of the STEM Academy for Teachers and Leaders Project	1
Method	2
Participants	3
Results	4
Informational Recruitment Video	4
Letter of Intent	4
Factors Contributing to Teachers' Decision About Participation	4
Conclusion	7
References	9
Appendix A – Teacher and Leader Interest Survey	10

STEM Academy for Science Teachers and Leaders: Participation Interest Survey February 2018

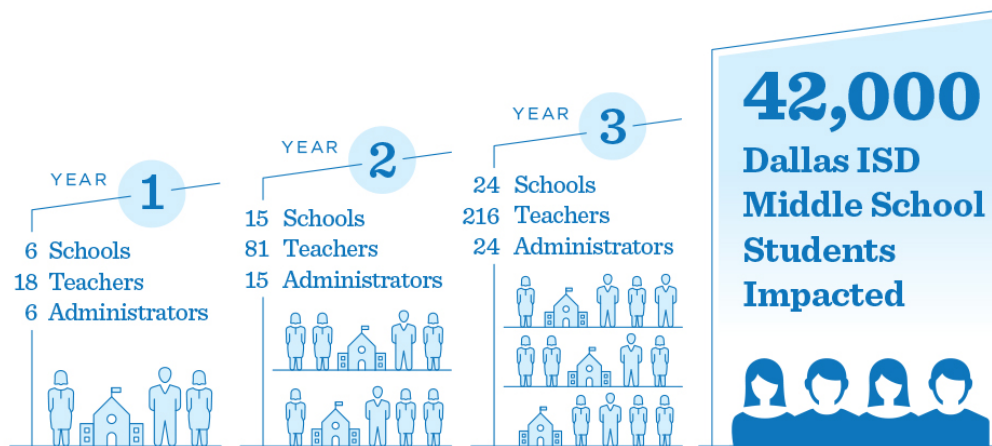
Overview of the STEM Academy for Science Teachers and Leaders

The STEM Academy for Science Teachers and Leaders program is the result of a collaborative effort between Southern Methodist University (SMU), Dallas Independent School District (Dallas ISD), the Texas Instruments Foundation, and the O'Donnell Foundation. The program was designed to foster comprehensive school reform, in that program participation required a commitment from the majority of the teachers on the grade-level team, as well as a school leader. The critical components of the program include a summer academy with face-to-face and online coursework and ongoing coaching throughout the school year. The program focuses on inquiry-based instruction, defined as active learning strategies to support student learning (NRC, 2012). The program is designed to strengthen middle school science teachers in:

- Inquiry-based instructional strategies,
- Science content knowledge,
- Understanding and implementation of the scientific process standards, and
- Utilization of differentiation strategies for students (Perry, Jungman Reeder, Brattain, Hatfield, & Ketterlin-Geller, 2017).

The program is intended to impact 70 percent of middle school science teachers in Dallas ISD by the third year of implementation (Perry et al., 2017). This goal requires successful recruitment and retention of school leaders and teachers across the school district. The recruitment goals for the program are depicted in Figure 1. The primary incentive for teacher and leader participation is academic course credit from SMU.

Figure 1. Recruitment Goals Across Years for the STEM Academy for Science Teachers and Leaders



During Year 1, the goal was for 18 teachers and six school leaders at six schools to participate in the program. The program was able to successfully recruit 16 teachers (89% of goal) and six school leaders at six middle schools. These teachers' and school leaders' participation will be ongoing for a total of three years. One teacher withdrew from the program during the first year.

Initially, during Year 2, the goal was to enroll 81 teachers and 15 administrators at 15 schools in the program. Based on participation from the previous year, the modified goal was to enroll 78 teachers. These counts include: (a) the 15 persisting Year 1 teachers and 6 Year 1 school leaders, (b) 36 additional Grades 6 and 7 science teachers at the six *previously participating* middle schools, (c) 27 Grade 8 science teachers at nine *new* middle schools, and (d) nine school leaders at nine *new* middle schools.

The recruitment plan for the STEM Academy was multi-faceted (see Appendix A for a graphic depicting the recruitment plan). In fall 2017, SMU and Dallas ISD presented an overview of the program to school principals. In January 2018, SMU distributed an informational video about the STEM Academy. Teachers and school leaders were encouraged to have a viewing party, during which they watched the informational video as a group. SMU and Dallas ISD staff then hosted an informational session for school leaders about the STEM Academy. Finally, school leaders were encouraged to ask teachers to sign a letter of intent, indicating their commitment to participate in the Academy, and submit this letter to SMU.

The goal of the recruitment efforts was to: (a) ensure continued commitment from the *six* already participating schools and (b) recruit *nine* new schools. SMU and Dallas ISD staff executed the following recruitment strategies: (1) SMU staff presented an overview of the program to middle school principals; then (2) SMU and Dallas ISD staff disseminated an informational video and frequently asked questions to school leadership (i.e., executive directors, middle school principals, and campus instructional coaches) via email at regular intervals during a four-week time period; and (3) SMU and Dallas ISD offered a follow-up information session after school hours. SMU received letters of intent from all six of the already participating schools and one new school that fully met the requirements for participation (8 fewer schools than anticipated). After extending the due date for letters of intent, no additional schools fully met the requirements for participation.

Method

A team at SMU developed a survey designed to understand how educators progress toward making a decision about participate in the STEM Academy for Science Teachers and Leaders (see Appendix B for the survey items). The items on the survey elicited feedback on the following aspects of recruitment:

- Types of emails and other communications received about the STEM Academy
- If and how the STEM Academy informational recruitment video was viewed
- If teachers had been asked to sign a letter of intent indicating their commitment to participate in the STEM Academy
- The factors contributing to their decision about participation in the STEM Academy

The survey was formatted in Qualtrics (Qualtrics, 2017). The Dallas ISD STEM Science Director sent the survey to middle school science teachers and principals in Dallas ISD via email on Friday, February 2, 2018 at approximately 6:00 AM.

Participants

The purpose of this survey is to understand the perceptions of teachers and leaders who would be considering entering the program for the first time. Seventeen middle school teachers, who were not already participating in the program, took the survey. The schools and grade levels of the 17 teachers are displayed in Table 1. Some teachers taught multiple grades. The majority of participating teachers taught Grades 7 or 8. Participating teachers represented 16 different middle schools. School names were removed to protect teacher confidentiality.

Table 1. Schools and Grades for Teachers Who Participated in the Survey (n=17)

School	Total	Grade 6	Grade 7	Grade 8
School A	1	0	0	1
School B	1	0	1	0
School C	1	1	1	0
School D	1	0	1	0
School E	1	0	1	1
School F	1	0	1	1
School G	1	0	1	1
School H	1	0	0	1
School I	1	0	1	1
School J	1	0	0	0
School K	1	0	1	1
School L	1	0	1	0
School M	1	1	0	0
School N	1	0	0	1
School O	2	1	1	1
School P	1	0	0	1
Total	17	3	10	10

Note: Grade level was missing for one teacher.

Results

Teachers' responses to the survey items are summarized in this section by topic.

Informational Recruitment Video

Of those 17 teachers, 71% (n=12) had not watched the STEM Academy Informational Video. Those 12 teachers described the communication that they had received, depicted in Table 2.

Table 2. Communication Received by Teachers Who Had Not Watched the Video (n=12)

Communication	Frequency
None	7 (58%)
Received an email	3 (25%)
Communication from instructional coach and participating teachers	1 (8%)
Not sure	1 (8%)

Table 2 shows that the majority of teachers (58%) had not received communication about the STEM Academy. Of the five teachers who watched the informational video, only one teacher watched the video as intended with her team and administrator/leader. The other four teachers watched the video individually.

Letter of Intent

Thirty-five percent of the teachers (n=6) reported that their principal had asked them to sign the program's letter of intent. The other 65% of teachers (n=11) reported that they had not been asked to sign the letter of intent. Therefore, the majority of teachers had neither seen nor been asked to sign the letter of intent by the school principal.

Factors Contributing to Teachers' Decision About Participation

Eleven teachers (63%) responded about the extent to which factors contributed to their decision to participate. Teachers' responses are depicted in Table 3. The stem to this item read, "If you are not participating in the STEM Academy for Teachers and Leaders, what factors influenced your decision?"

The columns on the left side of Table 3 include three teachers who were not aware of the program. The columns on the right side of Table 3 display the factors that contributed to teachers' decision after excluding the three responding teachers who were not aware of the program.

Table 3. Factors Contributing to Teachers' Decision to Participate (n=11)

Factor	Including All Responding Teachers (n=11)					Including Only Teachers who had Heard of the Program (n=8)				
	Did not Influence	Influenced a little	Moderately Influenced	Highly Influenced	n	Did not Influence	Influenced a little	Moderately Influenced	Highly Influenced	n
Other graduate programs	4 (40%)	1 (10%)	0 (0%)	5 (50%)	10 (100%)	3 (38%)	1 (13%)	0 (0%)	4 (50%)	8 (100%)
Time commitment	5 (45%)	0 (0%)	1 (9%)	5 (45%)	11 (100%)	3 (38%)	0 (0%)	1 (13%)	4 (50%)	8 (100%)
Commitment requirement for 2/3 of the team	3 (27%)	2 (18%)	1 (9%)	5 (45%)	11 (100%)	2 (25%)	2 (25%)	1 (13%)	3 (38%)	8 (100%)
Unanswered questions	6 (67%)	2 (22%)	0 (0%)	1 (11%)	9 (100%)	4 (57%)	2 (29%)	0 (0%)	1 (14%)	7 (100%)
Participation incentive (i.e., graduate credit)	5 (50%)	1 (10%)	1 (10%)	3 (30%)	10 (100%)	4 (57%)	1 (14%)	1 (14%)	1 (14%)	7 (100%)
Child care	8 (89%)	0 (0%)	0 (0%)	1 (11%)	9 (100%)	7 (100%)	0 (0%)	0 (0%)	0 (0%)	7 (100%)
Program's focus/content	6 (60%)	1 (10%)	1 (10%)	2 (20%)	10 (100%)	5 (71%)	1 (14%)	1 (14%)	0 (0%)	7 (100%)
Other summer employment	6 (55%)	1 (9%)	1 (9%)	3 (27%)	11 (100%)	5 (63%)	1 (13%)	1 (13%)	1 (13%)	8 (100%)
Other professional development	6 (60%)	1 (10%)	1 (10%)	2 (20%)	10 (100%)	5 (71%)	1 (14%)	1 (14%)	0 (0%)	7 (100%)

Four teachers reported that other factors contributed to their decision to participate including: (a) two teachers were not aware of the program; (b) one teacher already has a master's degree from SMU's Accelerated Leadership Program; (c) one teacher ran out of time to apply for the program; and (d) one teacher had summer travel plans.

Table 3 shows that the three factors that contributed the most to teachers’ decision to not participate included: (a) enrollment in other graduate programs, (b) time commitment, and (c) the program’s commitment requirement for 2/3 of the grade-level science team.

Individual responses for teachers who rated these factors as highly or moderately influencing their decision were examined. Only teachers who had heard of the program were included in this examination. Teachers’ responses are depicted in Table 4.

Table 4. Leading Factors Influencing Teachers’ Decision to Not Participate

	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5	Teacher 6	Teacher 7
Other graduate programs	Highly influenced	Influenced a little	Did not influence	Highly influenced	Did not influence	Highly influenced	Highly influenced
Time commitment	Highly influenced	Highly influenced	Highly influenced	Highly influenced	Did not influence	Moderately influenced	Did not influence
Commitment requirement for 2/3 of the team	Highly influenced	Influenced a little	Highly influenced	Influenced a little	Highly influenced	Moderately influenced	Did not influence
Participation incentive (i.e., graduate credit)	[Missing]	Highly influenced	Did not influence	Moderately influenced	[Missing]	Influenced a little	Did not influence

Note: Darker blue indicates more influence.

Three other interesting patterns were noted in teachers’ responses:

- One teacher reported that none of the factors influenced her decision to not participate; she simply ran out of time to apply.
- Eight of the 17 teachers (52%) already earned a Master’s degree or were currently enrolled in other master’s programs.
- Three of 15 teachers (20%) reported participating in another schoolwide professional development effort.

Table 5. Teacher Recommendations to Increase Interest in the STEM Academy

Teacher Recommendation	Frequency
Need to email teachers directly (e.g., “Email teachers at ALL schools. I want to participate [every] year! I love to learn!”)	4
Change incentive (e.g., “financial incentive in place of master’s degree”)	2
Change participation criteria (“allow 2/3 of the science department instead of grade level”)	1
More time (“I knew for a week and then the deadline hit”)	1
Later commitment date (“Cannot make a summer commitment now due to unresolved summer travel plans. Would like the option to commit later in the Spring.”)	1
Meeting location (“Going to SMU is a big commitment”)	1

Overall, teachers reported a need to access information about the STEM Academy. These findings informed policy decisions as summarized in the next section.

Conclusion

The main findings of this report suggest that the majority of teachers were influenced in their decision-making by:

- Lack of effective communications about the program,
- An incentive that didn’t meet their needs – a majority of teachers already had a master’s degree or are currently enrolled in a master’s program, and
- That the commitment requirement from 2/3 of the science team was a barrier for participation.

SMU and Dallas ISD discussed several alternative teacher incentives for program participation. After meeting with the Texas Instruments Foundation, funds were allocated for teachers to receive a \$1,000 stipend in addition to course credit. This stipend was designed to compensate teachers for the 70 hours of face-to-face coursework on the SMU campus in the summer. This decision to provide a teacher stipend was designed to incentivize teacher participation for teachers who already held a master’s degree or were currently enrolled in a master’s program.

In addition, SMU and Dallas ISD tailored the communication plan to meet the needs of teachers and leaders in the district. The informational video and frequently asked questions document were updated by SMU staff. Whereas previous communications were distributed to the principals and campus instructional coaches only, information about the new incentive was communicated directly to the teachers via email. Principals and campus instructional coaches were copied on the communications. SMU staff also made personal phone calls and sent

individual emails to principals, assistant principals, campus instructional coaches, and teachers who signed the letter of intent.

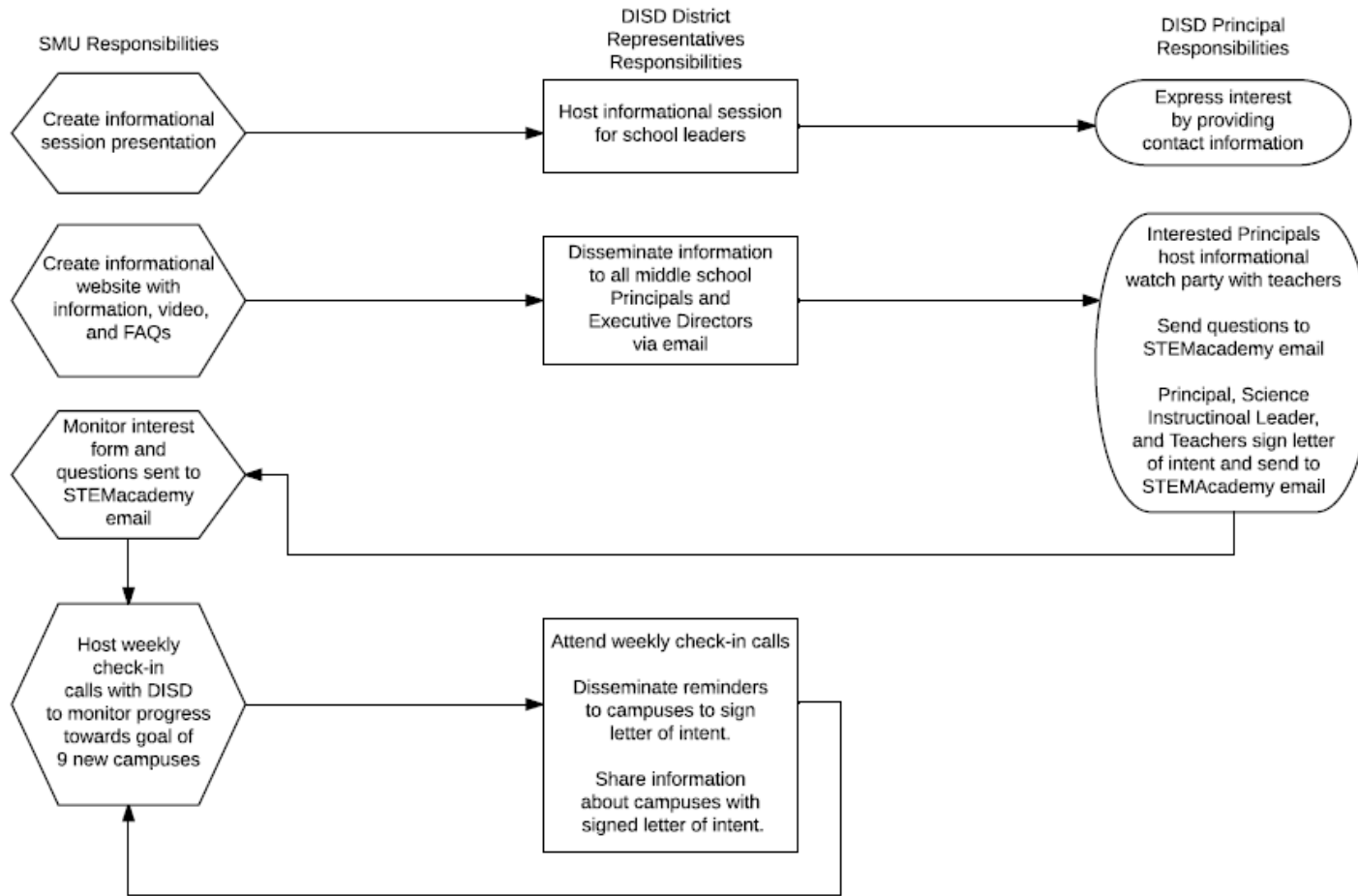
In summary, although only a small number of teachers completed the survey and their responses likely do not represent all teachers' perceptions in Dallas ISD, the teacher responses highlighted areas of critical need in the communication plan and the incentives offered by the program. The STEM Academy was very successful in retaining teachers once they committed to participating (only one teacher withdrew); however, it is critical that as the program expands to include more teachers and schools that the incentives and communication strategy is relevant and effective in recruiting teachers. Because the 17 teachers' responses included in this report only represent a small subset of the full population of middle school teachers ($n > 200$), the generalizations made from these data are limited in that they are biased toward those who completed the survey and do not reflect the perceptions of the full population of science teachers. Given these limitations, changes based on the findings in this report should be monitored carefully in order to ensure the desired outcomes.

References

National Research Council. (2012). *A Framework for K-12 Science Education*. The National Academies Press: Washington, D.C.

Perry, L., Jungman Reeder, M., Brattain, K., Hatfield, C., & Ketterlin-Geller, L. R. (2017). *STEM Academy for Teachers and Leaders: 2017 Academy Evaluation*. Report prepared by Research in Mathematics Education. Dallas, TX: Southern Methodist University.

Appendix A – STEM Academy for Science Teachers and Leaders Recruitment Plan



Appendix B – Teacher and Leader Interest Survey

Thank you so much for completing this survey. The purpose of this survey is to understand where you and your school are in the process of engaging in the STEM Academy for Science Teachers and Leaders. This information will help us better understand the opportunities associated with the program.

What is your role at your school?

Please describe your role at your school.

What is your school name?

What is your name?

What is your email address?

What is your phone number?

Is your school participating in the STEM Academy for Science Teachers and Leaders?

Please explain what communication if any you have received regarding the STEM Academy for Teachers and Leaders.

Did you do the following with the **program informational video**?

	Yes	No
Personally watched	<input type="radio"/>	<input type="radio"/>
Watched with other teachers	<input type="radio"/>	<input type="radio"/>
Watched with others including a school leader (e.g., CIC, AP)	<input type="radio"/>	<input type="radio"/>

Have you been asked to commit to the STEM Academy using the **letter of intent**?

Yes

No

If you are not participating in the STEM Academy for Teachers and Leaders, what factors influenced your decision?

	Did not influence	Influenced a little	Moderately influenced	Highly influenced
Time commitment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unanswered questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participation incentive (i.e., graduate credit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Child care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Program's focus/content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commitment requirement for 2/3 of team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other summer employment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other graduate programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other professional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are you currently enrolled or have you previously completed a master's program?

Where are you enrolled or where and when did you complete your master's degree?

Is your science department already participating in a campus-wide (not district-wide) science professional development program?

What program(s) are you participating in and with which organization/institution?

What program(s) are they participating in and with which organization/institution?

What recommendations do you have for us to help us increase interest from teachers in the STEM Academy for Science Teachers and Leaders?

Thank you for responding to our survey. For more information about the program please go to our [webpage](#) or email STEMacademy@smu.edu.