

Supplemental Material

CBE—Life Sciences Education

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SUPPLEMENTAL MATERIAL

2017 CSU Dean SFES Interview Protocol for 10-year CSU SFES Follow-up Study

- 30-minute interview protocol
- Two interviewers

Driving Research Questions

- **SFES Awareness:** Have deans heard of the SFES term and phenomenon? If so, where?
- **Current State of SFES:** How many SFES do individual deans report on their campus? How well do dean reports match other lists of CSU SFES?
- **SFES Origins:** What motivations do deans report for hiring, retaining, and supporting CSU SFES positions?
- **SFES Change Over Time:** For those deans that were in the CSU in 2007, how has the SFES phenomenon changed over time? If so, why? If not, why not?

1. Preamble (2 minutes)

- Hello, this is [Interviewer 1 name], from [campus], and I'm calling to conduct the brief interview about SFES (or "CSU faculty"?) that we've arranged with [Dean's name]. Is this [Dean's name]? <If dean's asst. answers and redirects to dean, then that will likely need to be repeated for dean> Thanks so much for talking with us today, [Dean's name]!
- There are two of us on the call today... Again, my name is [Interviewer 1 name], and I'm in the [science] department at [university name]...And I'm joined by my research colleague who will introduce her/himself... ([Interviewer 2] introduces her/himself).
- As a reminder, we have two folks on the call today to make sure we understand as much as possible about your perspectives on the Science Faculty with Education Specialties (SFES) phenomenon on your campus that we described in our previous email. By way of reminder, SFES are education specialists hired by biology, chemistry, geoscience, and physics departments to influence K-12 education, impact undergraduate science education, and conduct science education research.
- So that we can go back and re-check our understanding, we'd like to record today's conversation, which would only be used internally and would never be shared publicly or associated with your name or institution. Can we turn the recorder on now?
- We sincerely appreciate your time, and realize that 30 minutes will not be enough to learn all that we could learn from you, but we thank you for this time.
- We have 4 main questions we'd like to explore with you.
- You've already read and signed a copy of the Informed Consent document. Do you have any clarifying questions for us before we get started?
- So, are we ready to get started?

2. Current Awareness of SFES (3 minutes)

- **Had you heard the term SFES before we contacted you for this interview? If so,**

where did you hear about SFES?

Potential Follow-up Questions...

1. If a fellow CSU dean asked you what an SFES was, how might you explain it to them?

3. Current State of SFES on their CSU Campus (5 minutes)

- **When you think of SFES on your campus who comes to mind, and why? And roughly how many SFES would you estimate are in science departments on your campus?**

Potential Follow-up Questions...

1. In what specific departments did the first SFES emerge?
2. What departments have the most recent SFES hires?
3. Which if any of your departments have multiple SFES?
4. How aware of SFES are other faculty and administrators on your campus?

4. Motivations for the creation of SFES positions at this institution (5 minutes)

- **What could you share with us about the reasons SFES have been hired into science departments on your campus?**

Potential Follow-up Questions...

1. What role did administrators like yourself play in the hiring of SFES?
2. On your campus, who has primarily driven the hiring of SFES? Departments? Administrators? Individual faculty?

5. Changes in SFES over the last 10 years on our campus (5 minutes)

- **How, if at all, has the SFES phenomenon changed on your campus over the years, especially the last 10 years, since around 2007?**

Potential Follow-up Questions...

1. Would you say there are more or fewer SFES on your campus today compared to 10 years ago? Or has the number stayed the same?
2. What has driven the changes in the number of SFES on your campus? And the nature of their work?
3. What would you like to see happen with SFES on your campus in the coming years?
4. Who else on your campus would have insights about how the SFES phenomenon on your campus has changed over the last 10 years?

6. Other ideas about SFES that you would like to share (3 minutes)

- **What else would you like to share with us about SFES on your campus?**

7. Next steps in the research and sharing results (2 minutes)

1. Share that we are doing a 10-year follow-up survey with CSU SFES to compare with the original description of CSU SFES in the 2008 *Science* publication.

SM Table 1. Additional quotes from deans, organized by research question and relevant text from Results.

<p>Research question 1: To what extent are deans aware of the SFES phenomenon?</p> <p>Deans across the CSU system were generally aware of the SFES phenomenon, if not the specific term, SFES: Science Faculty with Education Specialties.</p> <ul style="list-style-type: none"> – <i>“We’ll we’ve used the term. I had not heard it before I came to the CSU, although I was familiar with the concept” – Dean 112</i> – <i>“I don’t know if I’ve ever heard that exact term before ... I think we just call them pedagogy specialists.” – Dean 128</i> <p>In some cases, the deans’ positive impressions of the SFES phenomenon were expressed as aspirations to bring more SFES to their campus in the future, as evidenced in the quote below.</p> <ul style="list-style-type: none"> – <i>“I think we would really like to see more hiring in this area across the college. We’d like to see, for example, somebody in each department with this kind of expertise.” – Dean 135</i>
<p>Research question 2: How do deans conceptualize SFES?</p> <p>SFES as card-carrying scientists: Deans repeatedly described SFES as scientists with PhD-level training in their science discipline and commonly linked their scientific credentials and research training with the level of respect, credibility, and influence that SFES were likely to garner from fellow science faculty:</p> <ul style="list-style-type: none"> – <i>“I think part of the success [at this campus] has been that they’re not always specialists. They’re card-carrying [scientists] like everybody else, and I think that actually influences how faculty view them and how much respect they get.” – Dean 139</i> <p>Concerns about perceived lower status: Multiple deans acknowledged that cultural acceptance of SFES and discipline-based science education as legitimate scholarly activity within the science disciplines varied not only across campuses but also across disciplinary departments on a single campus, often taking pride in their community’s inclusion of SFES and science education in their science discipline.</p> <ul style="list-style-type: none"> – <i>“I think the faculty [on this campus] are much more open-minded about a member of their department having different kinds of expertise than they have and working in pedagogy, which is really more of a social science than a science in many ways. They’re more open-minded, more accepting, and more interested in that than on my other campus.” – Dean 139</i> <p>Status differentials between education and science: Many deans explicitly acknowledged or implicitly evidenced deficit stances towards education as a discipline, which appeared to influence their conceptualizations of SFES and their professional efforts.</p> <ul style="list-style-type: none"> – <i>“One of the concerns that we have around SFES, I think is that these faculty with this expertise will not be able to teach at the upper division in their department. And, we have had such a shortage of faculty that everyone sort of wears every single hat in the department. And so, you can’t have someone who can only teach at the lower</i>

division, for example.” - Dean 149

Research question 3: What are deans’ perceptions of SFES Impacts?

Some deans saw SFES impacts on their campus as going far beyond individual efforts and moving towards being leaders, change agents, and culture changers.

- *“The fact is that people who are in this [SFES] role on this campus have proceeded through their careers and been able to be successful. I think that they’re seen as leaders on this campus. They’re go-to people.” – Dean 109*

Research question 4: What are deans’ perceptions about the motivations for inclusion of SFES in science departments?

Money as a motivator for SFES inclusion: When probed about their perceptions of what motivated SFES hiring by science departments on their campus, the most prevalent reason offered by CSU deans was the ability of SFES to bring grant monies to their campus, as evidenced below.

- *“I think first off that there were some [SFES] who were hired who do this who have been seen as being successful ... that success probably gets amplified by the fact that they were able to be funded, which I think in the CSU (and on this campus) probably speaks even higher volumes than at other institutions. Because relatively speaking, less people are funded. And so I think that that creates immediate leverage for people who are in administrative roles to say that [hiring SFES] is an advantage.” – Dean 109*

Policy mandates as an additional driver for SFES inclusion: In addition to extensive evidence that available grant monies in science education and the likelihood of SFES bringing resources to campus was a key driver in SFES hiring, deans also referenced a variety of institutional, regional, and CSU-wide policies as influential in decisions about hiring SFES into science departments.

- *“Right now we’ve just gone crazy over this Graduation Initiative 2025. We have these absurd goals for retention and graduation... this is where all the money is now. This is where all the talk is.” – Dean 120*

Central role of departments in SFES inclusion: While there was variability across campuses, science department faculty themselves were often credited by deans as driving requests for SFES hiring within their own departments, often after much conversation and resolution of skepticism about these types of faculty positions.

- *“Well, the last [SFES hires] were all hires the departments forwarded to me as the interim dean that I convinced upper administration to go ahead and search for. That was it. Other than meeting with the candidates and making offers, I really didn’t have much in the way of input ... I’ve never seen where a dean or a provost has had much in the way of input. We might give you a ranking of candidates or something, but when it comes down to it, the actual decision is up to the department.” – Dean 148*

Research question 5: How do deans perceive the evolution of the SFES phenomenon over the last decade?

When probed about changes in the number of SFES on their campus over the last decade, the majority of deans reported increased or similar numbers of SFES on their campus.

- *“I think that over the period that I was dean, there was certainly a significant increase [in SFES] ... My hope would be that each of the science departments would have at least one person, that there would be that critical mass, and that [my institution] would*

really embrace some of the pedagogical changes that could make a difference ...” – Dean 126

In reflecting on the evolution of the SFES phenomenon over time, several deans raised the importance of critical mass of SFES on a campus, as evidenced in the statement below.

- *“I think it comes down to critical mass in terms of bodies, and there's also critical mass in terms of thinking ... you can see demonstrably the places where there have been people who would identify in these roles. You can see that the language and the thinking by the other colleagues is different. That's why I brought up the concept of critical mass. I think it comes down in terms of the visibility and the celebration of the folks who do this work.” – Dean 109*