

**Report on a TRESTLE External Evaluation Visit to the University of Colorado Boulder
National Center for Higher Education Management Systems (NCHEMS)**

December 7, 2018

Report Authors: Peter Ewell and Sarah Torres Lugo

This report addresses findings from an External Evaluation visit to the University of Colorado Boulder (CU Boulder) as part of the NSF funded TRESTLE project. The visit took place on September 24-26, 2018 and was conducted by Peter Ewell and Sarah Torres Lugo of the National Center for Higher Education Management Systems (NCHEMS), which is serving as the external evaluation organization for the TRESTLE project.

Peter Ewell, Rachel Christeson, and Sarah Torres Lugo of NCHEMS worked with CU Boulder TRESTLE PI Stephanie Chasteen to identify interviewees. Stephanie provided background information on potential interviewees detailing their involvement and her thoughts on what areas they might be able to speak to. Peter, Rachel, and Sarah drafted interview protocols—one for administrators, one for awardees, one for the PI, one for Scholars Facilitators, and one for Scholars participants. Stephanie provided feedback and the protocols were revised. All interview protocols are included as part of the Appendix for this report.

During the visit, Stephanie introduced all but two interviewees to Peter and Sarah. Noah Finkelstein introduced Peter and Sarah to the interviewees when Stephanie was not available for the introduction. Introductions included why Stephanie thought we should speak with the interviewee and the purpose of the interview. Peter then gave an assurance of confidentiality and Stephanie exited the room.

Findings of the visit, together with associated recommendations, are provided under appropriate headings in the sections that follow. Recommendations are summarized in a final section of the report.

- Benefits of TRESTLE Participation for CU-Boulder. Interviews confirmed a number of positive benefits of participating in TRESTLE activities at CU-Boulder. Interviewees first noted that TRESTLE helped build a sense of community among participants and allowed them to learn where to locate and contact others on campus interested in course redesign and improving teaching and learning. A second noted benefit was the additional resources that TRESTLE provided, directly through course redesign grants and indirectly through associated convenings. Third, participants noted positive impacts on their own personal development as teachers and scholars.

CU-Boulder's participation in TRESTLE helped create needed infrastructure and fiscal support to sustain and further the efforts of previously established initiatives. Interviews suggested that departments and programs had mixed success with previous improvement efforts in science education but welcomed TRESTLE as it began to offer grant support for course redesigns and to convene faculty and staff around improving STEM teaching and learning. Indeed, many of those interviewed could not really distinguish among prior improvement initiatives, seeing them all as on a single continuum of development. Now that TRESTLE grant support is ending, the

university will face new challenges to sustain these activities. But there is no question that TRESTLE was important in doing so over the last four years. *Associated Recommendations:* Continue as before but see the discussion of sustainability below.

- Differential Experiences of Participant Groups. Participants in TRESTLE at CU-Boulder fall into several distinct groups, so it is useful to try to examine the extent to which their experiences differ. Those interviewed included faculty receiving support for course re-design, participants in or leaders of Scholars learning communities, participants in meetings aimed at improved practice (for example, Shared Innovations Discussion Group, or ShInDiG), and administrators. While the number of members of each of these constituent groups who were interviewed during the visit was necessarily limited, some tentative conclusions can be drawn about their differential experiences.

The benefit of the monetary support was mentioned by virtually all recipients of course transformation awards. One of those interviewed mentioned it was good to know seed grants were available. Several also noted the benefits of having access to materials that have been created by others who have participated in TRESTLE. One interviewee noted favorably that TRESTLE seems to have great materials to help people trying to do traditional course transformation and that they probably can be adapted for less traditional course transformation.

The Scholars facilitators interviewed noted professional development as a benefit of serving in this role. One mentioned how experience of facilitating provided a framework for creating a course, interventions, and assessments. Another Scholars facilitator noted that this role expanded her network and gelled knowledge on the topic of the Scholars. This individual also noted that participants have continued to report positive feedback to her regarding their participation. Another Scholars facilitator mentioned a few challenges. In particular, participants were unsure of what the required end product/project would be and so it would be beneficial to lay that out more clearly because that may dissuade potential participants. Also, participants did not always complete assignments and the facilitator was not sure of what to do in those cases; perhaps the MOU could have had more specific content to help navigate such situations.

Scholars participants and facilitators also shared thoughts regarding the disciplines represented by participants in the group. In general, they thought that it was best to encourage the representation of diverse disciplines while discouraging most participants being from one discipline. Also, they felt it was important to highlight commonalities to make collaboration worthwhile. One Scholars participant interviewee discussed the different level of participant expectations because of participants' different level of experience in the specific practice and how this prevented the group from learning together. Another Scholars participant mentioned the benefits of being part of Scholars despite not having applied for a course transformation award.

Turning to ShInDiG, several interviewees mentioned that one of the most valuable aspects of participation are the opportunities for feedback that they might not be getting from their departments in a very welcoming and collaborative environment. One interviewee noted her view that even if TRESTLE as such does not persist moving forward, people's perceptions change even in small, informal, meetings like ShInDiGs.

Associated Recommendations: Continue to monitor the differential experiences of participants in different roles associated with TRESTLE and seek ways to create and/or capitalize on synergies among these experiences.

- Lack of a Campus-wide Center for Teaching and Learning. Interviews strongly suggested that CU-Boulder's participation in TRESTLE (and its efforts to improve teaching and learning more generally) are hampered by the lack of a campus-wide Center for Teaching and Learning. All other institutions that are participating in TRESTLE have such a Center and house TRESTLE activities within it. Despite this, interviewees confirmed that there is a lot going on with respect to such efforts so establishing such an entity would build on existing strength. The difficulty is that these efforts are proceeding independently, which means that they are continually "re-inventing the wheel" and cannot learn from one another. Interviews confirmed that discussions are currently under way at the Provost's level to explore establishing such a Center, but few knew the details of these discussions, or whether they were likely to go anywhere. *Associated Recommendation:* Actively pursue the establishment of a campus-wide Center for Teaching and Learning with the resources and authority to discharge this role effectively.
- Impact of Interaction with TRESTLE Central. Interviews suggested limited, but positive, benefits arising from CU-Boulder participants' interactions with TRESTLE Central at the University of Kansas and with individuals from other TRESTLE campuses. The main contact for most participants was participation in TRESTLE Annual Meetings, especially the meeting that was held at CU-Boulder. At these meetings, many interviewees reported benefiting from seeing other people's course materials and assignments, as well as discussion guides. Teaching demonstration sessions, like those held at the final meeting at KU were also deemed extremely helpful. From an administrative point of view, the CU-Boulder PI reported that relationships with TRESTLE Central at KU were good and that the project was run effectively, especially after the first year when Blair Schneider came on staff as project coordinator. Reporting requirements arising from the need to document activities for the NSF, however, were seen by some course redesign grant recipients as burdensome. *Associated Recommendations:* Find a mechanism to continue the functions of the TRESTLE Annual Meeting, despite the fact that no further such activities are planned. At the same time, critically examine reporting requirements to re-affirm that all in place are actually needed.
- The Role of the CU-Boulder TRESTLE PI. Interviews unanimously affirmed the positive role of the CU-Boulder PI, Stephanie Chasteen, in leading the project and providing advice and resources to sustain its various activities. They reported that Stephanie was clear about expectations, was a

mentor who offered support and guidance, was good at checking in, was responsive, and was not a micromanager. When asked explicitly whether the fact that Stephanie is not a full-time employee of the university hindered her role and authority, virtually all those interviewed reported that they thought she **was** a full-time employee, so no such effects were reported. From the point of view of administrative backing and “clout,” a few interviewees noted that this might be a limitation, but they did not see it as impacting their own relationships with Stephanie as PI. *Associated Recommendation:* No change is urgently needed, but the University should explore ways to make the role of the PI more formally recognized.

- Dissemination of Findings. Interviewers noted multiple avenues for disseminating TRESTLE lessons and recommendations at CU-Boulder including working papers, faculty meetings, and campus-wide meetings like the CSL Symposium. Reactions were mixed, however, to proposals to hold the CSL Symposium more than once per year. Those interviewed strongly supported the Symposium regardless of when it is offered because it provides a regularly scheduled opportunity to get together that would otherwise be extremely difficult to carve out, given the fact that participants are so busy with other activities. *Associated Recommendation:* No substantive change but continue to seek new ways to disseminate TRESTLE lessons and findings.
- Sustainability Beyond Grant Funding. Interviews reflected concerns about sustaining TRESTLE activities at CU-Boulder in the absence of current grant funds. Some suggested “streamlining” TRESTLE activities to enable them to be offered at appropriate scale with institutional resources. Pursuing a centralized approach to teaching/learning improvement efforts such as a campus-wide Center for Teaching and Learning was also seen as aiding sustainability. Other suggestions centered on identifying new revenue, such as the use of course fees to support improvement efforts; some reported that this mechanism is already in place and could be more effectively harnessed. Partnerships and collaborations were also reported as promising avenues for increased sustainability. Some of those interviewed noted existing partnerships with feeder schools such as neighboring community colleges; some productive conversations have taken place with Front Range Community College in this regard, but these have not been well structured or sustained. On campus, a promising potential partner is ASSETT. But the current location of ASSETT in Instructional Technology means that its role is widely perceived as narrowly technical and less related to broad-based improvement of teaching and learning. On the other hand, ASSETT might be a logical permanent place to weave in TRESTLE functions like the Scholars in the absence of project funds. Some conversations between the ASSETT director and TRESTLE PI Stephanie Chasteen have already taken place to explore some of these ideas. *Associated Recommendations:* Continue to explore existing partnerships and streamline TRESTLE activities with an eye toward sustainability; actively reshape the priorities of ASSETT to allow it to absorb appropriate TRESTLE functions, especially in the light of potential establishment of a campus-wide Center for Teaching and Learning.

Taken together, results of the External Evaluation visit suggest that the TRESTLE project is having a positive impact on teaching and learning at CU-Boulder. As grant funding ceases to flow, however, considerable efforts on the part of existing university units will be required to sustain and build upon what has been accomplished.

Summary of Recommendations

- Continue to monitor the differential experiences of participants in different roles associated with TRESTLE and seek ways to create and/or capitalize on synergies among these experiences.
- Actively pursue the establishment of a campus-wide Center for Teaching and Learning with the resources and authority to discharge this role effectively.
- Find a mechanism to continue the functions of the TRESTLE Annual Meeting despite the fact that no further such activities are planned. At the same time, critically examine reporting requirements to re-affirm that all in place are actually needed.
- Explore ways to make the role of the CU-Boulder TRESTLE PI more formally recognized.
- Continue to seek new ways to disseminate TRESTLE lessons and findings.
- Continue to explore existing partnerships and streamline TRESTLE activities with an eye toward sustainability; actively reshape the priorities of ASSETT to allow it to absorb appropriate TRESTLE functions, especially in the light of potential establishment of a campus-wide Center for Teaching and Learning.

Appendix A
Interview Protocols

Questions for PI Interview

[TRESTLE External Evaluation Visit to CU Boulder]

Assurance of Confidentiality. Responses from this interview will only be shared in summary form with TRESTLE leadership and staff at CU-Boulder; verbatim responses will be summarized but will only be seen by the NCHEMS staff members charged with conducting the external evaluation.

Tell us the story of how you got involved in STEM education reform efforts at CU-Boulder.

- What was your background and experience in this area before coming to CU-Boulder?
- What drew you to CU-Boulder? What were you brought here to do? Who recruited you?
- How has your role changed over time? What was added to and subtracted from your responsibilities?
- Are you happy with what you have accomplished? What have been your biggest disappointments?

Describe your past and ongoing relationship with TRESTLE Central at KU.

- Have PI roles and responsibilities been clear?
- Have channels of communication been effective?
- Have expectations for reporting and project management been consistent and realistic?
- In your view, have the seven campus projects been treated equitably and have they made equivalent contributions?
- Anything else about this relationship?

How does TRESTLE/CSL fit in with other efforts to improve teaching and learning at CU-Boulder? Are these efforts well integrated and coherent? In your view, should there be more centralized support and coordination of such efforts?

How can initiatives like TRESTLE be used to promote greater collaboration among STEM programs at CU-Boulder?

What can be done to sustain efforts like TRESTLE to improve STEM teaching and learning for the future? How can CU avoid treating these as just a series of one-time initiatives?

Now that the operational phase of TRESTLE is winding down, what are your specific plans for building on its history. What will you be doing in the next two years?

Questions for Course Transformation Awardee Interviews

[TRESTLE External Evaluation Visit to CU Boulder]

Five awardees were interviewed, two of which were also Scholars participants.

Assurance of Confidentiality. Responses from this interview will only be shared in summary form with TRESTLE leadership and staff at CU-Boulder; verbatim responses will be summarized but will only be seen by the NCHEMS staff members charged with conducting the external evaluation.

Tell us the story of how you obtained your course transformation award.

- How did you first hear about the opportunity?
- Were you previously involved with SEI at CU? If yes, how did this affect the development of your course transformation proposal and subsequent project? Did TRESTLE add anything to your efforts, or to those at CU more generally, after SEI ended?

We have read your narrative reports on what you did to transform the course, but is there anything about the approach that you would like to *especially* highlight? What would be your “elevator speech” about the transformation?

Did you collaborate or talk with others in your program or department who were attempting something similar?

What sort of support did you get from TRESTLE/CSL? What support did you want, or would you want in the future? Did you feel you had the right level of interaction with Stephanie, the PI?

How does TRESTLE/CSL fit in with other efforts to improve teaching and learning at CU-Boulder? Are these efforts well integrated and coherent? In your view, should there be more centralized support and coordination of such efforts?

What can be done to sustain efforts like TRESTLE to improve STEM teaching and learning for the future? How can CU avoid treating these as just a series of one-time initiatives?

How has engaging in this (or other) course transformation(s) affected your own professional development as a teacher and a scholar?

How and to whom are you disseminating what you learned? In what specific ways is TRESTLE helping you to do this?

Do you have any additional suggestions or feedback for TRESTLE’s leaders (at both CU and in the multi-campus project) about how they can improve what they are doing?

Questions for Administrator Interviews

[TRESTLE External Evaluation Visit to CU Boulder]

Four administrators were interviewed.

Assurance of Confidentiality. Responses from this interview will only be shared in summary form with TRESTLE leadership and staff at CU-Boulder; verbatim responses will be summarized but will only be seen by the NCHEMS staff members charged with conducting the external evaluation.

Describe the history of your involvement with STEM course transformation, the CSL, SEI, or TRESTLE over the past few years. What was the sequence of events and what was your role in helping make things happen?

How does TRESTLE/CSL fit in with other efforts to improve teaching and learning at CU-Boulder? Are these efforts well integrated and coherent? In your view, should there be more centralized support and coordination of such efforts?

What is your perception of how TRESTLE/CSL is viewed with respect to positional power at CU-Boulder? Is it well known and respected or just one of many disparate players? Would it have more influence if it was led by a regular tenured faculty member?

How can initiatives like TRESTLE be used to promote greater collaboration among STEM programs at CU-Boulder?

What can be done to sustain efforts like TRESTLE to improve STEM teaching and learning for the future? How can CU avoid treating these as just a series of one-time initiatives?

[Mark Warner only] Do you see opportunities or barriers to incorporating elements of TRESTLE into resources offered by ASSETT? What has TRESTLE offered to ASSETT in the past?

Do you have any additional suggestions or feedback for TRESTLE's leaders (at both CU and in the multi-campus project) about how they can improve what they are doing?

Questions for Scholars Community Facilitator Interviews

[TRESTLE External Evaluation Visit to CU Boulder]

Four Scholars facilitators were interviewed, including one individual that was both a Scholars facilitator and participant.

Assurance of Confidentiality. Responses from this interview will only be shared in summary form with TRESTLE leadership and staff at CU-Boulder; verbatim responses will be summarized but will only be seen by the NCHEMS staff members charged with conducting the external evaluation.

Describe your own involvement with TRESTLE over the past few years. What specific activities or initiatives have you been involved with? How did you get involved and how does involvement benefit you?

Describe your Scholars Community: what is/was it about and what do/did you talk about?

What worked well in your Scholars community? How did you encourage the discussions to stay on track? What about the program could be improved in the future?

How has facilitating this Scholars community affected your own professional development as a teacher and a scholar?

What can be done encourage participants to sustain their engagement in similar efforts after a Scholars Community is no longer operating?

How does TRESTLE/CSL fit in with other efforts to improve teaching and learning at CU-Boulder? Are these efforts well integrated and coherent? In your view, should there be more centralized support and coordination of such efforts?

What is your perception of how TRESTLE/CSL is viewed with respect to positional power at CU-Boulder? Is it well known and respected or just one of many disparate players? Would it have more influence if it was led by a regular tenured faculty member?

Do you have any additional suggestions or feedback for TRESTLE's leaders (at both CU and in the multi-campus project) about how they can improve what they are doing?

Questions for Scholars Community Participants Interviews

[TRESTLE External Evaluation Visit to CU Boulder]

Four Scholars participants were interviewed, two of which were also course awardees.

Assurance of Confidentiality. Responses from this interview will only be shared in summary form with TRESTLE leadership and staff at CU-Boulder; verbatim responses will be summarized but will only be seen by the NCHEMS staff members charged with conducting the external evaluation.

Describe your own involvement with TRESTLE over the past few years. What specific activities or initiatives have you been involved with? How did you get involved and how does involvement benefit you?

Describe your Scholars Community: what is/was it about and what do/did you talk about?

What worked well in your Scholars community? What about the program could be improved in the future?

How has engaging in this Scholars community affected your own professional development as a teacher and a scholar?

What can be done encourage participants to sustain their engagement in similar efforts after a Scholars Community is no longer operating?

How does TRESTLE/CSL fit in with other efforts to improve teaching and learning at CU-Boulder? Are these efforts well integrated and coherent? In your view, should there be more centralized support and coordination of such efforts?

What is your perception of how TRESTLE/CSL is viewed with respect to positional power at CU-Boulder? Is it well known and respected or just one of many disparate players? Would it have more influence if it was led by a regular tenured faculty member?

Do you have any additional suggestions or feedback for TRESTLE's leaders (at both CU and in the multi-campus project) about how they can improve what they are doing?