Purpose of the study:

The Elementary Science Partnership (ESP) supports elementary science teachers with high-quality, intensive professional development coupled with ongoing participating in reciprocal communities of practice. In alignment with the Next Generation Science Standards (NGSS), ESP supports efforts to increase access to high-quality science instruction to all student and to create opportunities for students to engage in scientific inquiry and sensemaking of real-world phenomena.

The ESP Research Team, led by Dr. Kathryn Hayes, will explore a range of questions focused on teachers' instructional practices for elementary science, teachers' engagement in reciprocal communities of practices, and organizational conditions that influence efforts to reform science teaching and learning. All research activities have been approved by the California State University East Bay Office of Research and Sponsored Programs (IRB # CSUEB-IRB-2019-076-F).

Data security and storage:

The research team will make every effort to ensure the security of all data collected as part of ESP and the confidentiality of study participants. All participating teachers will be provided with information about the purpose of the research study and will have the opportunity to indicate their consent to participate in various components of the research, including online surveys, observations, and interviews. Participation is completely voluntary and teachers can discontinue their participation in research activities at any time.

All data will be stored on secured, password-protected and encrypted servers and computers, and will only be accessible to members of the research team. Any individually identifiable information will be removed for analysis and reporting. All survey data will be reported in aggregate with any personally identifiable information removed. Data collected through interviews, focus groups, and observations will be made anonymous prior to reporting to ensure the privacy of participants. The following sections will provide a brief overview of the various ways that research data will be collected as part of this project:

Science Instructional Practices Survey

All teachers participating in ESP will be asked to complete both the Science Instructional Practices (SIPS) and Reform Conditions surveys once each year for the duration of the grant. These surveys gather information about teachers' strategies for teaching science, their knowledge and experiences with NGSS, and their perspective on conditions within their school and classroom that influence science instruction. Participating teachers will receive the surveys during the annual ESP Summer Institute.

Additionally, all third, fourth, and fifth grade teachers at participating school sites will be invited to complete the same surveys once per year, with the goal of better understanding the ways that science instructional practices are shared among colleagues. The research team will provide an email invitation and online survey link to district administrators and/or school principals to share with teachers. Those who complete the survey will receive a $10 Amazon gift card in appreciation of their participation.

Survey data will be collected using SurveyMonkey to help ensure the security and accuracy of participant responses. All survey questions are optional. All individually identifiable information, such as name and email, will be removed for analysis and reporting.

Science Lesson Observation

The research team will invite all ESP teachers to participate in a video observation of a science lesson and follow-up interview each year for the duration of the grant, with the goal of learning about the various ways that teachers approach science instruction and the ways that students talk to each other about scientific concepts. These observations are in no way evaluative and participating teachers can choose any science lesson to have observed. These observations may be conducted at a scheduled time by visiting the teacher's classroom or via distance learning session. Teachers will be prompted to choose a typical science lesson where students have the opportunity to discuss and collectively make sense of scientific phenomena. After the lesson, the observer will conduct a 30- to 45-minute interview with the teacher to debrief and reflect on the lesson, either in person or through video conferencing.

In preparation for the observation, participating teachers will be provided with parent consent forms for all students in their class. With permission, the observer will gather video and audio recordings during the lesson, and will work with the teacher to ensure that recordings capture only those students whose parents have provided written consent. All video and audio data will be immediately transferred to a secured server and deleted from recording devices, and any identifiable information will be removed for analysis and reporting.

As part of the science lesson observation, the research team may request that students complete a short (four-item multiple choice) "exit ticket" to share their thoughts about the kinds of activities they were engaged in during the lesson. Students may also be asked to fill out a short questionnaire about the kinds of learning activities they are engaged in more generally during science instructional time. These questionnaires will not ask students to provide their name or any other identifying information.

Lesson Study

Lesson Study is an evidence-based practice and ongoing cycle of inquiry in which teachers make improvements to their teaching based on observations of student learning in their classrooms. Each year for the duration of the grant, teachers will work in grade-level teams to design and conduct science lessons.

The research team will select several Lesson Study teams to focus on throughout the year to better understand how lesson study teams can serve as reciprocal communities of practice for teachers. Team planning meetings and the post-lesson analysis of student work will be audio recorded with permission. As part of the Lesson Study process, the classroom science lesson may be observed by team members, ACOE staff, and members of the research team, but will not to be audio or video recorded for research purposes.

Building Capacity for Science

In an effort to better understand the wide range of factors that can influence elementary science teaching and learning over time, the research team will invite district leaders, principals, science TOSAs, and teachers in select districts to participate in interviews and focus groups each year for the duration of the grant. Interviews and focus groups will be conducted in person or through video conferencing, and recorded with permission to ensure accuracy. In addition, members of research team will be conducting observations during regular meetings, both in-person and via video-conferencing, and events of the District Leadership Institute and may ask for permission to record particular activities and discussions. As previously stated, participation in research activities is completely voluntary.

Research Team

If you have any questions about the research, please contact the Principal Investigator:

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