

Professional Leave Report Cover Sheet

Name: Frederick Nelson

Department: Liberal Studies

College: Kremen School of Ed & Human Development

Leave taken: ☒ Sabbatical Difference in Pay Professional Leave without Pay

Time Period: Fall
 ☒ Spring
 Academic Year
 Other

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Sabbatical Application

Frederick Peinado Nelson, Associate Professor

Department of Liberal Studies

Section 1. Reporting on the Success of the Leave

The original application for the sabbatical included work to examine two steps along the science teacher education pathway: (i) preservice science teacher methods courses, and (ii) district level professional development for inservice teachers. This work involved activities to disseminate a set of lesson planning and analysis structures. While I made some adjustments to distinct activities outlined in the original application, the focus of my work during Spring continued to center on science teacher education, particularly the activities in a science methods course and professional development for practitioners.

My original goals were to

1. Conduct research specific to these questions:
 - a. How is the Next Gen Toolkit used to facilitate discourse to enact NGSS curriculum and instruction within and across different steps of the science teacher education pathway?
 - b. What other mechanisms or training tools are necessary to aid implementation of the Toolkit in each of the pathway steps?
2. Produce scholarly articles for publication on
 - a. Research described in (1) and
 - b. Research on Integrating Science and Literacy Methods for Preservice Secondary Science Teachers, a submission for a Themed Poster Session at AERA 2020

Due to the interruption of plan specifics due to the COVID-19 pandemic and other considerations (including implications of Black Lives Matter in science education), I made some modifications to my original goals and activities:

1. Design and deliver a series of virtual professional development workshops for practicing teachers focusing on NGSS implementation. (Original Goal 1)
2. Preparation and submission of an article manuscript based on research on the work of a Networked Improvement Community relevant to social justice activities in science methods courses. (Original Goal 2a)
3. Preparation and submission of a conference proposal on the implementation of social justice activities in science methods courses. (Original Goal 2b)
4. Submission of a grant proposal for self-study research on implementation of social justice in undergraduate teacher education.
5. Participation in professional development experiences relevant to science teacher education, reflective practice, and social justice in teacher education.

These modifications provided greater relevance to current issues in science teacher education. While the innovations developed in the NGSS Toolkit have been implemented in my science methods courses for a few years, I had not yet had the opportunity to introduce those tools to practicing teachers, particularly teachers who serve as cooperating teachers for teacher candidates in the South Valley Integrated Teacher Education Program. I achieved all of these

modified goals.

1. NGSS Professional Development Workshops for Visalia Unified Cooperating Teachers
 1. Wednesday, February 24, 2021--16 participants
 2. Wednesday, March 10, 2021--16 participants
 3. Wednesday, March 24, 2021--18 participants
 4. Wednesday, April 14, 2021--16 participants

2. Manuscript submitted for publication:
 Nelson, F.P., Kerstiens, G., Sineapuelos, M., Lardy, C. (Under Review). Supporting social justice in science education: Ensuring equal access to quality standards-aligned education through a networked improvement community. Submitted to *Educational Studies*.

Manuscripts published:

Shin, M., & Nelson, F. P. (2021). Funds of knowledge in making: Reenvisioning maker education in teacher preparation. *Journal of Research on Technology in Education*.

Miller, L., Nelson, F. P., Phillips, E. L. (2021). Exploring critical reflection in a virtual learning community in teacher education. *Reflective Practice: International and Multidisciplinary Perspectives*. DOI: 10.1080/14623943.2021.1893165.

3. Conference presentations:
 Nelson, F. P., Dean, K., Macalalog, A.M., Walter, E., & DiDio, R. (October 2021). *Pedagogical insights emerging from Egyptian STEM teacher education professional development: An international collaborative self study*. Paper presented at the 2nd International Conference on Science and Technology Education, Porto, Portugal

Birmingham, C., Levine, S., Sales, T., Hamm, D., Keith, L., Norris, C., Pengilly, M., Zoller, J., & Nelson, F. P. (October 2021). Through shining eyes: New knowledge for a pedagogy of reflective coaching. Roundtable presentation at the Conference of the California Council on Teacher Education, San Diego, CA.

Carrie Birmingham, Somer Levine, & Terrelle Sales (Pepperdine University), Deborah Hamm (California State University, Long Beach), Lisa Keith, Claudia Norris, Michelle Pengilly, & Jan Zoller (Fresno Pacific University), & Frederick Peinado Nelson (California State University, Fresno).

Nelson, F. P., & Arciniega, F. (January 2022). *"This is what's out there": Supporting social justice in elementary science teacher education*. Paper accepted for presentation at the Hawaii International Conference on Education, Hilo, HI.

Nelson, F. P., Miller, L. R., & Van Horn, S. (Under Review). *"Not being racist and Anti-racist is not the same": Preservice teachers' reflection for social justice*. Paper submitted for presentation at the Annual Meeting of the American Educational Research Association, San Diego, CA.

Nelson, F. P., Dean, K., Macalalog, A.M., Walter, E., & DiDio, R. (October 2021). *Pedagogical insights emerging from Egyptian STEM teacher education professional development: An international collaborative self study*. Paper presented at the 2nd

International Conference on Science and Technology Education, Porto, Portugal

4. Grant proposal submission:
Co-Principal Investigator, Spencer Foundation Research Grants in Education, *Are We Doing What We Said? A Self-Study of a New Teacher Education Department's Commitments to Social Justice*, 2021, \$60,000 (Under review)
5. Professional Development:
 - An Unapologetically Engaged Approach to Racial Justice Research in Schools and Communities with Dr. Malik Henfield, The Ohio State University, April 2021
 - Core Reflection Coaching, California Association of School-University Partnerships, March & April 2021
 - Diaspora, Anti-Black Racism, and Race Relations; Ensenamos en el Valle Central Anti-Racism Webinar, March 2021
 - Noyce Scholar Panel on Invisibility of Students with Disabilities in STEM, Metropolitan State University of Denver, February 2021
 - Tips for Writing Strong Grant Proposal Narratives; California State University, January 2021
 - Racial Literacy & Antiracist Math & Science Teaching: What, Why, & How; Noyce Scholarship Program, January 2021

Section 2. Benefits to you as a faculty member

My professional plan in the next few years involves a greater emphasis on research in science teacher education. As Chair of the Department of Liberal Studies, my ability to engage in this aspect of my scholarship has been limited. The resource of time during my sabbatical allowed me to reconnect with more current issues in science education, most particularly issues of social justice.

I was able to collaborate with other researchers who already have some expertise in social justice. We are working on a practitioner-oriented article emphasizing the use of text to examine a scientific phenomenon.

I also plan on using the research framework developed for the Spencer Foundation grant submission to guide the preparation of the self-study for the next program review.

The scholarly activities I completed during spring 2021 demonstrate my continued contributions to the field of teacher education, and will support my application for promotion to the rank of full Professor in 2022.

Section 3. Benefit to the university

My participation in the NGSS Networked Improvement Community includes Fresno State in a consortium of fifteen institutions collaborating for science teacher education reform. Our recent efforts have focused on the incorporation of social justice efforts into science methods coursework.

During the spring of 2021, I also engaged in work with the *STEM Teacher Education and School Strengthening Activity (STESSA)*, a \$1.2 million funded contract subaward from USAID to Fresno State with the goal of redesigning STEM teacher education programs in Egypt. From this involvement, Fresno State was invited to collaborate as a lead partner

institution in the recent submission of a \$3.5 million proposal to USAID for the *Teacher Excellence Initiative Activity (TEIA)*.

The grant submission to the Spencer Foundation will provide valuable information for the ongoing analysis and improvement of the Liberal Studies program. The department was founded with commitments to Social Justice and Universal Design for Learning. Funding from the grant will provide opportunities for critical examination of the curriculum and pedagogical practices in program coursework.