TEXAS STATE VITA

I. Academic/Professional Background

A. Name and Title

Name: Dr. Hunter G. Close Title: Associate Professor

B. Educational Background

Degree	*Year*	*University*	*Major*	*Thesis/Dissertation*
PHD	2005	University of Washington	Physics	Improving Instruction in Mechanics through Identification and Elicitation of Pivotal Cases in Student Reasoning
MS	2001	University of Washington	Physics	
MA	2000	Indiana University Bloomington	History and Philosophy of Science	
BA	1995	Rice University	Physics and Philosophy	

C. University Experience

Position	*University*	*Comments*	*Dates*
Associate Professor, Physics	Texas State University. San Marcos		September 1, 2015 - Present
Assistant Professor, Physics	Texas State University. SAN MARCOS, TX, United States		September 1, 2011 - August 31, 2015
Assistant Professor Visiting, Physics	Seattle Pacific University., WA		September 2007 - August 2011
Adjunct Instructor, Physics	University of Washington., WA		June 2006 - August 2006
Adjunct Instructor, Physics	Cascadia Community College., WA		March 2006 - June 2006
Adjunct Instructor, Physics	Seattle Pacific University., WA		September 2005 - March 2006
Adjunct Instructor, Physics	North Seattle Community		September 2005 - December 2005

Position	*University*	*Comments*	*Dates*
	College., WA		
Graduate Teaching Assistant, Physics	University of Washington., WA		September 2000 - June 2005
Associate Instructor, Physics	Indiana University., IN		August 1998 - May 2000

D. Relevant Professional Experience

Position	*Entity*	*Comments*	*Dates*
High School Science Coach	Seattle Public Schools, WA		September 2006 - June 2007
Teacher	Jesse Jones High School Vanguard Program, Houston, TX		August 1995 - June 1998

E. Other Professional Credentials (licensure, certification, etc.)

Protecting Human Research Participants certificate, National Institutes of Health. (January 11, 2016 - Present).

Teaching Certificate, State of Washington. (January 6, 2016 - Present).

Teaching Certificate, State of Texas. (January 1, 1996 - Present).

Human Research / Social and Behavioral Research / 2 - Refresher Course, Collaborative Institutional Training Initiative. (December 20, 2022 - December 20, 2024). License Number: 25780162.
2022.12.H.Close.citiCompletionCertificate_5506047_25780162-1.pdf

II. TEACHING

A. Teaching Honors and Awards:

Award / Honor Nominee: Excellence in Teaching award, College nominee.
January 1, 2011 - January 1, 2012

Award / Honor Nominee: Excellence in Teaching award, Department nominee.
January 1, 2011 - January 1, 2012

Award / Honor Nominee: Finalist Best Teaching Idea competition, for the Physics Interview Project, Seattle Pacific University.
January 1, 2009

B. Courses Taught:

Texas State University:

EDST 4681 - STUDENT TEACH 7-12

PHYS 1430 - MECHANICS

PHYS 2150 - PROF DEV PHYS

PHYS 2230 - INTRO COMP MOD PHYS

PHYS 2425 - ELCTRCTY & MAGNENT

PHYS 2435 - WAVES & HEAT

PHYS 3311 - MECHANICS I

PHYS 3320 - INTRO MATH PHYSICS

PHYS 3320 - INTRO TO MATHEMATICAL PHYSICS

PHYS 3414 - MECHANICS I

PHYS 3417 - OPTICS

PHYS 4121 - UG RESEARCH

PHYS 4221 - UG RESEARCH

PHYS 4312 - QUANTUM MECH I

PHYS 4320 - SEL STDS IN PHYS

PHYS 4321 - UNDERGRAD RESEARCH

PHYS 4350C - PHYS COG & PED II

PHYS 4360 - PHYS COG & PED II

PHYS 5303 - QUANTUM MECHANICS

PHYS 5350D - COG FOUND PHYS EDUC RES

PHYS 5370 - PROB ADV PHYS

PHYS 5395 - FUND OF RESEAR

PHYS 5399A - THESIS

PHYS 5399B - THESIS

PHYS 5401 - CLASSICAL MECHANCS

PHYS 5999B - THESIS

Indiana University:

Mathematics for Elementary Teachers via Problem Solving (MATH T104)

Seattle Pacific University:

Development of Concepts in Physical Science I and II (PHY 2567, 2568) (special courses for future elementary teachers)

Dynamics (PHY 3841)

Introduction to the Nature of Science (PHY 1110)

Introductory algebra-based physics sequence (PHY 1101, 1102, 1103)

Introductory calculus-based physics sequence (PHY 1121, 1122, 1123)

Learning Assistant Pedagogy and Preparation (PHY 4510, 4511, 4512, 4513)

Thermodynamics (PHY 3401)

University of Washington:

Physics by Inquiry Summer Institute

Thermal Physics (PHYS 224)

Tutorial sessions for the introductory calculus-based physics sequence (PHYS 121, 122, 123)

C. Directed Student Learning (i.e. theses, dissertations, exit committees, etc.):

Supervisor / Chair, Master's Thesis, "Student Understanding of Series Approximations", Status: In Progress. (August 2021 - Present). Physics, Texas State University.
Student(s): Samuel Zamora, Graduate, M.S.

Supervisor / Chair, Independent Study, "Statistical Physics", Status: Completed. (August 2021 - December 2021). Physics, Texas State University.
Student(s): Jordan Knight, Undergraduate.

Supervisor / Chair, Independent Study, "Introduction to Computational Fluid Dynamics", Status: Completed. (January 2020 - May 2020). Physics, Texas State University.
Student(s): Elijah LaLonde, M.S.

Additional Comments: The student was enrolled in our M.S. program and wanted to pursue a Ph.D. in aeronautical engineering. The student wanted to learn computational fluid dynamics to help him prepare for his doctoral work. This independent study was instrumental in helping the student get admitted to his preferred Ph.D. program by the end of the course of study.

Advisor, Independent Study, "Understanding student experiences in STEM retention using the Hero's Journey", Status: Completed. (August 2018 - August 2019). Physics, Texas State University.
Student(s): Gabriel Mestas, Undergraduate, BS.

Advisor, Independent Study, "Development of ideas in nuclear physics used in the Manhattan Project", Status: Completed. (January 2018 - May 2018). Physics, Texas State University.
Student(s): Samuel Wright, Undergraduate, BS.

Member, Dissertation, "Exploring Mathematical Flow: A Case Study of Pre-Service Secondary Teachers Collaborating on Model-Eliciting Activities", Status: Completed. (June 24, 2016). Mathematics, Texas State University.
Student(s): Geoffrey Miller, Doctoral, Mathematics Education.

D. Courses Prepared and Curriculum Development:

PHYS 3320 Introduction to Mathematical Physics, First Time Course Preparation, Texas State University. Taught: August 2020 - December 2020.

Additional Comments: I changed the textbook to Felder & Felder's Mathematical Methods in Engineering and Physics, which is a more student-friendly text with a greater emphasis on physical examples and interactive instructional materials. I accentuated the use of the "quiz" function in Canvas to maintain student accountability for the microscopic learning objectives of in-class instruction.

EDST 4681 Student Teaching, First Time Course Preparation, Texas State University. Taught: January 2020 - May 2020.

Additional Comments: I was formally trained in Student Teaching Supervision so that physics student teachers could get the highest quality supervision - from someone with a physics background, many years of pedagogical training and original research, and high school teaching experience.

PHYS 2150, Professional Development for Beginning Physicists, New Course, Texas State University. Approved: October 2017.

Additional Comments: Developed on the recommendation of the Phys21 report from the Joint Task Force on Undergraduate Physics Programs.

PHYS 2230, Introduction to Computational Modeling for Physics, New Course, Texas State University. Taught: August 2017 - December 2017.

Additional Comments: Taught twice annually since Fall 2017. Course materials developed through participation in the national organization PICUP (Partnership for Integration of Computation into Undergraduate Physics). Developed on the recommendation of the Phys21 report from the Joint Task Force on Undergraduate Physics Programs.

PHYS 4360, Physics Cognition and Pedagogy II, New Course, Texas State University. Taught: January 2017 - May 2017.

Additional Comments: Developed in response to recommendations from PhysTEC (Physics Teacher Education Coalition) to enhance recruitment and preparation of K-12 physics teachers and physics education researchers. Taught annually since Spring 2017. (Currently stacked with PHYS 5350D)

PHYS 5350D, Cognitive Foundations of Physics Education Research, New Course, Texas State University. Taught: January 2017 - May 2017.

Additional Comments: Developed in response to recommendations from PhysTEC (Physics Teacher Education Coalition) to enhance recruitment and preparation of K-12 physics teachers and physics education researchers. Taught annually since Spring 2017. (Currently stacked with PHYS 4360)

PHYS 2150, Professional Development for Beginning Physicists, Revise Existing Course, Texas State University. Taught: January 2020 - December 2020.

Additional Comments: I adapted the professional development course to include weekly visits from guest alumni, who reflect on their career journey for the benefit of the students. The change in approach, which was stimulated by the pandemic, has been a high yield of real, complex information about the job preparation and search process.

PHYS 4360 Physics Cognition and Pedagogy II, Revise Existing Course, Texas State University. Taught: January 2020 - May 2020.

Additional Comments: This course was revised from a center in cognitive theory to a dual center in teaching practice and physics pedagogical content knowledge. This change was stimulated by my beginning to supervise student teachers. In this role, I could see the skills and knowledge that were most urgently needed for future physics teachers. The course is still intended to be welcoming of all physics majors, with the recognition that physics is not taught only in classroom settings, but also as needed in a variety of workplaces.

Advanced Physics Minor, Revise Existing Degree Program, Texas State University. Approved: December 2021 - Present.

Additional Comments: This minor was created to support students who are pursuing physics teaching through the B.S. with double major in Education and also want to learn the same physics content as other physics majors.

B.S. in Physics with 7-12 Physics/Math Teacher Certification, Revise Existing Degree Program, Texas State University. Approved: December 2020 - Present.

Additional Comments: This revision was required by the recent proposal from our College of Education that all secondary teachers would earn a dual major in Education and their subject area.

E. Teaching Grants and Contracts

1. Funded External Teaching Grants and Contracts:

Close, Hunter (Principal). Professional Teachers of Science, Department of Education through OSPI, Olympia, Washington, Title II B Math and Science 0555312, Institutional (Higher Ed), $1,000,000.00. (Submitted: January 1, 2007). Grant.

Close, Eleanor W (Principal), Strickland, Sharon K (Co-Principal), Luxford, Cynthia J (Co-Principal), Van Overschelde, James P (Co-Principal), Collins, Kristina Henry (Co-Principal), Close, Hunter G (Supporting). Preparing Engaged STEM Teachers through Multi-level Peer Mentoring and Early Teaching Experiences, National Science Foundation Robert Noyce Teacher Scholarship Program, Federal, $1,200,000.00. (Submitted: August 31, 2022, Funded: June 15, 2023 - June 14, 2028). Grant.

Additional Comments: **Research component**: Investigate the teaching performance of Scholars after employment using special expert access to a vast data lake on Texas students, teachers, and schools. **Teaching component**: Provide scholarship and stipend support to STEM majors who seek K-12 teacher certification. Continue the Learning Assistant initiative in the three-course calculus-based physics sequence. Support a cohort of 6-8 Noyce Scholars each year, resulting in the preparation of an additional 20-30 STEM teachers over the five-year life of the project, with a focus on recruiting physics, chemistry, and mathematics majors. Implement vertical peer mentoring networks including master mentors and Scholars who are student-teachers and in years 1-5 of classroom teaching.

Close, Eleanor W (Principal), Close, Hunter Garth (Co-Principal), Huling, Leslie L (Co-Principal), Ortiz, Araceli Martinez (Co-Principal), Luxford, Cynthia J (Co-Principal). Responsive, Attentive, Dialogic, and InterActive Noyce Scholars Project, National Science Foundation, Federal, $1,254,627.00. (Funded: June 1, 2016 - May 31, 2023). Grant.

Additional Comments: Provide scholarship and stipend support to STEM majors who seek K-12 teacher certification. Continue the Learning Assistant initiative in the three-course calculus-based physics sequence launched through the Communities and Pathways project. Support a cohort of 10-12 Noyce Scholars each year, resulting in the preparation of an additional 50-60 STEM teachers over the five-year life of the project, with a focus on recruiting physics, chemistry, and engineering majors.
Supplemental funding of $54,627 awarded August 2021. Two no-cost extensions granted due to COVID impacts.

Roundtree, Aimee (Principal), Zong, Ziliang (Co-Principal), Close, Hunter (Co-Principal), Collins, Kristina (Co-Principal), Guirguis, Mina (Supporting), Kim, MiHyun (Supporting). Coding Across the Disciplines: Computer Science Collaborative in Texas, WeTeach CS Program at UT Austin's Center for STEM Education, State, $100,000.00. (Funded: January 13, 2017 - August 15, 2017). Grant.

2. Submitted, but not Funded, External Teaching Grants and Contracts:

Close, Hunter G (Principal), Strickland, Sharon K (Co-Principal), Close, Eleanor W (Co-Principal), Luxford, Cynthia J (Co-Principal), Van Overschelde, James P (Co-Principal). Responsive, Attentive, Dialogic, and InterActive Noyce Scholars with Vertical Peer Mentoring (RADIANS2), National Science Foundation, Federal, $1,200,000.00. (Submitted: August 31, 2021, Funded: August 1, 2021 - July 31, 2021). Grant.

Close, Eleanor W (Principal), Huling, Leslie L (Co-Principal), Close, Hunter Garth (Co-Principal), Feakes, Debra A (Co-Principal), Ortiz, Araceli Martinez (Co-Principal). Responsive, Attentive, Dialogic, and InterActive Noyce Scholars (RADIANS), NSF Noyce program, $1,200,000.00. (Submitted: March 2015). Grant.

Huling, Leslie L (Principal), Close, Eleanor W (Co-Principal), Close, Hunter Garth (Co-Principal), Feakes, Debra A (Co-Principal), Ortiz, Araceli Martinez (Co-Principal). STEM Teacher Education Pathways Project, NSF Noyce program, $1,450,000.00. (Submitted: March 2014). Grant.

F. Other:

Continuing Education, 2018 PICUP Summer Faculty Development Workshop, PICUP. River Falls, United States. 50. (July 15, 2018 - July 20, 2018).

Additional Comments:
https://www.compadre.org/PICUP/events/2017-Faculty-Development/

G. Teaching Professional Development Activities Attended

Continuing Education Program, "Field Supervisor Training," Education Service Center 20, San Antonio, TX, United States. (August 5, 2020).
Certificate-1.pdf
Additional Comments: This training is required by the Texas Education Agency for all Student Teaching Supervisors.

Self-Study Program, "The Danielson Framework for Teaching," The Danielson Group. (January 2020).

Additional Comments: This program is more intensive than the state-required Field Supervisor Training and is required by the Texas State University College of Education.

Workshop, "Partnership for Integration of Computation into Undergraduate Physics," River Falls, WI, United States. (August 1, 2016 - August 5, 2016).

III. SCHOLARLY/CREATIVE

A. Works in Print (including works accepted, forthcoming, in press):

1. Books:

d. Chapters in Books:

Refereed:

Close, E. W., Seeley, L., Robertson, A. D., DeWater, L. S., & Close, H. G. (2015). Seattle Pacific University: Nurturing Physics Teachers at a Small Liberal-Arts School. In E. Brewe & C. Sandifer (Eds.), *Effective Practices in Preservice Physics Teacher Education: Recruitment, Retention, and Preparation*. AIP Press. Retrieved from http://www.phystec.org/webdocs/EffectivePracticesBook.cfmhttp://www.phystec.org/webdocs/EffectivePracticesBook.cfm

2. Articles:

a. Refereed Journal Articles:

Daane, A., Haglund, J., Scherr, R. E., Robertson, A., & Close, H. G. (2018). The Pedagogical Value of Conceptual Metaphor for Secondary Science Teachers. *Science Education*, *102*(5), 1051–1076. https://doi.org/https://doi.org/10.1002/sce.21451

Daane, A. R., Haglund, J., Robertson, A. D., Close, H. G., & Scherr, R. E. (2018). The pedagogical value of conceptual metaphor for secondary science teachers.

Science Education, *102*(5), 1051–1076. https://doi.org/DOI: 10.1002/sce.21451https://onlinelibrary.wiley.com/doi/abs/10.1002/sce.21451

Scherr, R. E., Harrer, B. W., Close, H. G., Daane, A. R., DeWater, L. S., Robertson, A. D., … Vokos, S. (2016). Energy Tracking Diagrams. *The Physics Teacher*, *54*(2), 96–102.

Close, E. W., Conn, J., & Close, H. G. (2016). Becoming Physics People: Development of Integrated Physics Identity through the Learning Assistant Experience. *Physical Review: Physics Education Research*, *12*. Published.

Close, H. G., & Scherr, R. E. (2015). Enacting conceptual metaphor through blending: Learning activities embodying the substance metaphor for energy. *International Journal of Science Education*, *37*(5-6), 839–866.

Close, H. G. (2015). Geometric reasoning about damped and forced harmonic motion in the complex plane. *American Journal of Physics*, *83*(9), 794–801.

Scherr, R. E., Close, H. G., Close, E. W., Flood, V. J., McKagan, S. B., Robertson, A. D., … Vokos, S. (2013). Negotiating energy dynamics through embodied action in a materially structured environment. *Physical Review Special Topics: Physics Education Research*, *9*(2).
Additional Comments: Recognized by the AAPT with a press release.

Close, H. G., Gomez, L., & Heron, P. R. L. (2013). Student understanding of the application of Newton's second law to rotating rigid bodies. *American Journal of Physics*, *81*(6), 458–470.

Scherr, R. E., Close, H. G., McKagan, S. B., Close, E. W., & Vokos, S. (2012). Representing energy. I. Representing a substance ontology for energy. *Physical Review Special Topics - Physics Education Research*, *8*(2).

Scherr, R. E., Close, H. G., McKagan, S. B., Close, E. W., & Vokos, S. (2012). Representing Energy. II. Energy tracking representations. *Physical Review Special Topics - Physics Education Research*, *8*, 01–11.

Close, H. G., & Heron, P. R. L. (2011). Student understanding of the angular momentum of classical particles. *American Journal of Physics*, *79*(10), 1068–1078.

Close, H. G., & Heron, P. R. L. (2010). Research as a guide for improving student learning: An example from momentum conservation. *American Journal of Physics*, *78*(9), 961–696.

3. Conference Proceedings:

a. Refereed Conference Proceedings:

Close, E. W., Mailloux-Huberdeau, J.-M., Close, H. G., & Donnelly, D. (Accepted / In Press). Characterization of time scale for detecting impacts of reforms in an undergraduate physics program.
EC-PERC2017-Timescale of reform (Revised1)-1.pdf

Mestas, G. R., & Close, H. G. (2019). Framing the pursuit of a physics degree as a hero's journey. United States: American Institute of Physics. https://doi.org/10.1119/perc.2019.pr.Mestashttps://www.compadre.org/per/items/detail.cfm?ID=15304

Close, H. G. (2019). Meaning and purpose in the pursuit of physics teaching careers. United States: American Institute of Physics. https://doi.org/10.1119/perc.2019.pr.Closehttps://www.compadre.org/per/items/detail.cfm?ID=15263

Sault, T. M., Close, H. G., & Wolf, S. F. (2018). Student Cognition in Physics Group Exams. American Institute of Physics. https://doi.org/10.1119/perc.2018.pr.Sulthttps://www.compadre.org/per/items/detail.cfm?ID=14851

Wolf, S. F., Sault, T. M., & Close, H. G. (2018). Information flow in group exams. American Institute of Physics.

Close, E. W., Mailloux-Huberdeaus, J.-M., Close, H. G., & Donnelly, D. (2018). Characterization of time scale for detecting impacts of reforms in an undergraduate physics program. In *AIP Conference Proceedings: 2017 Physics Education Research Conference*. American Institute of Physics.

Wolf, S. F., Blakeney, C., & Close, H. G. (2016). Group Formation on Physics Exams (pp. 400–403). Retrieved from http://www.compadre.org/Repository/document/ServeFile.cfm?ID=14279&DocID=4633**Error! Hyperlink reference not valid.**

Conn, J., Close, E. W., & Close, H. G. (2015). Learning Assistant Identity Development: Is One Semester Enough? In P. V. Engelhardt, A. D. Churukian, & D. L. Jones (Eds.) (pp. 55–58). https://doi.org/10.1119/perc.2014.pr.010http://dx.doi.org/10.1119/perc.2014.pr.010

Close, E. W., Conn, J., & Close, H. G. (2014). Learning Assistants' Development of Physics (Teacher) Identity. In P. V. Engelhardt, A. D. Churukian, & D. L. Jones (Eds.) (pp. 89–92). AIP Conference Proceedings. https://doi.org/10.1119/perc.2013.pr.010http://dx.doi.org/10.1119/perc.2013.pr.010

Schiber, C. C., Close, H. G., Close, E. W., & Donnelly, D. (2014). Student use of a material anchor for quantum wave functions. In P. V. Engelhardt, A. D. Churukian, & D. L. Jones (Eds.) (pp. 325–328). AIP Conference Proceedings. https://doi.org/10.1119/perc.2013.pr.069http://dx.doi.org/10.1119/perc.2013.pr.069

Close, H. G., Schiber, C. C., Close, E. W., & Donnelly, D. (2014). Students' dynamic geometric reasoning about quantum spin-1/2 states. In P. V. Engelhardt, A. D. Churukian, & D. L. Jones (Eds.) (pp. 93–96). AIP Conference Proceedings. https://doi.org/10.1119/perc.2013.pr.011http://dx.doi.org/10.1119/perc.2013.pr.011

Additional Comments: Finalist for 2013 Physics Education Research Conference Paper Award

Close, E. W., Conn, J., & Close, H. G. (2014). Development of Integrated Physics Identity through Physics Learning Assistant Experience. In J. L. Polman, E. A. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, … L. D'Amico (Eds.) (Vol. 3, pp. 1533–1534). International Conference of the Learning Sciences. Retrieved from http://www.isls.org/icls2014/Proceedings.htmlhttp://www.isls.org/icls2014/Proceedings.html

Close, H. G., Close, E. W., & Donnelly, D. (2012). Nesting in graphical representations in physics. In S. Rebello, P. Engelhardt, & A. Churukian (Eds.). AIP Press.

Close, E. W., Close, H. G., & Donnelly, D. (2012). Understanding the learning assistant experience with physics identity. In S. Rebello, P. Engelhardt, & A. Churukian (Eds.). AIP Press.

McKagan, S. B., Scherr, R. E., Close, E. W., & Close, H. G. (2011). Criteria for Creating and Categorizing Forms of Energy. In S. Rebello, C. Singh, & P. Engelhardt (Eds.). Melville, NY: AIP Press.

Close, H. G., & Scherr, R. E. (2011). Differentiation of Energy Concepts Through Speech and Gesture in Interaction. In S. Rebello, C. Singh, & P. Engelhardt (Eds.). Melville, NY: AIP Press.

Harrer, B., Scherr, R. E., Wittmann, M., Frank, B., & Close, H. G. (2011). Elements of Proximal Formative Assessment in Learners' Discourse About Energy. In S. Rebello, C. Singh, & P. Engelhardt (Eds.). Melville, NY: AIP Press.

Scherr, R. E., Close, H. G., & McKagan, S. B. (2011). Intuitive Ontologies for Energy in Physics. In S. Rebello, C. Singh, & P. Engelhardt (Eds.). Melville, NY: AIP Press.

Additional Comments: _Finalist for 2011 PERC Proceedings paper award

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Scherr, R. E., Close, H. G., & McKagan, S. B. (2011). Supporting Proximal Formative Assessment with Relational Discourse. In S. Rebello, C. Singh, & P. Engelhardt (Eds.). Melville, NY: AIP Press.

Kahle, E. C., Scherr, R. E., & Close, H. G. (2010). An evolving model for seeing colored objects; A case study progression. In C. Singh, M. Sabella, & S. Rebello (Eds.). Melville, NY: AIP Press.

Scherr, R. E., & Close, H. G. (2010). Transformative professional development: Cultivating concern with others' thinking as the root of teacher identity.

Close, E. W., Close, H. G., McKagan, S. B., & Scherr, R. E. (2010). Energy in action: The construction of ideas in multiple modes. In C. Singh, M. Sabella, & S. Rebello (Eds.). Melville, NY: AIP Press.

Scherr, R. E., Close, H. G., McKagan, S. B., & Close, E. W. (2010). Energy Theater': Using the body symbolically to understand energy. In C. Singh, M. Sabella, & S. Rebello (Eds.). Melville, NY: AIP Press.

b. Non-refereed:

Close, E. W., Scherr, R. E., Close, H. G., & McKagan, S. B. (2011). Development of Proximal Formative Assessment Skills in Video-Based Teacher Professional Development. In S. Rebello, C. Singh, & P. Engelhardt (Eds.). Melville, NY: AIP Press.

Close, H. G., DeWater, L. S., Close, E. W., Scherr, R. E., & McKagan, S. B. (2010). Using the Algebra Project method to regiment discourse in an energy course for teachers. In C. Singh, M. Sabella, & S. Rebello (Eds.). Melville, NY: AIP Press.

B. Works Not in Print:

1. Papers Presented at Professional Meetings:

Close, E., Conn, J., Donnelly, D., Close, H., Physics Education Research Conference, "Designing Learning Assistant Program Structures to Create Resilient Community," AAPT, Provo, UT, United States. (July 2019).

Mestas, G. R., Close, H. G., AAPT Summer Meeting, "Framing the pursuit of a physics degree as a hero's journey," American Association of Physics Teachers, Provo, UT, United States. (July 23, 2019).

Close, H. G., AAPT Summer Meeting, "Meaning and purpose in the pursuit of physics teaching careers," American Association of Physics Teachers, Provo, UT, United States. (July 23, 2019).

Close, H. G., Close, E. W., American Association of Physics Teachers Winter Meeting, "Best Practices at Texas State University Physics Department," American Association of Physics Teachers, Houston, TX, United States. (January 2019).

Blakeney, C., Close, H. G., Four Corners / Texas Joint Meeting of the American Physical Society and the American Association of Physics Teachers, "Developing a visual programming editor for VPython," Las Cruces, NM, United States. (October 22, 2016).

Close, H. G., Donnelly, D., Close, E. W., Four Corners / Texas Joint Meeting of the American Physical Society and the American Association of Physics Teachers, "Physics Teacher Education at Texas State," Las Cruces, NM, United States. (October 22, 2016).

Close, H. G., Schiber, C.S., Donnelly, D., Close, E.W., spring joint meeting of the Texas sections of the APS and AAPS, and Zone 13 of SPS, "Students dynamic geometric reasoning about quantum spin-1/2 states," Stephenville, TX, United States. (March 2013).

Schiber, C.S., Close, H. G., Close, E. W., Donnelly, D., spring joint meeting of the Texas sections of the APS and AAPS, and Zone 13 of SPS, "Students gestures about complex wave functions for one-dimensional potentials," Stephenville, TX, United States. (March 2013).

Close, H. G., Donnelly, D., winter meeting of the American Association of Physics Teachers, "Simulating the conference experience in upper-division theory courses," New Orleans, LA, United States. (January 2013).

Shiber, C., Close, H. G., Donnelly, D., Close, E. W., winter meeting of the American Association of Physics Teachers, "Student gestures about complex wave functions for one-dimensional potentials," New Orleans, LA, United States. (January 2013).

Donnelly, D., Close, E.W., Close, H.G., fall joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Factors contributing to CLASS shifts in a general education physics course," Lubbock, TX, United States. (October 2012).

Close, H.G., Close, E.W., Donnelly, D., fall joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Nesting in Graphical Representations in Physics," Lubbock, TX, United States. (October 2012).

Beuhler, G., Murrell, C., Caswell, B., Close, H.G., fall joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Programming Mathematica to find normal mode frequencies for a system with a large number of degrees of freedom," Lubbock, TX, United States. (October 2012).

Close, E.W., Close, H.G., Donnelly, D., fall joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Understanding the Learning Assistant Experience with Physics Identity," Lubbock, TX, United States. (October 2012).

Murrell, C., Caswell, B., Beuhler, G., Close, H.G., fall joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Using new graphics and physical arguments to make sense of frequencies of large-N normal mode systems," Lubbock, TX, United States. (October 2012).

Donnelly, D., Close, E. W., Close, H. G., summer meeting of the American Association of Physics Teachers, "Factors contributing to CLASS shifts in a general education physics course," Philadelphia, PA, United States. (July 2012).

Close, H. G., Close, E.W., Donnelly, D., summer meeting of the American Association of Physics Teachers, "Nesting in Graphical Representations in Physics," Philadelphia, PA, United States. (July 2012).

Close, E. W., Close, H. G., Donnelly, D., summer meeting of the American Association of Physics Teachers, "Understanding the Learning Assistant Experience with Physics Identity," Philadelphia, PA, United States. (July 2012).

Close, H. G., Close, E. W., Scherr, R.E., McKagan, S.B., spring joint meeting of the Texas sections of the APS and AAPT, "A Conceptual Blending Analysis of Energy Theater," San Angelo, TX, United States. (March 2012).

Laughlin, R., Close, H. G., spring joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Analysis of Lagrange's original derivation of the Euler-Lagrange differential equation," San Angelo, TX, United States. (March 2012).

Hammons, D., Close, H. G., spring joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Learning to use TeX," San Angelo, TX, United States. (March 2012).

Donnelly, D., Close, H. G., spring joint meeting of the Texas sections of the APS and AAPT, and Zone 13 of SPS, "Student Understanding and Application of the Dirac Delta Function," San Angelo, TX, United States. (February 2012).

Close, H. G., Close, E. W., Scherr, R.E., McKagan, S.B., winter meeting of the American Association of Physics Teachers, "A Conceptual Blending Analysis of Energy Theater," Ontario, CA, United States. (January 2012).

Donnelly, D., Close, H. G., winter meeting of the American Association of Physics Teachers, "Student Understanding and Application of the Dirac Delta Function," Ontario, CA, United States. (January 2012).

Willcockson, M.W., Close, H. G., Scherr, R.E., winter meeting of the American Association of Physics Teachers, "Discovering Cognitive Resources in Students Teaches LAs About Genuine Dialogue," American Association of Physics Teachers, Jacksonville, FL, United States. (January 2011).

Harrer, B.W., Scherr, R.E., Wittman, M.C., Close, H. G., Winter meeting of the American Association of Physics Teachers, "Finding Evidence for Teachers' Intentions in Video Using Participation Frameworks," American Association of Physics Teachers, Jacksonville, FL, United States. (January 2011).

Rowles, H.K., Close, H. G., Scherr, R.E., Winter meeting of the American Association of Physics Teachers, "How Learning About Learning in Physics Changed My Future Career," American Association of Physics Teachers, Jacksonville, FL, United States. (January 2011).

Close, E. W., Close, H. G., Scherr, R.E., Winter meeting of the American Association of Physics Teachers, "Teacher Concepts of "Good Video" in a Video Club," American Association of Physics Teachers, Jacksonville, FL, United States. (January 2011).

Close, H. G., Scherr, R.E., Close, E. W., McKagan, S.B., summer meeting of the American Association of Physics Teachers, "Empathizing With Energy: Understanding Physics By Identifying With Hypothetical Entities," American Association of Physics Teachers, Portland, OR, United States. (July 2010).

Close, E. W., Close, H. G., McKagan, S.B., Scherr, R.E., summer meeting of the American Association of Physics Teachers, "Energy in Action: The Construction of Physics Ideas in Multiple Modes," American Association of Physics Teachers, Portland, OR, United States. (July 2010).

Scherr, R.E., Close, H. G., Close, E. W., McKagan, S.B., summer meeting of the American Association of Physics Teachers, "Individual and Group Understanding of Energy in an Embodied Learning Activity," American Association of Physics Teachers, Portland, OR, United States. (July 2010).

McKagan, S.B., Scherr, R.E., Close, E. W., Close, H. G., summer meeting of the American Association of Physics Teachers, "Ontology in the Flesh: Embodied Learning Activities for Conceptual Understanding of Energy," American Association of Physics Teachers, Portland, OR, United States. (July 2010).

McKagan, S.B., Scherr, R.E., Close, H. G., Close, E. W., summer meeting of the American Association of Physics Teachers, "Ontology in the Flesh: Embodied Learning Activities for Conceptual Understanding of Energy," American Association of Physics Teachers, Portland, OR, United States. (July 2010).

Sayre, E.C., Scherr, R.E., Close, H. G., Physics Education Research Conference, "So you're saying: Paraphrase and Interpretation in Peer Physics Interviews," Portland, OR, United States. (July 2010).

Close, H. G., Scherr, R.E., winter meeting of the American Association of Physics Teachers, "Challenging Learning Assistants with Development of Representations of Student Thinking," American Association of Physics Teachers, Washington, DC, United States. (January 2010).

Scherr, R.E., Close, H.G., winter meeting of the American Association of Physics Teachers, "Empowering Teachers with the Development of Representations of Physics Scenarios," American Association of Physics Teachers, Washington, DC, United States. (January 2010).

DeWater, L.S., Close, H. G., Close, E. W., summer meeting of the American Association of Physics Teachers, "Elementary Teachers' Analysis of Energy Transformations in their Own Units," American Association of Physics Teachers, Ann Arbor, MI, United States. (July 2009).

Close, H.G., summer meeting of the American Association of Physics Teachers, "Teaching the Joy of Learning About Student Thinking in Physics," American Association of Physics Teachers, Ann Arbor, MI, United States. (July 2009).

Vokos, S., Kraus, P.A., Close, E.W., Close, H.G., Seeley, L.H., summer meeting of the American Association of Physics Teachers, "Improving Student Learning Through Continuous Formative Assessment," American Association of Physics Teachers, Edmonton, Canada. (July 2008).

Seeley, L.H., Vokos, S., Close, H. G., summer meeting of the American Association of Physics Teachers, "Learning Assistants: Re-imagining TAs as Future Pre-college Physics Teachers," American Association of Physics Teachers, Edmonton, Canada. (July 2008).

Close, H. G., Close, E.W., Vokos, S., Williamson, S., Kraus, P.A., winter meeting of the American Association of Physics Teachers, "Developing Heat and Temperature Diagnostic Tools for K-12 Teachers," American Association of Physics Teachers, Baltimore, MD, United States. (January 2008).

Sabella, M., Close, H., Harrington, R.R., Vokos, S., summer meeting of the American Association of Physics Teachers, "Continuing the Debate: Experiences from the Fourth and Fifth Science and Mathematics Workshops for Tibetan Buddhist Monks.," Sacramento, CA, United States. (July 2004).

Close, H..G., Heron, P.R.L., Shaffer, P.S., McDermott, L.C., winter meeting of the American Association of Physics Teachers, "Relationships Between Student Understanding of Linear Momentum and Angular Momentum," Miami Beach, FL, United States. (January 2004).

Close, H.G., Heron, P.R.L., Shaffer, P.S., McDermott, L.C., winter meeting of the American Association of Physics Teachers, "Addressing Student Difficulties in Applying the Principle of Conservation of Momentum," Austin, TX, United States. (January 2003).

Close, H.G., Heron, P.R.L., Shaffer, P.S., McDermott, L.C., summer meeting of the American Association of Physics Teachers, "Identifying Student Difficulties in Applying the Principle of Conservation of Momentum.," Boise, ID, United States. (July 2002).

2. Invited Talks, Lectures, and Presentations:

Close, H. G., AAPT Winter Meeting 2020, "Iterative Tuning of the Scope of a Physics Pedagogy Course," American Association of Physics Teachers, Orlando, FL, United States. (January 20, 2020).

Lunk, B. R., Close, H., Donnelly, D., Das, K., American Association of Physics Teacher Summer Meeting, "An Holistic Integration of Computational Modeling in Undergraduate Physics," AAPT, Washington, DC. (July 2018).

Close, H. G. (Presenter), Das, K. (Co-author), Blakeney, C. (Co-author), Dube, M. C. (Co-author), Hauser, E. (Co-author), Marks, B. P. (Co-author), "Development and Initial Assessment of GlowScript Blocks," Center for Computing in Science Education, University of Oslo, University of Oslo, Oslo, Norway. (May 22, 2018).

Close, H. G., Nuevas Tendencias en la Ense*f*±anza de la F*f*sica (New Trends in Physics Teaching), "Symbolic Embodiment and Cognitive Interactions in Physics Learning Situations," Puebla, Mexico. (May 2012).

Close, H. G., Scherr, R.E., summer meeting of the American Association of Physics Teachers, "Differentiation of energy concepts through speech and gesture in interaction," American Association of Physics Teachers, Omaha, NE, United States. (July 2011).

Close, H. G., Colloquium presentation for the Department of Physics at Texas State University, "Using the body symbolically to understand energy," San Marcos, TX, United States. (March 2011).

Close, H.G., Scherr, R.E., Colloquium presentation for the Department of Physics at Oregon State University, "Using the body symbolically to understand physics," OR, United States. (October 18, 2010).

Close, H. G., Scherr, R.E., summer meeting of the American Association of Physics Teachers, "Cultivating concern with others' thinking as the root of teacher identity," American Association of Physics Teachers, Portland, OR, United States. (July 2010).

Scherr, R.E., Close, H. G., McKagan, S.B., summer meeting of the American Association of Physics Teachers, "Thinking About Energy with Bodies and Objects: Cognition as a Sensorimotor and Material Activity," American Association of Physics Teachers, Portland, OR, United States. (July 2010).

Close, E. W., DeWater, L.S., Close, H. G., summer meeting of the American Association of Physics Teachers, "Teaching People How to Teach Children to Think Like Scientists," American Association of Physics Teachers, Edmonton, Canada. (July 2008).

Heron, P.R.L., Close, H.G., Shaffer, P.S., McDermott, L.C., winter meeting of the American Association of Physics Teachers, "Research on Student Understanding of Linear and Angular Momentum Conservation," Anchorage, AK, United States. (January 2006).

3. Consultancies:

Academic, Rochester Institute of Technology, Rochester, NY, United States. (September 2012 - August 2014).

4. Workshops:

Close, H. G., Jariwala, M., Haase, D., PhysTEC 2016, "Integrated Training and Pedagogy for TAs and LAs," Physics Teacher Education Coalition, Baltimore, MD, United States. (March 12, 2016).

Close, H. G., Close, E. W., Donnelly, D., "Blending theory for physics education researchers." (January 2012).
Additional Comments: 3-day workshop conducted for physics education researchers to learn more about applications of blending theory to PER.

Close, H.G., Six-hour workshop conducted annually for elementary teachers served by Educational Service District 105, "Motion and Design content workshop," Yakima, WA, United States. (2011).
Additional Comments: Designed for improving conceptual understanding of content in STC kit Motion and Design.
Annually, 2006 - 2011.

Close, H. G., 75-minute workshop conducted for the Physics Teacher Education Coalition, "Cultivating Learning Assistants' interest in physics teaching with clinical interviewing," Austin, TX, United States. (May 2011).

Close, H.G., Scherr, R.E., Two-hour workshop conducted for the Oregon section of the American Association of Physics Teachers, "Using the body symbolically to understand physics," Eugene, OR, United States. (October 2010).

McKagan, S.B., Close, H. G., Close, E. W., Scherr, R.E., Workshop conducted for the Integrating Science and Mathematics Education Research into Teaching national conference, "Embodied learning activities: Using bodily experiences to build and

share understanding of abstract science concepts," Orono, ME, United States. (June 2010).

Close, H. G., Close, E.W., DeWater, L.S., Four-hour workshop conducted for AAPT 2009 Summer Meeting, "Designing a Diagnostic Learning Environment: A Workshop for Teacher Educators," Ann Arbor, MI, United States. (July 2009).

Close, H. G., Close, E. W., Six-hour workshop conducted for high school science teachers in Seattle Public Schools, "Introduction to the Reformed Teaching Observation Protocol (RTOP)." (April 2009).

Close, H. G., Vokos, S., Workshop conducted for Secondary Leadership Institute in Seattle Public Schools, "Science discussion for principals," Seattle, WA, United States. (August 2008).

5. Other Works not in Print:

a. Works "submitted" or "under review":

Journal Articles:

Close, H. G., & Heron, R. L. (Submitted / Under Review). Force-balancing reasoning in static friction and tension scenarios. *Physical Review - Physics Education Research*. (August 2020)

b. Works "in progress":

Journal Articles:

Lunk, B. R., & Close, H. G. (In Preparation; Not Yet Submitted). On the Value of Constraint-Based Reasoning in Computational Physics.

c. Other Works Not in Print:

Keynote / Plenary Addresses:

Close, H. G., Scherr, R.E., Plenary speaker for Foundations and Frontiers of Physics Education Research–Puget Sound, "Using the body symbolically to understand energy," Port Angeles, WA, United States. (June 2011).

Close, H. G., Scherr, R.E., Plenary speaker for Foundations and Frontiers of Physics Education Research, "Using the body symbolically to understand energy," Bar Harbor, ME, United States. (May 2011).

Close, H. G., Scherr, R.E., annual meeting of the Pacific Northwest Association of College Physics, "Using the body symbolically to understand energy," Pacific Northwest Association of College Physics, Moscow, ID, United States. (April 2011).

Posters:

Zamora, S. (Student), Close, H. G., Joint Fall 2022 Meeting: Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the SPS, "Examining student thinking about series approximations using potential energy in a series of charge configurations," American Physical Society, Rice University, Houston, TX, United States. (October 13, 2022).

Close, E. W., Conn, J., Donnelly, D., Close, H. G., Physics Teacher Education Coalition (PhysTEC) Conference, "Designing Learning Assistant Program Structures to Create Resilient Community," Denver, CO. (February 2020).

Close, E. W., Quichocho, X. R., Schipull, E. M., Conn, J., Close, H. G., International Learning Assistant Research Symposium, "Supporting Identity Reconciliation Through LA Program Structures," Boulder, CO, United States. (October 18, 2019).

Mestas, G. R., Close, H. G., Physics Education Research Conference, "Framing the pursuit of a physics degree as a hero's journey," American Association of Physics Teachers, Provo, UT, United States. (July 25, 2019).

Close, H. G., Physics Education Research Conference, "Meaning and purpose in the pursuit of physics teaching careers," American Association of Physics Teachers, Provo, UT, United States. (July 25, 2019).

Close, E. W., Mailloux-Huberdeau, J.-M., Close, H. G., Donnelly, D., 2018 PhysTEC Conference, "Characterization of time scale for detecting impacts of reforms in an undergraduate physics program," College Park, MD, United States. (February 2018).

Close, E. W. (Presenter), Conn, J., Close, H. G., 2018 PhysTEC Conference, "“It’s okay to be wrong”: Developing identities of competence in the TXST LA program," College Park, MD, United States. (February 2018).

Close, E. W., Mailloux-Huberdeau, J.-M., Close, H. G., Donnelly, D., 2017 Physics Education Research Conference, "Characterization of time scale for detecting impacts of reforms in an undergraduate physics program," Cincinnati, OH, United States. (July 2017).

Lunk, B. R., Close, H. G., American Association of Physics Teachers Conference, "On the Value of Constraint-Based Reasoning in

Computational Physics," AAPT, Covington, KY, United States. (July 2017).

C. Scholarly / Creative Grants and Contracts:

1. Funded External Grants and Contracts:

Feng, Li (Principal), Close, Hunter Garth (Co-Principal). Collaborative Research: Retention, Persistence, Effectiveness of STEM Teachers in High-need School Districts--An Investigation of the NSF Robert Noyce Teacher Scholarship, National Science Foundation, Federal, $1,160,761.00. (Submitted: August 28, 2019, Funded: September 1, 2020 - August 31, 2024). Grant.

Additional Comments: This project aims to investigate how to build a reliable high-quality supply of STEM teachers for high-need school districts. This work will contribute to the national need for educating a robust and diverse STEM workforce. The project will analyze whether and, if so, how scholarships provided by the Noyce Teacher Scholarship Program help to alleviate STEM teacher shortages. The project seeks also to provide insights about how to create partnerships between local school districts and higher education institutions. The collaborating institutions are in two populous states, and together serve both rural and urban school districts and cover multiple STEM disciplines. This research has the potential to raise awareness of challenges STEM teachers face in high-need settings and to suggest policy solutions to address these challenges. In addition, the project will contribute to understanding the influence of the Noyce program on the STEM teacher workforce.

This project involves three core research institutions (Texas State University, Florida Atlantic University, and The Brookings Institution) and four collaborating institutions with Noyce programs (Texas State University, University of Texas at Arlington, University of West Florida, and Florida International University). The project will mine local and national databases for patterns that uncover the impact of Noyce projects on the supply of STEM teachers in the school districts they serve. The project seeks to raise awareness of challenges specific to STEM teachers in high-need settings, generate evidence-based policy solutions, and promote a better understanding of how Noyce projects influence the STEM teacher workforce. Project research questions include: (1) What are the characteristics of STEM teachers in high-need school districts and how have these characteristics changed over time? (2) What factors are associated with STEM teacher retention and persistence in high-need school districts? (3) What types of district or school programs or policies are associated with stronger STEM workforce measures? (4) What is the estimated impact of proximity to the Noyce program on the STEM teacher workforce in high-need school districts? (5) Do high-need school

districts with higher proportions of Noyce graduates perform better on student outcomes or experience smaller race- or poverty-based gaps than other high-need school districts with fewer Noyce graduates? (6) What are the demographics and qualifications of the STEM teacher candidate pool, and how do they change during the training process? (7) Do different programs have varying levels of success getting candidates through their programs? (8) How do local high-need school districts perceive teachers coming from Noyce institutions? The research team will use secondary data and collect primary data to examine these questions. Secondary data will include several nationally representative surveys on teachers, schools, school districts, and principals administered by the National Center on Education Statistics. New primary data will be generated through interviews at collaborating institutions with Noyce programs and through the administration of an alumni survey. The research team will also work with collaborating Noyce institutions to extract and analyze program data on the selection and matriculation of teacher candidates. This Track 4: Noyce Research project is supported through the Robert Noyce Teacher Scholarship Program (Noyce). The Noyce program supports talented STEM undergraduate majors and professionals to become effective K-12 STEM teachers and experienced, exemplary K-12 STEM teachers to become STEM master teachers in high-need school districts. It also supports research on the persistence, retention, and effectiveness of K-12 STEM teachers in high-need school districts.

Justice, Sean Bradley (Principal), Assaf, Lori Czop (Co-Principal), Kinard, Timothy A (Supporting), Martinez Hinestroza, Jose Manuel (Supporting), Veech, Joseph A (Supporting), Close, Hunter G (Supporting), Burke, Quinn (Supporting). EPK-2: Exploring PK-2 Teachers' Abilities to Identify CT Precursors and Implement Learning Activities that Strengthen Computer Science in Early Childhood Classrooms, National Science Foundation, Federal, $450,000.00. (Submitted: November 2019, Funded: September 2020 - August 2023). Grant.

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Close, Hunter Garth (Co-Principal), (Principal), Donnelly, David (Co-Principal). Collaborative Research: Understanding Robert Noyce Teacher Scholarship Outcomes in Texas, National Science Foundation, Federal, $49,998.00. (Funded: July 1, 2016 - June 30, 2019). Grant.

Close, Hunter (Principal), Close, Eleanor (Co-Principal), Donnelly, David (Co-Principal), Mount, Jennifer (Co-Principal), Smith, Philip (Principal). Communities and Pathways: Cultivating Science Educator Identity for Undergraduates through an Inclusive Physics Learning Assistant Program and Alignment of STEM Degrees with Teacher Certifications, National Science Foundation, Other, $350,000.00. (Submitted: January 1, 2013, Funded: January 1, 2013 - December 1, 2014). Grant.

Additional Comments: Foster a thriving community of undergraduate students at Texas State who identify as science educators, which will serve in the future as the supply of applicants to a Noyce Phase I Teacher Scholarship project. Build and support community via two major mechanisms: the "Communities" component, which is an expanding Learning Assistant (LA) program in the physics department; and the "Pathways" component, which is alignment of STEM degrees with teacher certifications. Conduct qualitative research on LA program using theoretical lens of community of practice.

Funding Source not specified

Close, Hunter (Principal). Tech2Teach: Developing Institutional Commitment to STEM Teacher Preparation, Funding Source not specified, Other, $300,000.00. (Submitted: September 1, 2012, Funded: September 1, 2012 - August 1, 2014). Grant.

Additional Comments: This capacity-building proposal develops the foundation for a Learning Assistant program at Rochester Institute of Technology (RIT) to attract majors in four core STEM disciplines - physics, chemistry, mathematics, and biology - toward careers in secondary education. This project takes a comprehensive approach: attracting undergraduate STEM majors at RIT, providing a path - Tech2Teach - through Nazareth to certification in secondary education, and developing connections with existing high-school teacher groups to provide continuing support.

Funding Source not specified

Close, Eleanor (Co-Principal), Close, Hunter (Principal). Honing diagnostic practice: Toward a new model of teacher professional preparation and development, Funding Source not specified, Other, $3,700,000.00. (Submitted: September 1, 2008, Funded: September 1, 2008 - August 1, 2013). Grant.

Additional Comments: (NSF DRL 0822342) The "Energy Project." Conduct qualitative research of

teacher practice of formative assessment in order to elucidate components of
and obstacles to effective practice. Investigate the evolution of teachers' establishment of a diagnostic learning environment in the science classroom.
Develop curriculum for the learning of energy for a pair of two-week courses
for teachers. Develop framework for online diagnostic tools for teachers' use
in ongoing assessment of student thinking about energy.

Funding Source not specified

Close, Hunter (Principal), Close, Eleanor (Principal). Improving the Effectiveness of Teacher Diagnostic Skills and Tools (G)(NSF ESI 0455796), Private / Foundation / Corporate, $1,500,000.00. (Submitted: April 1, 2005, Funded: April 1, 2005 - March 10, 2010). Grant.

Additional Comments: Close,Hunter,Senior Personnel.
Develop and implement rigorous content-based professional development courses
for in-service secondary teachers in the content areas of Properties of Matter, Heat, & Temperature, and Physical, & Chemical Change. Develop and test
web-based tools for formative assessment of student learning in these content
areas.

2. Submitted, but not Funded, External Grants and Contracts:

Close, Hunter Garth (Principal), Collins, Kristina Henry (Co-Principal), Qasem, Apan Muhammad (Co-Principal), Roundtree, Aimee Kendall (Co-Principal), Solis, Carlos (Co-Principal). Interactions of Physical & Computational Thinking in a Block-based Editor for GlowScript VPython, National Science Foundation, Federal, $928,335.00. (Submitted: March 2017). Grant.

Close, Hunter Garth (Principal), Close, Eleanor W (Co-Principal), Donnelly, David (Co-Principal). BEMUP-z: Body Engagement with Mathematics in Undergraduate Physics – Complex Numbers, NSF IUSE program, $330,000.00. (Submitted: February 2014). Grant.

Additional Comments: Explore a novel framework for designing learning experiences about mathematical abstractions in physics using the promise of gesture and other symbolic body engagement. Develop and study modes of body engagement, including interaction with symbolic props like graphics and manipulatives that enable more complicated

gesturing, for managing the specific abstraction of complex numbers (e.g., 2 + 3i) and functions (e.g., e^ikx) in various physics contexts.

Close, Eleanor (Co-Principal), Close, Hunter (Principal). Collaborative Research: Type 2: Developing Engineering Students as Self-regulated Learners: A Texas Collaborative., TUES (Type 2) program at NSF, Private / Foundation / Corporate, $600,000.00. (Submitted: January 1, 2013). Grant.

Additional Comments: Support the development of self-regulated learning (SRL) abilities in first-
year engineering students at four collaborating institutions (Texas A&M; University, lead institution; Texas State University-San Marcos; Tarleton State University; West Texas A&M; University), with the goal of increasing
retention and improving academic success rates, by: (1) providing professional
development for faculty members at participating institutions to support their
preparation of instructional materials; (2) developing and evaluating instructional materials for SRL in four subject areas: engineering, chemistry,
physics, and mathematics; and (3) evaluating the influences of the materials
on student SRL skills and content learning.

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Close, Hunter (Principal). Building a Paradigms-Inspired Community of Practice in Quantum Mechanics, TUES (Type 2) program at NSF, Private / Foundation / Corporate, $500,000.00. (Submitted: July 1, 2012). Grant.

Additional Comments: Type 2 proposals focus on providing research evidence for effectiveness of
instructional innovations, which is in this case, Paradigms in Physics (http://physics.oregonstate.edu/paradigms/index). Study how understanding
complex numbers functions in students' and instructors' understanding of quantum mechanics, and how this understanding is communicated.

Close, Hunter (Principal), Talley, Kim (Co-Principal), Beall, Gary (Principal), Weigum, Shannon (Co-Principal). Interdisciplinary Entrepreneurial Educational Experience, IGERT program at NSF, Private / Foundation / Corporate, $2,200,000.00. (Submitted: June 1, 2012). Grant.

Additional Comments: Support PhD students in MSEC program at Texas State in engaging in
entrepreneurial projects off-campus, in collaboration with local businesses.
Apply "Community of Practice" theory of learning for effective program design
and for formative assessment of project via qualitative research on socio-cognitive dynamics between students and work within project structures.

Close, Hunter (Principal). Transformative Professional Development: Changing what future instructors value in science education., REESE program at NSF, Private / Foundation / Corporate, $300,000.00. (Submitted: November 1, 2009). Grant.

Additional Comments: This project ($300,000) proposed to design, implement, and research the
effectiveness of a particular transformative PD program:Â the Learning Assistant program at Seattle Pacific University (SPU).Â LA programs integrate
content, pedagogy, and practice and produce documented improvement in all
three areas. At SPU, preliminary results include improvement of the LAs' abilities to listen and to teach effectively, increased esteem for the intelligence that teaching requires, and a relative explosion of interest in K-12 physical science teaching as a profession.

3. Funded Internal Grants and Contracts:

Close, Hunter (Principal). National dissemination of transformative experiences of Physics Learning Assistants, Center for Scholarship and Faculty Development, Seattle Pacific University, Institutional (Higher Ed), $4,000.00. (Submitted: January 1, 2010). Grant.

Additional Comments: Advise undergraduate Physics Learning Assistants in preparation of contributed
presentations at AAPT. Formulate account of those elements of LA program that
were most transformative for LAs' sense of professional vocation.

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Month not specified, 01 entered

Roundtree, Aimee Kendall (Co-Principal), Close, Hunter Garth (Co-Principal). Computer Modeling and Visualization App for Science Teachers and Students, Speed Networking for Research Multidisciplinary Team Incentive, Texas State University, $2,200.00. (Funded: 2016 - Present). Grant.

Additional Comments: We have started the preliminary stage of a larger grant project for submission to the NSF program STEM+C, which addresses emerging challenges in the learning and teaching of STEM and computing. The STEM+C grant will involve Dr. Close and his graduate students building an app that will help students and teachers create high-level scientific visuals with an interface easier than learning Python or other programming languages. The app will facilitate integration of computing education in STEM education. Finally, phase one will include developing a preliminary prototype of the application to usability test, Dr. Roundtree’s expertise and involvement.

Close, Hunter Garth (Principal), Percent Contribution: 100%. Programming for physics students using GlowScript Blocks, Instructional Technologies Support, Texas State University, $5,000.00. (Funded: March 2017 - October 2017). Grant.

4. Submitted, but not Funded, Internal Grants and Contracts:

Close, Hunter Garth. Student understanding of computation in introductory physics via GlowScript Blocks, Research Enhancement Program, Texas State University, $8,000.00. (Submitted: October 2017). Grant.

Close, Hunter (Principal). Toward the Development of a Stronger Foundation in Theory and Observational Practice for Cognitive Dynamics in Interactive Physics Learning Situations, Research Enhancement Program at Texas State University, Institutional (Higher Ed), $8,000.00. (Submitted: January 1, 2011). Grant.

Additional Comments: This project proposed to adapt Conceptual Blending Theory for physics
education research, especially for use in analysis of interactions in learning
situations on video record.

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Month not specified, 01 entered

E. Scholarly / Creative Professional Development Activities Attended:

"AAPT New Faculty Workshop." (November 2011).

IV. SERVICE

A. Institutional

1. University:

Department Representative, General Education Council. (November 6, 2023 - Present).

Additional Comments: I appeared before the General Education Council to explain and justify the physics department's application to have the new (Fall 2024) introductory calculus-based course numbers included in the university core curriculum, like the existing course numbers.

Member, Teacher Education Council. (August 2023 - Present).

Alternate, General Education Council. (August 2021 - Present).

Liaison, Faculty Senate. (August 2022 - August 2023).

Additional Comments: Faculty Senate Liaison from the Department of Physics

Department Liaison, Faculty Senate. (August 2015 - August 2020).

Additional Comments: Participate in one senate meeting per semester, conduct department senate liaison election annually

Member, Registration and Academic Calendar Committee. (August 2017 - May 2019).

Ambassador, Public relations re: Ingram Hall classrooms. (October 2018 - November 2018).

Additional Comments: I cooperated with the reporter and photographer to create this documentation of the new classrooms.
https://stories.txstate.edu/campus-life/ingram-building-opening.html

Chair, PhysTEC site visit. (April 27, 2018).

Additional Comments: The external review team visited our PhysTEC Comprehensive Site in the 3rd and final year of the project.

Member, Suspension Appeals Committee. (January 2017 - May 2017).

Member, Continuation of college-level committee for developing STEP proposal. (January 1, 2013 - May 1, 2013).

Additional Comments: Initial development of physics degree plans in combination with teacher
certification in physical science and physics/mathematics.

Role not specified, Member selected as default

Member, College of Science and Engineering committee to explore possibility of developing a proposal for the NSF Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) program. (September 1, 2012 - December 1, 2012).

Additional Comments: Led by Dean S. Seidman

Role not specified, Member selected as default

Member, STEM Education committee. (January 1, 2012 - May 1, 2012).

Additional Comments: Presented on potential physics department submission of grant application to
Robert Noyce Teacher Scholarship Program at NSF. Led by Dean S. Seidman.

Role not specified, Member selected as default

Member, committee on STEM Education in the College of Science and Engineering. (September 1, 2011 - December 1, 2011).
Additional Comments: Prepared presentation on and led discussion of comparison of Learning
Assistant programs and Supplemental Instruction programs. Led by Dean S.
Seidman.

2. College:

Member, Ingram Hall Classrooms Committee. (January 2016 - December 2017).

3. Department/School:

Undergraduate Advisor, Department of Physics. (January 2020 - Present).

Additional Comments: I instituted a high-accessibility mechanism for student-advisor meetings involving appointment sign-ups and one-on-one zoom meetings.

Website editor. (April 2016 - Present).

Member, Personnel Committee. (August 2015 - Present).

Chair, Physics Undergraduate Major Programs Committee. (September 2014 - December 2019).

Co-Chair, Learning Assistant Program. (January 2012 - May 2019).

Chair, Tenure-track faculty search committee. (November 2017 - May 2018).

Chair, Lecturer Search Committee. (April 2017 - July 2017).

Chair, Building undergraduate community Committee. (January 1, 2013 - May 1, 2013).

Co-advisor, Society of Physics Students. (January 1, 2013 - May 1, 2013).

Invited and hosted, Invited and hosted colloquium speaker Jesse Canterbury on April 10, 2013. (January 1, 2013 - May 1, 2013).

Leader, Led expansion of Learning Assistant program into pilot section of PHYS 2425. (January 1, 2013 - May 1, 2013).

Chair, Building undergraduate community Committee. (September 1, 2012 - December 1, 2012).

Co-advisor, Society of Physics Students. (September 1, 2012 - December 1, 2012).

Led, with Eleanor Close, The expansion of the Learning Assistant program into all sections of PHYS 1430. (September 1, 2012 - December 1, 2012).

Member, Team to design and implement Learning Assistant pilot program for one section of PHYS 1430. (September 1, 2011 - December 1, 2011).

Member, upper division instructional reform team with Prof. David Donnelly. (September 1, 2011 - December 1, 2011).

Additional Comments: Regular preparation meetings throughout the process of introducing research-
based tutorials into PHYS 3414 (Classical Mechanics) and PHYS 4310 (Electromagnetic Theory I).

Undergraduate Advisor, Honors contract with student for PHYS 3414. (September 1, 2011 - December 1, 2011).

Additional Comments: supplemented course with project on history of Euler-Lagrange equation.

B. Professional:

Chair, College Board, Advanced Placement Physics 2 - Exam Development Committee, Reston, VA, United States. (June 2023 - Present).

Additional Comments: 3 year term

Member, College Board, Advanced Placement Physics 2 - Exam Development Committee, Reston, VA, United States. (August 2021 - Present).

Reviewer / Referee, Computers & Education. (July 2016 - Present).

Reviewer / Referee, The Physics Teacher. (June 2016 - Present).

Reviewer / Referee, Science Education. (April 2016 - Present).

Reviewer / Referee, American Journal of Physics. (January 1, 2010 - Present).

Reviewer / Referee, Physics Education Research Conference proceedings. (January 1, 2010 - Present).

Reviewer / Referee, Physical Review: Physics Education Research. (January 1, 2008 - Present).

Member, College Board, Advanced Placement Physics 2 Reading, Kansas City, MO, United States. (June 1, 2023 - June 8, 2023).

Senior PhysTEC Advisor, Physics Teacher Education Coalition. (September 2019 - December 2022).

Additional Comments: Serve as consultant to national PhysTEC project, with special focus on advising the PhysTEC project team at Texas A&M University - Commerce.

Texas-area Computation Users Support Person, Partnership for Integration of Computation into Undergraduate Physics, TX. (March 2017 - May 2019).

Reviewer / Referee, National Science Foundation, Alexandria, VA, United States. (September 24, 2018 - September 25, 2018).

Additional Comments: Proposal review panelist

Vice President, Texas Section of the American Association of Physics Teachers. (October 2016 - October 2017).

External Review Committee, PhysTEC Program at West Virginia University, Morgantown, WV, United States. (April 17, 2017 - April 19, 2017).

Reviewer / Referee, National Science Foundation, Washington, DC, United States. (February 24, 2016 - February 26, 2016).

Chair, Research in Physics Education Committee, American Association of Physics Teachers. (January 1, 2014 - January 1, 2015).

Member, Physics Education Research Leadership Organizing Council. (January 1, 2014 - January 1, 2015).

Member, Research in Physics Education Committee, American Association of Physics Teachers. (January 1, 2012 - January 1, 2015).

Official adopter and beta-tester of quantum mechanics materials, Paradigms in Physics program from Oregon State University. (January 1, 2011 - May 15, 2014).

Vice chair, Research in Physics Education Committee, American Association of Physics Teachers. (January 1, 2013 - January 1, 2014).

Reviewer / Referee, Journal of College Science Teaching. (January 1, 2011 - August 1, 2013).

Panel moderator, 2012 Physics Education Research Conference. (January 1, 2012).

Director and Lead Designer, Physics Learning Assistant Program, Seattle Pacific University. (January 1, 2008 - January 1, 2011).

Member, Standard Setting Committee, Washington Educator Skills Test for Physics Endorsement. (January 1, 2008 - December 1, 2008).
Additional Comments: Defined evaluation criteria for performance on test

Member, Washington State Science Assessment Leadership Team. (January 1, 2006 - January 1, 2008).
Additional Comments: Developed scenarios and questions for Washington Assessment of Student
Learning
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Reviser, Washington State Science Curriculum Instructional Framework. (January 1, 2006 - January 1, 2008).
Additional Comments: Revised state science standards to identify core content standards
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Member, Committee to Revise the Washington State Physics Endorsement Competencies. (January 1, 2007 - December 1, 2007).
Additional Comments: Reviewed and revised state physics endorsement competencies, including
addition of a new section on understanding of student thinking in physics as required content knowledge for physics teachers.

Member, Content Advisory Committee, Washington Educator Skills Test for Physics Endorsement. (January 1, 2007 - December 1, 2007).
Additional Comments: Reviewed, revised, and contributed new questions for state physics endorsement
test. Advocated successfully for inclusion of items testing candidates' reasoning about student thinking in physics.

C. Community:

Organizer, Led a session for elementary teachers at Science Saturday, hosted by Drs. Sharon ONeal and Catherine Davis at the Round Rock Higher Education Center. (February 1, 2013).

Organizer, Led a session for teachers for the STELLAR project, cooperating with Jesse Gainer, faculty in the College of Education at Texas State: Explaining states of matter with a kinesthetic activity for atoms. (September 1, 2012).

Organizer, Led a session at the STELLAR summer institute for teachers, cooperating with Jesse Gainer, faculty in the College of Education at Texas State: Making the abstract concrete with a kinesthetic activity for energy. (July 1, 2012).

Participant, Joined 5th grade team at Crockett elementary school in SMCISD for science assessment planning meeting. (September 1, 2011 - December 1, 2011).

Participant, after-school professional development workshop for K-5 teachers. (November 1, 2011).

Participant, full-day professional development workshop for K-5 teachers in San Marcos CISD and Hays CISD, hosted by University of Texas College of Natural Sciences Regional Collaborative. (September 1, 2011).

Speaker, Met with Sara Torres, Travis Elementary School, SMCISD, to meet teachers and discuss science education collaborations between Travis and the Texas State Department of Physics. (September 1, 2011).

D. Organization Memberships:

American Physical Society (APS). (2011 - Present).

American Association of Physics Teachers (AAPT). (2002 - Present).

International Society of the Learning Sciences. (2010 - 2015).
Additional Comments: Years not specifed, 1925 entered as start year

Washington Teachers of Teachers of Science. (2007 - 2011).

E. Service Honors and Awards:

Award / Honor Recipient: PhysTEC 5+ Club (AY 2020-21), Physics Teacher Education Coalition.
December 10, 2021

Additional Comments: 10 universities nationwide, only 1 in Texas
Major goal of funded PhysTEC project at TXST (2015-2018)

Award / Honor Recipient: PhysTEC 5+ Club (AY 2019-20), Physics Teacher Education Coalition.
December 8, 2020
PhysTEC 5+ Club 2019-20-1.JPG
Additional Comments: Texas State Newsroom, (originally published 17 Dec 2020):
https://news.txstate.edu/inside-txst/2020/texas-state-joins-five-plus-club.html

From the Hill, Spring II, 2021 (29 Jan 2021):
https://mailchi.mp/b01c3b489e83/from-the-hill?e=66fbb842da&fbclid=IwAR

0R37CmvVRGNPoSGCu248_bv4Dcm_GZ4A37v2MPPEwfGs1kKA1yePIh9wc

8 universities nationwide, 2 in Texas
Major goal of funded PhysTEC project at TXST (2015-2018)

F. Service Grants and Contracts:

1. Funded External Service Grants and Contracts:

Close, Hunter Garth (Principal), Close, Eleanor W (Co-Principal). PhysTEC Comprehensive Site, American Physical Society, Federal, $300,000.00. (Funded: August 1, 2015 - July 31, 2018). Grant.

G. Service Professional Development Activities Attended:

Conference Attendance, "2016 Noyce Summit," National Science Foundation, Washington, DC, United States. (July 20, 2016 - July 22, 2016).