

PERSONAL INFORMATION

Wilson J. González-Espada

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College of Science, Morehead State University

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EDUCATION

Ph.D., Science Education, The University of Georgia, Athens, GA, May 2001

M.A., Science Education, Interamerican University of Puerto Rico, San Germán, PR, May 1997

B.A., Secondary Education-Physics, University of Puerto Rico, Río Piedras, PR, May 1993

ACADEMIC POSITIONS

Professor of Physics and Science Education, 2018-present.

Associate Professor of Physics and Science Education, 2008-2018.

College of Science, Morehead State University, Morehead, KY

HON 215, [History of Physical Science in] The Modern World: Honors Core IV

PHYS 109, A History of the Universe

PHYS 201, Elementary Physics I

SCI 103, Introduction to Physical Science

SCI 104, Modern Issues and Problems in the Physical Sciences

SCI 111, Inquiry Physical Science for Elementary Teachers

SCI 123, Concepts and Experiences in Energy

SCI 199, Special Class - Essentials of STEM Education Research (Level Up!)

SCI 490, Science for the Elementary Teacher

SCI 491/691, Science for the Middle School Teacher

UTCH 250, [Historical] Perspectives on Science and Mathematics

UTCH 400, Research Methods for Science

Associate Professor of Physical Science/Science Education, 2007-2008.

Assistant Professor of Physical Science/Science Education, 2001-2007.

School of Physical and Life Science, Arkansas Tech University, Russellville, AR

PHSC 1013, Introduction to Physical Science, Lecture

PHSC 1021, Introduction to Physical Science, Lab

PHYS 1114, Applied Physics Lecture and Lab

PHYS 2014-2024, Physical Principles I and II

PHSC 3213, Science in Elementary and Middle School Education

PHSC 4701, Special Methods in Physical Science Education

PHYS 4992, Special Problems in Physics: Guided Experiences in Physics Instruction

PHSC 4883, Multicultural Science and Math Education

Instructor of Physics and Mathematics, 1996-1998

Department of Physics and Mathematics, Instituto Tecnológico de Puerto Rico, Ponce, PR

FISI 1105-1205, Applied Physics

MATE 1111-1112, Technical Mathematics.

Physics and Chemistry Teacher, 1994-1995

Geometry and Algebra Teacher, 1993-1994

Notre Dame High School, Caguas, PR

PROFESSIONAL EXPERIENCE

2021-23

STEM Education and Assessment Consultant, Eastern Kentucky Light at Night Education Project AAPT Bauder Endowment for the Support of Physics Teaching, KAS Athey Science Education and Outreach Fund (External grant, Dr. Jennifer Birriel, PI; Dr. J. Kevin Atkins, Co-PI).

2019-23

Summer Research Fellow, Air Force Research Lab Faculty Fellowship Program, Center for Physics Education Research, Department of Physics, United States Air Force Academy, Colorado Springs, CO.

2018

External Proposal Evaluator, National Agency for Investigation and Innovation (ANII), María Viñas Fund, Montevideo, Uruguay.

2016-17

Director, International Education, Morehead State University, Morehead, KY.

2014-17

Grant Program Evaluator, Cybernetic Girls can be Pinky, Teaching to Increase Diversity and Equity in STEM (TIDES), Project Kaleidoscope, American Association of Colleges and Universities, University of PR Humacao Campus.

2012-13

Pre-College Summer Science Research Coordinator, Morehead State University/Universidad Metropolitana/NSF partnership (12 student-researchers).

2010

Program Evaluator, Peer Mentoring and Undergraduate Research, Space Science Program, Morehead State University, Morehead KY.

2009

Program Evaluator, Undergraduate Fellowship Program, Morehead State University, Morehead, KY.

2009-present

Physics Science Test Item Writer, Measured Progress, Dover, NH.

2008-present

Fairness issues consultant (science passages & items), ACT Inc, Iowa City, IA.

2008

Summer Research Fellow, Department of Pediatrics, University of Arkansas for Medical Sciences, Little Rock, AR

2005

Summer Research Fellow and REU Co-Mentor, Center for the Analysis and Prediction of Storms, National Weather Center, Norman, OK

2005-08

Physical Science Laboratory Coordinator, Department of Physical Science, Arkansas Tech University

2004

Summer Research Fellow, Center for Applied Research and Evaluation, Arkansas Children's Hospital/University of Arkansas for Medical Sciences, Little Rock, AR

2003

Summer Visiting Scholar, Center for Fairness in Assessment, Educational Testing Service, Princeton NJ.

2002-08

University Supervisor of four student teachers in physical science education, Arkansas Tech University, Russellville, AR.

2000-01

University Supervisor of seven student teachers in science education, The University of Georgia, Athens, GA.

1999

Summer Research Intern, Hispanic Association of Colleges and Universities USDA Forest Service, Athens, GA.

1994

Summer Research Intern, University of Wisconsin Medical School, Madison, WI.

SCHOLARLY ACTIVITIES: REFEREED PUBLICATIONS

Blankenship, R., Candra, B., Pennington, L., & González-Espada, W. J. (2022). Children's understanding of analog time keeping: Longitudinal view and potential misconceptions. *Journal of the Kentucky Academy of Science*, 84(1), xx-xx.

Hyman, S., González-Espada, W. J., Bieryla, A., and Díaz-Merced, W. (2023). Sounds in sunlight: Blind students hear solar eclipses. *The Science Teacher*, 90(7), 46-51.

O'Keefe, D. S., González-Espada, W. J., and Meier, D. (2023) *Beyond STEM attrition: Quantifying the flow of U.S. Air Force Academy cadets between academic majors to improve STEM persistence*. *Journal of Military Learning*, 7(2), 3-25.

Casillas-Martínez, L., Franco-Ortiz, M., Carrasquillo, R. E., & González-Espada, W. J. (2023). Unpacking racism among Puerto Rican scientists: Intersectionality of colorism, colonialism, and the culture of science. *Journal of Latinos and Education*, <https://doi.org/10.1080/15348431.2023.2184370>.

González-Espada, W. J., Gallenstein, K., & Collins, K. (2022). Can clockwise exists without clocks? *The Physics Teacher*, 60(8), 653-655.

Pérez-Aguirre, R., González-Espada, W. J., & Sarasola-Bonetti, M. (2022). Implementación del aprendizaje basado en proyectos en tres centros de educación media uruguayos. *Pensamiento Educativo, Revista de Investigación Latinoamericana*, 59(2), 1-17. <https://doi.org/10.7764/PEL.59.2.2022.10>.

O'Keefe, D. S., Meier, D., Valentine-Rodríguez, J., Belcher, L. T., & González-Espada, W. (2022). A mixed methods analysis of STEM major attrition at the U.S. Air Force Academy. *The Journal for Military Learning*, 6(1), 15-38. <https://www.armyupress.army.mil/journals/journal-of-military-learning/journal-of-military-learning-archives/april-2022/>

Brewer, H. E., González-Espada, W. J., & Boram, R. (2021). Student retention in quantitative STEM majors: Science teachers and college students' perceptions of push and pull factors. *Journal of the Kentucky Academy of Science*, 82(1), 1-12. <https://doi.org/10.3101/1098-7096-82.1.1>

González-Espada, W. J. & Jones, B. S. (2020). *Betting on better buoyancy? Be careful what you wish for*. *The Physics Teacher*, 58(6), 413-415.

Dwyer, J. H., González-Espada, W. J., de La Harpe, K, & Meier, David (2020). Factors associated with students graduating with STEM degrees at a military academy: Improving success by identifying early obstacles. *Journal of College Science Teaching*, 50(1), 28-35.

González-Espada, W. J. (2020). Rosa Navarro-Haydon: Struggling for locally relevant science education in Puerto Rico, 1926-1966. *Revista Educación, Universidad de Costa Rica*, 44(1), <https://revistas.ucr.ac.cr/index.php/educacion/article/view/37423>.

- González-Espada, W. J., Lacués, E.; Otheguy, G., Pagano, M., Pollio, A., Pérez, R., & Sarasola, M. (2019). Identifying academically at-risk incoming freshmen at a private university in Uruguay: Psychometric evaluation of a mathematics diagnostic test. *UNIÓN: Revista Iberoamericana de Educación Matemática*, 15(56), 26-46. <https://union.fespm.es/index.php/UNION/article/view/277>
- González-Espada, W. J., Pérez-Aguirre, R., & Sarasola, M. (2017). Perception of Science-Technology-Society (STS) topics among Uruguayan college students: Implications for high school curricular reform. *Bulletin of Science, Technology & Society*, 37(1), 15-22.
- González-Espada, W. J. & Carrasquillo, R. E. (2017). Puerto Rico: Race, ethnicity, culture, and physics teaching. *The Physics Teacher*, 55(6), 334-337.
- González-Espada, W. J., Díaz-Muñoz, G., Feliú-Mójer, M., Flores-Otero, J., Fortis-Santiago, Y., Guerrero-Medina, G., López-Casillas, M., Colón-Ramos, D., & Fernández-Repollet, E. (2015) Assessing a graduate school science recruitment symposium. *Cuadernos de Investigación en la Educación*, 30, 11-36. <http://cie.uprrp.edu/cuaderno/numero-30/>
- Knell, J. L., Wilhoite, A. P., Fugate, J. Z., & González-Espada, W. J. (2015). Using Item Response Theory to improve locally-constructed multiple choice tests: Measuring knowledge gains and curricular effectiveness. *Electronic Journal of Science Education*, 19(7). <http://ejse.southwestern.edu/issue/view/1213>.
- González-Espada, W. J., Llerandi-Román, P., Fortis-Santiago, Y., Guerrero-Medina, G., Ortiz-Vega, N., Feliú-Mójer, M., & Colón-Ramos, D. (2014). Impact of culturally relevant contextualized activities on elementary and middle school students' perceptions of science: An exploratory study. *International Journal of Science Education B – Communication and Public Engagement*, 5(2), 182-202.
- Wilhoite, A. P., Knell, J. L., & González-Espada, W. J. (2014). Use of herbal supplements among college students in Eastern Kentucky: Impact factors. *Journal of the Kentucky Academy of Science*, 75 (1-2), 53-68.
- Guerrero-Medina, G., Feliú-Mójer, M., González-Espada, W., Díaz-Muñoz, G., López, M., Díaz-Muñoz, S., Fortis-Santiago, Y., Pérez-Otero, J., Craig, D., & Colón-Ramos, D. A. (2014). Supporting diversity in science through social networking. *PLOS Biology*, 11(12), e1001740.
- González-Espada, W. J., Fortis-Santiago, Y., Guerrero-Medina, G., Ortiz-Vega, N. M., Colón-Ramos, D., & Feliú-Mójer, M. (2013). Suplementando el currículo de ciencias con contenido contextual y culturalmente relevante: Lecciones de la implementación del Proyecto Ciencia Boricua. *Cuadernos de Investigación en la Educación*, 28, 109-127.
- González-Espada, W. J. (2012) Falling PC solitaire cards: An open-inquiry approach. *The Physics Teacher*, 50(6), 365-366.
- O'Dell, G. A. & González-Espada, W. J. (2011). Going underground. *The Science Teacher*, 78(9), 39-43.
- González-Espada, W. J. (2011). Perceptions of school science teaching as a career among science majors. *Journal of Science Education/REC*, 12(2), 82-86.
- González-Espada, W. J., Birriel, J., & Birriel, I. (2010). Discrepant events: A challenge to students' intuition. *The Physics Teacher*, 48(8), 508-511.
- González-Espada, W. J., Birriel, J., & Birriel, I. (2010). Our planet from space: Pedagogical implications of the DISH Earth channel. *Astronomy Education Review*, 9(1), 010302, 10.3847/AER2009054.
- Haight, A. D. & González-Espada, W. J. (2009). Science literacy in Appalachia through contextually relevant experiences: The "Reading the River" project. *International Journal of Environmental and Science Education*, 4(3), 215-230.
- González-Espada, W. J. (2009). Preservice teacher education online: Students' opinions from a science methods course. *Journal of the Kentucky Academy of Science*, 70(1), 84-93.
- González-Espada, W. J. (2009). College students' opinions of engaging approaches in a physical science course. *Journal of College Science Teaching*, 38(5), 18-23.

- González-Espada, W. J., Hall-Barrow, J., Hall, R. W., Burke, B. L., & Smith, C. E. (2009) Peds PLACE: Quality continuing medical education in Arkansas. *Journal of the Arkansas Medical Society*, 105 (9), 211-213.
- González-Espada, W. J., Hall-Barrow, J., Hall, R. W., Burke, B. L., & Smith, C. E. (2009) Achieving success connecting academic and practicing clinicians through telemedicine. *Pediatrics*, 123(3), e484-e491.
- González-Espada, Wilson J. (2009). Detecting gender bias through test item analysis. *The Physics Teacher*, 47(3), 175-179.
- González-Espada, Wilson J. (2009). Authoring newspaper science articles: A rewarding experience! *The Clearing House*, 82(3), 131-134.
- González-Espada, W. J. (2008). Physical science lab quizzes: Results from test item analysis. *Journal of Science Education/REC*, 9(2), 81-85.
- González-Espada, W. J. & Stone, M. (2007). Guiding experiences in physics instruction for undergraduates. *The Journal of Physics Teacher Education Online*, 4(3), 3-6.
- González-Espada, W. J. & Bullock, D. W. (2007). Innovative applications of classroom response systems: Investigating students' item response times in relation to final course grade, gender, general point average, and high school ACT scores. *Electronic Journal for the Integration of Technology in Education*, 6, 97-108.
- González-Espada, W. J. (2007). The role of the scientific community in school science education. *Interciencia*, 32(8), 510-515.
- González-Espada, W. J. (2007). Using simple statistics to assure science fair success. *Science Scope*, 30(9), 54-56.
- Zaras, D. S. & González-Espada, W. J. (2006). Evaluation of the impact of the NWC REU Program compared with other undergraduate research experiences *Journal of Geoscience Education*, 54(5), 541-549.
- González-Espada, W. J. & Napoleoni-Milán, R. L. (2006). The impact of the freshman year experience on science students. In J. J. Mintzes and W. H. Leonard (eds.), *Handbook of college science teaching*. Arlington, VA: National Science Teachers Association, pp. 351-358.
- González-Espada, W. J. (2006). The influence of Puerto Rican physics teachers' political beliefs in their pedagogical practices. *Journal of Science Education/REC*, 7(2), 109-113.
- González-Espada, W. J., Ochoa, Eduardo R., Ibarra, Melissa J., & Vargas, Perla A. (2006). Perceptions of differential treatment from the viewpoints of attending physicians, residents, and Hispanic parents in Arkansas. *Hispanic Health Care International*, 4(3), 157-167.
- González-Espada, W. J. (2006). My experience as a visiting faculty at the NWC REU Program. *Journal of Earth System Science Education*, 1, JESSE-05-400-09.
- Torres, S. M. & González-Espada, W. J. (2006). Calculating "g" from acoustic Doppler data. *The Physics Teacher*, 44(8), 536-539.
- González-Espada, W. J., Ibarra, Melissa J., Ochoa, Eduardo R., & Vargas, Perla A. (2006). Multicultural medical encounters: The experience at a pediatric clinic. *Journal of the Arkansas Medical Society*, 102(8), 227-229.
- González-Espada, W. J. (2005). Inmigración y multiculturalismo educativo: El caso de los estudiantes dominicanos en las escuelas puertorriqueñas. *Revista Iberoamericana de Educación*, 36(12), 1-9.
- González-Espada, W. J., & Trantham, K. (2005). How is energy like money? Using analogies in physics teaching. *School Science Review*, 86(317), 85-90.
- González-Espada, W. J. (2005). Succeeding in Introduction to Physical Science: Is mathematics background important? *Journal of the Arkansas Academy of Science*, 58, 60-64.
- González-Espada, W. J. (2005). Las limitaciones del metodo científico. *Revista Spin Cero: Cuaderno de Ciencias*, 9, 87-91.

- González-Espada, W. J. (2004). Reinforcing physical science concepts with original comic strips. In M. Druger, E. D. Siebert, & L. W. Crow (Eds.), *Teaching Tips: Innovations in Undergraduate Science Instruction*. Arlington, VA: National Science Teachers Association Press.
- González-Espada, W. J. (2004). Multicultural education: Helping students succeed in science. *Electronic Journal of Literacy through Science*, 3(12).
- Hemmati, M. & González-Espada, W. J. (2003). Thermal behavior inside an igloo: An improved model. *Physics Education*, 38(3), 270-271. A multimedia file with additional details and derivations: <http://www.iop.org/EJ/mmedia/0031-9120/38/3/605/>.
- González-Espada, W. J. (2003). Learning and having fun with electric letter soups! *Science Education Review*, 2(3), 79-83.
- González-Espada, W. J. (2003). A last chance for getting it right: Addressing misconceptions in physical science through independent research. *The Physics Teacher*, 41(1), 36-38.
- González-Espada, W. J. (2003). Integrating physical science and the graphic arts with scientifically accurate comic strips: Rationale, description, and implementation. *Revista Electronica de Enseñanza de las Ciencias*, 2(1), 58-66. http://reec.uvigo.es/volumenes/volumen2/REEC_2_1_4.pdf.
- González-Espada, W. J. (2003). Physics education research in the United States: A summary of its rationale and main findings. *Journal of Science Education/REC*, 4(1), 5-7.
- González-Espada, W. J., Bryan, L.A., and Kang, N. (2001). The intriguing physics inside an igloo. *Physics Education*, 36(4), 290-292.
- Tippins, D. J., González-Espada, W. J., and Haugh, T. A. (1999). A chocolate curriculum. *The Science Teacher*, 66(7), 30-33.

SCHOLARLY ACTIVITIES: NON-REFEREED PUBLICATIONS

- Carrasquillo, R. E. & González-Espada, W. J. (2023?). An Americanizing journey from western Cuba to Kentucky: Juan E. Hernández's biographical sketch. In R. Nazario-Colon (ed.), *Latinxs in Appalachia: Appalachian Futures*. Lexington: University of Kentucky Press [submitted].
- Casillas-Martinez, L. & González-Espada, W. J. (2019). Cybernetic girls can be pinky: Strategies to recruit and retain Latinas into STEM in the context of faculty-to-student empowerment. In K. M. Mack, K. Winter & M. Soto (Eds.), *Culturally responsive strategies for reforming STEM higher education: Turning the TIDES on inequity* (pp. 33-51). Bingley, UK: Emerald Publishing Limited.
- Méndez, A. & González-Espada, W. J. (2016). *Searching for habitable worlds: An introduction*. San Rafael, CA: Morgan & Claypool Publishers.
- González-Espada, W. J. (2014). Entrevista a Joseph Taylor: Púlsares y radiotelescopios. *Astronomía*, 19(179), 38-43.
- González-Espada, W. J. (2011). Sandy Cheeks, scientist. *SpongeBob SquarePants and philosophy* (Popular Culture and Philosophy Series #60). Chicago, Ill: Open Court Publishing, pp. 181-194.
- González-Espada, W. J., Colón-Ramon, D., & Feliú-Mójer, M. (2011). *Ciencia Boricua: Ensayos y anécdotas del científico puertorriquito*. San Juan, PR: Editorial Callejón.
- González-Espada, W. J. (2011). El radiotelescopio de Arecibo desde dentro. *Astronomía*, 26 (140), 26-32.
- González-Espada, W. J. (2010). Peer mentoring at a space science undergraduate research program: Students' voices and lessons learned. *CUR Quarterly on the Web*, 31(2), 1-8.
- González-Espada, W. J. (2010). The case of the "not-so-short" circuit. *The Physics Teacher*, 48(8), 554-555.
- González-Espada, W. J. & Melvin, A. D. (2007). Physics takes Oklahoma by storm. *Interactions across Physics and Education*, 37(3), 46-47.
- Roberts, E. & González-Espada, W. J. (2006). Snap! Catch students' attention with mousetrap vehicles. *Tech Directions*, 65(1), 15-18.

González-Espada, W. J. & Oliver, J. S. (2002). Context and cultural relevance in Puerto Rican high school physics: A quantitative analysis of influencing factors *Proceedings of the 2002 Annual International Conference of the Association for the Education of Teachers in Science*, USA, 7, 682-702. ERIC Document Reproduction Service No. ED (465 602).

SCHOLARLY ACTIVITIES: SUBMITTED PUBLICATIONS

- O'Keefe, D., González-Espada, W. J., Alsid, S., & Meier, D. (2024?). Improving cadet success at USAFA by analyzing demographic and experiential interactions in quantitative Core courses and their impact on STEM attrition. *Journal of Military Learning* (in preparation).
- Black, A. & Gonzalez-Espada, W. J. (2024?). Using centicubes and Sankey diagrams to visualize radioactive decay. *The Physics Teacher* (in preparation).
- Drs. J. K. Adkins, J. Birriel, W. J. Gonzalez-Espada (and undergrads) (2024?). A physics-based light pollution education outreach program: Promise and problems. *The Physics Teacher* (submitted).
- Hicks, R. E. & Gonzalez-Espada, W. J. (2024?) Rural disparities and STEM persistence: An exploratory study. *Journal of Rural Social Sciences (JRSS)*
- Castillo-Cruz, B., González-Espada, W. J., & Vedrine, J. (2024?). Flipping introductory chemistry: Findings from a Hispanic serving institution. *Journal of Chemical Education*.