

BRENDA P. RODRÍGUEZ VILLANUEVA, Ed.D.

Educational Technology Strategist | STEM Specialist | Academic Researcher

San Juan, Puerto Rico | 787-484-6882 | brendapa367@gmail.com

PROFESSIONAL SUMMARY

Educator and Researcher with a Doctorate in Learning Technology and over 20 years of experience in Mathematics and Physics instruction. Expert in transforming complex scientific concepts into meaningful learning experiences through STEM methodologies, interactive simulations, and digital laboratories. Proven track record in designing high-impact virtual environments and curricula, optimizing academic performance through the strategic integration of educational technology at both graduate and K-12 levels.

EDUCATION

- Ed.D. in Curriculum and Teaching in Learning Technology | University of Puerto Rico, Río Piedras | GPA 4.0/4.0 | 2021
- M.Ed. in Education | Universidad Autónoma del Caribe, Colombia | 2012
- Specialization: Active STEM Learning with Interactive PhET Simulations | University of Colorado Boulder | 2025
- Post-Graduate Specialization: Pedagogy in Science (2010) Universidad Simón Bolívar, Colombia
- Post-Graduate Specialization: General Physics (2007) Universidad del Atlántico, Colombia.
- B.S. in Mathematics and Physics | Universidad del Atlántico, Colombia | 2004

ACADEMIC LEADERSHIP & RESEARCH SERVICE

- **Doctoral dissertation committee member:** Serve as a subject matter expert, evaluating research methodology and academic defense for doctoral candidates in Education and Technology.
- **Peer Reviewer / Journal Referee:** Conduct critical evaluations of manuscripts for specialized journals (Revista de Investigaciones de la Universidad Católica de Manizales,) focusing on pedagogy and digital learning factors.
- **Graduate student representative:** Elected representative for the Faculty of Education (2020-2021) at UPR-RP.

HIGHER EDUCATION & RESEARCH EXPERIENCE

University of Puerto Rico, Río Piedras (DECEP / CEA) | Professor & Facilitator | 2019 – 2021

- **Master-level course design (2022):** Developed and facilitated five core graduate courses for the Academy of Learning Technology and STEM Academy:
 - **EDUC 6645:** *Instructional Design Principles*, **EDUC 6650:** *Online Course Development*, **EDUC 6675:** *Instructional Message Design*, and **EDUC 6720:** *Learning Technology*.

- **Online Quality Assessment (2023):** Directed the "Online Course Evaluation" module for the RCM certification, establishing critical metrics for digital pedagogical effectiveness.
- **Digital Literacy Leadership (2023):** Developed the "Informed Digital Citizenship" module via Moodle, integrating media literacy and digital ethics into the university curriculum.
- **STEM Facilitation (2019):** Managed experimental laboratories and Learning Management System (LMS) platforms for specialized STEM certifications.

Universidad de la Costa (CUC), Colombia | *Physics & Engineering Professor* | 2007 – 2017

- **Technical Instruction:** Taught Mechanical Physics, Thermodynamics, and Electromagnetism for engineering programs, maintaining high retention rates through experimental learning.
- **Digital Transformation (2017):** Pioneered the migration of the "Introduction to Engineering" course to a 100% virtual modality.

University of Puerto Rico, Río Piedras Campus *Doctoral Research Assistant* | 2016 – 2019

- **Data Analytics:** Conducted quantitative data analysis using **SPSS** and developed/validated research instruments for educational projects.

K-12 TEACHING EXPERIENCE

S F School, San Juan, PR | *Physics & STEM Teacher* | March 2024

- Instruct high school physics (Grades 9-12) utilizing STEM methodologies and digital simulations to improve conceptual mastery.

Escuela Central de Artes Visuales, San Juan, PR | *Math Teacher* | 2021 – 2022

- Integrated technology-based instructional tools for senior-level mathematics in a specialized arts environment.

I.E.D. Salvador Suarez Suarez, Colombia | *Math & Physics Teacher* | 2008 – 2016 / 2022 – 2024

- Developed curriculum for grades 6-11 focusing on ICT-mediated reading comprehension and logical reasoning.

PUBLICATIONS

- Rodríguez-Villanueva, B. P., & Martínez-Mejía, R. D. (2025). Critical factors in hybrid learning environments. *Educación*, 34(67), 5–27.
<https://doi.org/10.18800/educacion.202502.A001>
- Rodríguez Villanueva, B. P., Rodríguez Villanueva, S. M., Martínez Mejía, R. D. C., & Nuñez Coavas, H. (2024). Determination of the Oxidative Stability of Omega-3 Oil Using Electrochemical Impedance Spectroscopy. *Ciencia Latina Revista Científica Multidisciplinar*, 8(4), 8307-8321. https://doi.org/10.37811/cl_rcm.v8i4.12993
- Martínez-Mejía, R. D. & Rodríguez-Villanueva, B. P. (2024). Key factors influencing initial learning in computer programming. *Revista Científica de Sistemas e Informática*, 4(2), e743. <https://doi.org/10.51252/rcsi.v4i2.743>
- Rodríguez-Villanueva B. P., Martínez-Mejía R. D. & Medina-Mosquera C. P. (2018). Study of the movement of projectiles using sensors of a smartphone. *Revista Espacios*, 39 (35), 13-13. <https://www.revistaespacios.com/a18v39n35/a18v39n35p13.pdf>

- Rodríguez-Villanueva B. P., Martínez-Mejía R. D. & Medina-Mosquera C. P. (2017). Use of Information and Communication Technologies (ICT) as a teaching resource to promote school coexistence. *Revista Espacios*, 38 (30), 24- 24.
<https://www.revistaespacios.com/a17v38n30/a17v38n30p24.pdf>
- Rodríguez-Villanueva B. P. & Molina-Coronel I J. E. (2015). Construction of an electromechanical generator for teaching string waves, using a virtual generator for tablet. *Revista Mexicana de Física E*, 61(2), 65 - 68.
https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1870-35422015000200002
- Rodríguez-Villanueva B. P. & Nuñez-Coavas H. (2013). Mechanical Formulation of Helmholtz Thermodynamics. *Revista momentos*, 46, 51 – 58.
<https://revistas.unal.edu.co/index.php/momento/article/view/41556/43194>
- Rodríguez-Villanueva B. P. & Martínez-Mejía R. D. (2011). Reading comprehension strategies mediated by tic. An alternative to improve reading skills in secondary school. *Revista Escenarios*, 9, 18 - 25. <http://repositorio.uac.edu.co/handle/11619/1618>

CORE COMPETENCIES & CERTIFICATIONS

- **Tech Stack:** Moodle, SPSS, Mendeley, Microsoft Office 365, PhET Simulations, Digital Programming.
- **Certifications:** Digital Programming Skills (600hrs), Student Learning Assessment (30hrs), Virtual Learning Environment Construction (42hrs).
- **Awards:** Doctoral Fellowship (2016-2020), Dissertation Scholarship (2020-2021), Academic Excellence Awards (B.S. & M.Ed.).

PROFESSIONAL TRAININGS

- STEM Content for Educators (90hrs, 2024)
- STEM Methodology & Inclusive Education (SENA, Academia Ciencias Exactas)
- Universal Design for Learning (UDL) & Academic Integrity (UPRRP, 2021)
- Data Scientist’s Toolbox (Johns Hopkins University, 2020)