PHILIP DANSO

Outlook ORCID
ResearchGate

ACADEMIC QUALIFICATIONS

Utah State University (USU), USA
Ph.D., Mathematics Education *August 2026 – Present*

Oregon State University (OSU), USA
Master of Science, Mathematics *September 2024 – June 2026*

Kwame Nkrumah University of Science and Technology (KNUST), Ghana
Bachelor of Science, Mathematics *September 2019 – August 2023*

RESEARCH INTERESTS

- Scientific Computing
- Mathematics Education
- STEM Education
- Quantitative Education Research

RESEARCH

- **Master's Thesis: Curriculum Reform Through the Lens of Mathematical Knowledge for Teaching: A Comparative Analysis of Ghana's Objective-Based and Standards-Based Senior High School Mathematics Curricula.** *2026*
  This study analyzes past and current SHS mathematics curriculum documents and teacher-facing resources to identify key shifts in content, learning goals, and instructional expectations, and to clarify the knowledge demands these shifts place on teachers. Using an MKT-informed analytic framework, the project aims to generate actionable implications for teacher education and curriculum-aligned professional development to support effective implementation of the new curriculum.
  Supervisor: Prof. Mary Beisiegel, Oregon State University
- **Bachelor's Thesis: A Forecast Of Ghana's Interest Rates Using Artificial Neural Networks (ANN), Article** *2023*
  This study applied Artificial Neural Networks (ANN) to forecast Ghana's short- and long-term interest rates using historical macroeconomic indicators. The model was trained and evaluated to assess its predictive accuracy compared to traditional econometric approaches. The findings demonstrated the potential of machine learning techniques in improving financial forecasting and policy analysis within emerging economies.
  Supervisor: Dr. Adu Sakyi, Kwame Nkrumah University of Science and Technology

SELECTED ACADEMIC PROJECTS

- **Fostering Diversity, Equity, and Inclusion in Mathematics Education: Insights and Implications for Practice** *(Course Project, 2025)*
  Explored strategies to promote inclusivity in mathematics teaching and learning through literature review and class presentation.
  Supervisor (Course Instructor): Prof. Elise Lockwood, Oregon State University
- **Conceptual and Procedural Understanding of Transformations of Complex Numbers** *(Course Project, 2025)*
  Investigated students' understanding of transformations of complex numbers, combining conceptual and procedural analysis.
  Supervisor (Course Instructor): Prof. Mary Beisiegel, Oregon State University
- **Exploring the Assignment Problem: The Hungarian Method in Action** *(Course Project, 2022)*
  Applied the Hungarian Method to solve optimization problems involving assignment tasks, illustrating the efficiency of combinatorial optimization techniques.
  Supervisor (Course Instructor): Prof. Joseph Abeiku Ackora-Prah, Kwame Nkrumah University of Science and Technology
- **Cubic Interpolation Method and Its Applications** *(Course Project, 2022)*
  Examined the derivation and implementation of the cubic interpolation method and demonstrated its applications in data approximation.
  Supervisor (Course Instructor): Prof. Joseph Abeiku Ackora-Prah, Kwame Nkrumah University of Science and Technology

PUBLICATIONS

- CURRICULUM REFORM THROUGH THE LENS OF MATHEMATICAL KNOWLEDGE FOR TEACHING: A COMPARATIVE ANALYSIS OF GHANA'S OBJECTIVE-BASED AND STANDARDS-BASED SENIOR HIGH SCHOOL MATHEMATICS CURRICULA — *Peer Reviewed*
  Article
- LYAPUNOV-BASED STABILITY AND NUMERICAL CONVERGENCE IN A NONLINEAR CARDIAC OSCILLATOR MODEL — *Peer Reviewed*
  Article
- ASYMPTOTIC ANALYSIS OF SUSTAINABLE EDUCATIONAL QUALITY: STABILITY AND CONVERGENCE IN A NONLINEAR DELAY MODEL — *Peer Reviewed*
  Article
- A FORECAST OF GHANA'S INTEREST RATES USING ARTIFICIAL NEURAL NETWORKS (ANN) — *Under Review*

REVIEWER EXPERIENCE

- Internal Journal of Science, Engineering and Technology (IJSET) — *Editorial Board Member*
  Profile

- International Journal of Research and Scientific Innovation (IJRSI), International Journal of Research and Innovation in Applied Science (IJRIAS) — *Reviewer*
  Profile

WORK EXPERIENCE

- **Graduate Teaching/Research Assistant, Oregon State University** *September 2024 – present*
  Corvallis, Oregon
  Courses: Algebraic Reasoning, PreCalculus I: Functions, PreCalculus II: Trigonometry
- **Teaching Assistant, Kwame Nkrumah University of Science and Technology** *November 2023 – August 2024*
  Kumasi, Ghana
  Courses: Algebra, Differential Equations, Mathematical Methods, and Fluid Dynamics.
- **Mathematics Tutor, Berean Mission School** *August 2019 – May 2023*
  Accra, Ghana
- **Information and Communication Technology(ICT) Tutor** *February 2017 – July 2019*
  Accra, Ghana

LEADERSHIP POSITIONS

- President, Divine Grace Academy Old Students' Association (DOSA), *May 2014 – present*
- Chief Protocol Head, House Of Mercy Assemblies Of God Church (HOMAG), *September 2017 – August 2023*
- Group Project Team Leader, *January 2023 – August 2023*

TECHNICAL STRENGTHS

Languages: Python, C, MATLAB, R, LaTeX

AWARDS AND CERTIFICATIONS

- Teaching in Core Education, Oregon State University (Certificate) *2025*
- Student Activist, Department of Mathematics, Kwame Nkrumah University of Science and Technology (Certificate) *2023*
- Student Leader, Department of Mathematics, Kwame Nkrumah University of Science and Technology (Award) *2023*

- Most Resourceful Student, Department of Mathematics, Kwame Nkrumah University of Science and Technology (Award) *2023*
- Most Trusted Student, Department of Mathematics, Kwame Nkrumah University of Science and Technology (Award) *2022*
- Omega Brains, Certificate of participation *2021*

CONFERENCES, LECTURES, SYMPOSIUMS AND WORKSHOPS

- 2025 Math & Racial Justice Workshop, University of California, Berkeley, *May 2025*
- Math For All conference, Oregon State University, *April 2025*
- Critical Issues in Mathematics Education 2025: K-12 Mathematics Literacy for 21st-Century Citizenship, Simons Laufer Mathematical Sciences Institute (SLMath), *April 2025*
- Ghana Numerical Analysis Day, Kwame Nkrumah University of Science and Technology, *August 2022*

MEMBERSHIPS

- American Mathematical Society (AMS)
- Society of Industrial and Applied Mathematics (SIAM)
- The Mathematics Community (TMC)
- Ghana Mathematic Society (GMS)

SERVICES

- Reviewer, International Journal of Research and Innovation in Social Science (IJRISS) *Profile*
- Organizer Volunteer, Oregon State University, Collation of Graduate Employees' annual Brew Off *Summer 2025*
- Volunteer Tutor, Math Circle, Corvallis High School *Spring 2025*
- Volunteer Tutor, Math Circle, Cheldelin Middle School *Spring 2025*
- Volunteer Tutor, Math Circle, Lincoln Elementary School *Spring 2025*
- Hospitality Volunteer, Oregon State University, 2025 Commencement *Summer 2025*
- Volunteer Tutor, Math Circle, Franklin Elementary & Middle School *Spring 2025*

OTHER INTERESTS

Music & Dance, Hiking

REFERENCES

- Prof. Mary D. Beisiegel: `https://math.oregonstate.edu/directory/mary-d-beisiegel`
  Oregon State University, Department of Mathematics.
- Prof. Elise Lockwood: `https://math.oregonstate.edu/directory/elise-lockwood`
  Oregon State University, Department of Mathematics.
- Dr. Serge Phanzu: `https://math.oregonstate.edu/directory/serge-phanzu`
  Oregon State University, Department of Mathematics.
- Prof. William Obeng Denteh: `https://webapps.knust.edu.gh/staff/dirsearch/profile/areas-of-interest/12dbd68fbc97.html`
  Kwame Nkrumah University of Science and Technology, Department of Mathematics.
- Dr. Adu Sakyi: `https://webapps.knust.edu.gh/staff/dirsearch/profile/summary/b34039999883.html`
  Kwame Nkrumah University of Science and Technology, Department of Mathematics.