Interdisciplinary Training in Education Research and Advanced Statistical Methods

Daryl B. Greenfield, Ph.D.  Program Director

PROGRAM THEME

- The program theme is an in-depth study of educational issues arising in diverse, urban settings.
- Students will be trained in the design, management, and analysis of complex quantitative data sets. These include:
  - randomized field trials
  - quasi-experimental studies
  - surveys
  - observational studies
  - large-scale population databases, such as electronic school records, birth certificate data and the important records that can be created through the electronic linkage of extant databases.
- These advanced statistical skills will be used in the analysis of faculty mentor project data on a diverse set of topics that include:
  - early intervention
  - school readiness
  - emergent literacy
  - developmental epidemiology
  - development of reading, math, and science skills in the primary grades
- Emphasis is on the study of low-income and bilingual populations in urban settings who are at risk for poor educational outcomes including children:
  - served by Head Start
  - prenatally exposed to cocaine
  - with autism spectrum disorders
  - with language delays
  - with special needs
  - with cochlear implants

PROGRAM PARTICIPANTS

- Epidemiology/Public Health
- Psychology
- Sociology
- Research, Measurement and Evaluation
- Teaching and Learning
  - Exceptional Student Education
  - Reading
  - Teaching English to Speakers of Other Languages
  - Mathematics and Science Education

COMMUNITY PARTNERS

- Miami-Dade County Public School System
- Miami-Dade County Head Start Program
- Florida Department of Education
- Florida Department of Health
- Child Dependency Court
- Department of Children and Families
- Marino Foundation
- Infants in Need
- These collaborations provide access to local school populations and statewide epidemiological and assessment databases to conduct critical studies of educational interventions, risk and protective factors, and student achievement.

PROGRAM OBJECTIVES

- Provide a rigorous background in advanced statistical techniques, education practices, theory construction, and research methodology applicable to real-world settings.
- Provide experience and expertise in working with multicultural issues that affect educational research.
- Train students to translate knowledge of statistics, methods, basic development science, and educational practices into critical, problem solving education research applications.

PROGRAM COMPONENTS

- The 9 required courses include 4 courses in statistics (ANOVA, Multiple Regression and Multivariate Statistics, HLM, SEM), 1 course in measurement (Tests and Measurements), 1 course in research design (Randomized Field Trials), 1 course in diversity (Issues and Trends in Multicultural Education), 1 course in scientific writing (Scientific Writing and Grantsmanship) and 1 course in Educational Accountability (Evaluation, Accountability, and School Improvement).
- Research: Trainees spend 20 hours per week participating in research from the onset of graduate training.
- Ongoing Seminar Series:
  - Provides trainees the opportunities to be directly involved in cross-disciplinary discussions of a wide range of educationally important research topics.
  - Trainees learn how the advanced quantitative thinking skills they are acquiring are being used to address multiple topics in education.
- Speakers include faculty mentors, trainees, guest experts from around the country, and practitioners holding senior level positions in education and educationally relevant institutions (e.g., schools, government, policy organizations).

EXAMPLES OF TRAINEE RESEARCH

- Utilizing the ECLS Birth and Kindergarten cohorts to monitor children with developmental delays and to track their health, development, and education throughout early childhood and into school.
- Developing and testing SEM models to understand how temperament and approaches to learning affect children’s school readiness. While reactivity is relatively stable, children can be taught self-regulation skills and strategies during the preschool years to improve school readiness.
- Applying multistage mega-cluster analytic technique to identify profiles of approaches to learning in Head Start children who may benefit from different interventions.
- Evaluating the Polyvagal Language Intervention in children prenatally exposed to cocaine for increasing receptive and expressive language abilities and social engagement skills to improve subsequent school success.
- Assessing the role of parenting style in social and academic outcomes of preschool children in high-risk environments.
- Studying individual differences in children with autism and developing interventions to increase engagement so that these students better benefit from teacher lessons.
- Examining the roles of the family and parents on children’s approaches toward learning and exploring using a parent-child interaction paradigm to create a home intervention for low-income minority families.
- Developing classroom and school-wide interventions to improve children’s math and science achievement.
- School based health interventions to improve students academic outcomes.

Additional Information

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