

Table II.9 Action research studies on student learning resulting from participation on environmental projects

Name	Discipline/ Grade level	Title of project	Research design	Math or science topics studied
<i>Mathematics</i>				
Carmen J. Velázquez Rivera	Math/7-9	Studying the Problem of Solid Waste in Fast Food Restaurants in Puerto Rico	Pre-experimental: Pre/post	Data analysis & probability: central tendency & dispersion measures
Lymarie Pérez Muler	Math/10-12			Statistics & probability: Frequency, central tendency, dispersion measures and its graphic representations
Luis O. De Jesús Torres	Math/7-9	<i>Zero Waste</i> : Reducing the amount of solid waste (plastic bottles) to protect the environment	Pre-experimental: Pre/post	Data analysis & probability: central tendency measures & graphs
Josiel Rosado Tirado	Math/10-12			Data analysis & probability: dispersion diagrams & linear association patterns (correlation & regression)
Amabel T. Soto Guzmán	Math/7-9	Impact of Solid Waste to our Community in Terms of Volume and the Surface Area it Occupies	Quasi-experimental: Pre/post with comparison group	Measurement: Perimeter, area, volume of two and three dimension geometric figures
Marilyn Santiago Román	Math/7-9			Geometry: Bi-dimensional models of tridimensional figures. Measurement: area & volume formulas
Yamily Colón Negrón	Math/10-12			Measurement: Volume of tri-dimensional figures.
Osvaldo Parés Rivera	Math/10-12	Reduction of Solid Waste: Studying the generation of solid waste and devising ways to reduce it	Pre-experimental: Pre/post	Statistics & probability: Collection, organization, analysis (descriptive statistics), representation & interpretation of experimental data.
Sylvia Hernández Acevedo	Math/10-12			
Tomás Díaz Berrios	Math/10-12	AgroSTEM: Potential Development of Agriculture in Urban Areas in the Municipality of Orocovis	Pre-experimental: Pre/post	Exponential functions: linear & exponential models; 'best fit' line
<i>Science</i>				
Marixa Rodríguez Vega	Science/ 7-9	Transforming waste we will eat better	Pre-experimental: Pre/post	Conservation & change: states of matter, chemical & physical changes & properties
Maria L. Ortiz Hernández	Science/ 7-9	Educate, act, and live: Development of Alternatives to Reduce the Amount of Solid Waste Generated by Students from Public Schools in Four	Quasi-experimental: Pre/post with comparison group	Energy & interactions: carbon cycle & nitrogen cycle
Lourdes R. Rivera González	Science/ 7-9		Pre-experimental:	Conservation & change: protecting the natural resources

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Myrna Hernández Nieves	Science/ 10-12	Geographic Areas of Puerto Rico	Pre/post	Conservation & change: chemical and physical changes at the macro & micro levels
Sandra Beltrán Morales	Science/ 10-12			Energy: organic matter, biomass, bioenergy, renewable energy, energy recuperation, biogas
Carmen M. Ruiz Méndez	Science/ 10-12	Hydrological Study in Quebrada Juan Méndez at Río Piedras	Pre-experimental: Pre/post	Systems & models; Energy: water cycle, water quality, related physical & chemical parameters, water contamination by solid waste
Minnette Rodríguez Harrison	Science/ 10-12	Environmental disclosure to analyze the impact on the natural landscape of the El Pedregal Community	Pre-experimental: Pre/post	Nature of science, technology & society: human actions in the environment, urbanism, environmental conservation Data analysis & probability: Graphic representations to scale
Jadira Aponte Ramírez	Science/ 10-12	Potential Development of Agriculture in Urban Areas in the Municipality of Orocovis	Quasi-experimental: Pre/post w comparison group	Systems and models: organic recycling, biogeochemical cycles, food chain.