

Influence of Teachers' Perceptions and Socioeconomic Factors on Climate-Responsive 4-K Club Activities Implementation in South Eastern Kenya.

Climate extremes such as rising temperatures, erratic rainfall and frequent droughts pose significant threats to agriculture-dependent communities in Kenya. Education plays a crucial role in equipping learners, 'our future climate stewards,' with the necessary knowledge and skills to respond to these environmental changes. The 4-K Club, a school-based initiative focusing on practical agricultural and environmental learning, serves as a platform for promoting climate-resilient education. This study examines how teachers' perceptions and socioeconomic factors influence the implementation of climate-responsive 4-K Club activities in Junior schools in Makueni County. Data from 108 teachers were analysed using an ordered probit model. The implementation of 4-K Club activities ranged from 13.0% to 29.6%, reflecting a low level of activity. The study found that gender, education level and teachers' perceptions of digital literacy competency negatively influenced implementation intensity ($\beta = -0.906, p = 0.015$ for gender, $\beta = -0.926, p = 0.016$ for education level). In contrast, the presence of an active 4-K Club and teachers' perceptions of critical thinking and problem-solving competencies were associated with higher implementation intensity ($\beta = 5.051, p < 0.001$ for active 4-K Club). These findings underscore the importance of targeted teacher training, enhanced digital infrastructure, and institutional support in strengthening 4-K Club-based climate education within Kenya's Competency-Based Education (CBE). This study contributes valuable insights for enhancing teacher preparedness and informing policy frameworks aimed at integrating climate literacy and sustainable practices into school programs, offering lessons for climate education reform in similar developing contexts.