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Implementation of climate smart agricultural practices: an assessment of uganda’s lower secondary agriculture competence-based curriculum

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Abstract

Climate change poses a significant threat to agricultural productivity, food security, and rural livelihoods in Uganda, where agriculture remains predominantly rain-fed and highly vulnerable to climate variability. In response, the Government of Uganda introduced a lower secondary school competence-based curriculum (CBC) to equip young learners with practical skills relevant to climate smart agriculture (CSA); however, empirical evidence on how effectively CSA principles are integrated and implemented to guide educators and learners remains limited. This study assessed the implementation of CSA practices within Uganda’s lower secondary agriculture CBC, focusing on curriculum integration, teacher capacity, implementation constraints, and improvement strategies, using selected schools in south-western Uganda. Guided by curriculum implementation and pedagogical content knowledge theories, the study adopted a mixed-methods research design. Data were collected from 494 respondents, including agriculture teachers, head teachers, students, district education officers, and national level curriculum and policy officials drawn from 40 government-aided secondary schools, using structured questionnaires, semi-structured interviews, focus group discussions, lesson observations, and document analysis. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were analysed thematically. Findings reveal that CSA concepts are moderately integrated into the curriculum, with stronger emphasis on productivity oriented practices and limited coverage of climate change adaptation and mitigation. Teacher capacity to implement CSA was uneven, characterized by adequate subject content knowledge but limited pedagogical skills for experiential learning, climate-responsive instruction, and competency-based assessment. Major constraints included inadequate instructional resources, limited practical facilities, insufficient in-service training, heavy teaching workloads, and weak institutional support. Nonetheless, the CBC has contributed to increased awareness among teachers and students of climate change risks and the relevance of CSA, motivating some educators and learners to address identified gaps through peer collaboration, workshops, self-directed learning, and engagement with online and external knowledge resources. Overall, while the CBC provides an enabling policy framework for CSA education, its effective implementation is limited by curriculum and teacher preparedness gaps, highlighting the need for targeted curriculum refinement, sustained professional development, improved practical learning resources, and stronger institutional support to prepare the next generation to understand climate change realities and respond through climate resilient agricultural practices.

Keywords: Climate smart agriculture, competence based curriculum, implementation, practices, principles