Approaches Educators Use to Implement School-based Agricultural Education in Uganda

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Introduction/Need for the Study

Improved agricultural productivity requires concerted efforts in capacity building through extension education programs. These efforts go along with improving our education system in Africa to make connections between the skills students acquire and community needs to foster the vision for African renaissance (African Union, 2016). Although schools provide an opportunity to expand agricultural innovations, there are no plans to modify school curricula to include experiential education in agriculture (Taylor et al., 2003). In developing the agriculture sector, it was imperative to begin with the grassroots schools. In Uganda, for instance, after the introduction of universal primary education in 1997, efforts were followed by adopting a new curriculum of teaching agriculture in the education system to improve the life skills of pupils in making connections between theory and practice (Murphy, 2003). To understand those connections, this study inquired into how educators have implemented school-based agriculture education in Uganda. This study aligns with the U.S. agricultural education research values of nurturing positive youth development and international development programs (AAAE, 2023).

Theoretical Framework

School-based agriculture education (SBAE) is a learn-by-doing pedagogy that includes classroom instruction, entrepreneurship experience, and leadership development (Thoron & Barrick, 2022). Successful implementation of SBAE programs is beneficial in nurturing students' leadership skills, preparing them for careers in the agricultural industry, and providing practical application of academic knowledge. This model of teaching and learning is experiential (Kolb, 2015); students are engaged in activities that result in attitude change toward agriculture in preparing them for challenges beyond classrooms. In traditional classroom instruction, learners are left with only cram work for the superficial benefits of passing high-stakes exams, limiting long-term knowledge retention and future ability to practice learned lessons (Baker & Robinson, 2018; Hunter & Botchwey, 2017). However, the experiential learning model in SBAE helps students to learn integrated science, including practices of concepts learned in classroom instruction, increasing their knowledge. Researchers in education systems and learning have implored educators to adopt active learning methods that engage and cultivate students' deep learning and long-term knowledge retention with hands-on experiences during the learning process (Baker & Robinson, 2018; Ikendi, Retallick et al., 2023). Considering the hand as the best teacher, adopting SBAE with an experiential learning component is effective in teaching.

Methods

This inquiry was done in Kamuli, Uganda, where the Center for Sustainable Rural Livelihoods (CSRL), a U.S.-based organization partners with ISU-UP and Makerere University to implement livelihood programs to end hunger (Ikendi, Owusu et al., 2023; Ikendi & Retallick, 2023). We based on a constructivist orientation seeking meaning in approaches to SBAE informed by the notion that knowledge is socially constructed and meaning emerges inductively (Crotty, 1998). A case study methodology was employed to gather data through interviews (Creswell & Poth, 2018). Eight educators were purposively selected including three school teachers and five ISU-UP extensionists engaged in SBAE in seven schools (five elementary and two high schools) supported by CSRL. Abid by the rules of natural settings, caution was taken by first establishing a rapport with educators through welcomes in the interview space in their respective work sites, followed by introducing the study purpose. Questions were clearly articulated during interviews, a printout was shared, probed, and notes were taken. In analysis, we engaged in a dialogue with

our data, reading the transcripts word by word and line by line, seeking to recognize and classify commonalities across SBAE approaches of educators, and perspectives that appeared distinct. Analytic memos were written reflecting on emerging themes that we shared to guide our peer-checking and discussions. Themes are presented with succinct descriptions and verbatims to account for educators' views on identified SBAE approaches (Lincoln & Guba, 1985).

Results

Five themes emerged, termed as approaches to SBAE used by educators, including classroom instruction, school gardening, home gardening, demonstrations, and field tours. In classroom instruction, Teacher 1 explained that *I go in the classroom and verbally explain an agricultural topic… pupils are allowed to ask questions… normally done before the real practical… to provide insight to the students on what will happen in the real fieldwork*. In school gardening, students work alongside their educators as explained by Extensionist 1, *we set up gardens at schools ... learners do practical work like land preparation, planting, weeding… several food crops are grown … like cassava, maize, pumpkins, fruits, vegetables …* [They] added that *most of these food products are consumed by the school*. In home gardening, Extensionist 2 explained that *I entirely use the practical-based approach in home gardening projects ... students are trained in basic agronomic practices of different crops so that they can grow their crops in their homes.*[They] added that *… train them how to use ... sack gardening ... and we always monitor their home gardens*. In the demonstration approach, Extensionist 3 explained that *we set up poultry units at schools. I directly engage the learners right from brooding, feeding, disease control … at each stage so that they can learn and acquire practical skills.* [They] added that *even if [we are]not at school, students can manage the poultry project*. In field tours, Teacher 2 explained, *we take pupils for a study tour to get them exposed to new and modern agricultural technologies. We normally take like 20 pupils to agricultural trade shows in Jinja and this is done once a year.* [They] added that *… tours greatly change the pupils' negative attitude...*

Conclusions

The five SBAE approaches were identified among educators but implemented differently based on their work sites and specialties. Some educators focused more on practical aspects like home gardening–knowledge is gained at school, and implementation is done at home with the guidance of educators through monitoring; promoting reciprocal learning with the community; increasing social credibility of SBAE in communities. Teachers mostly did classroom instruction, primarily focused on topical aspects, an element reflecting the design of the school's national curriculum. However, convergence was identified at the practical stage, where what students learned in classrooms is implemented in school and home gardening, increasing knowledge comprehension, retention, and deep learning (Banige et al., 2024; Ikendi, 2022; Ikendi, Retallick et al., 2023).

Implications and Recommendations

Our findings support diverse learning contexts that may expand and refine students' concrete knowledge through a range of hands-on learning experiences for students to test the validity and applicability of these concepts in new situations. Further, these experiential learning approaches support a greater equilibrium between classroom instruction and the practical application of agriculture in real-world settings. The exchange of knowledge through active community engagement also enhances sustainable agricultural productivity. Collectively, these approaches to teaching and learning undergird principles of experiential learning that support concrete to active experimentation (Kolb, 2015). Classroom theories are applied in real-world settings and supported by teachers in formal settings and extensionists in informal settings.

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