"By God's Grace, Nothing Will Prevent Me": Exploring Intentions to Implement School-Based Agricultural Education in Liberia

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Abstract

Scholars emphasize the pivotal role of agricultural education in driving development in sub-Saharan Africa, and Liberia, facing challenges such as job shortages, a fragile economy, and a vulnerable post-war youth population, stands uniquely positioned to benefit from school-based agricultural education. This research is a part of a multi-institutional, grant-funded, randomly controlled longitudinal investigation that delves into the long-term outcomes of school-based agricultural education implementation in Liberia. Our study focuses on understanding the intentions of Liberian agriculture teachers, principals, and parents regarding the adoption of school-based agricultural education, including 4-H, within their schools and communities after three trainings. Participants underwent extensive training covering school-based agricultural education, 4-H and youth leadership, school demonstration farms, home entrepreneurship projects, and agricultural innovations. Post-training questionnaires, including quantitative and qualitative data, revealed unwavering determination among participants to implement school-based agricultural education, particularly 4-H and school demonstration farms. Perceived barriers included a lack of support from school administrators and parents and the need for physical resources and tools. Nevertheless, participants expressed passion for the model, foreseeing positive impacts on the youth and the country's agricultural economy. This research sheds light on the potential transformative effects of SBAE in Liberia, providing insights into challenges and motivations for implementation.

Keywords: agriculture education, Liberia, teacher training, SBAE, 4-H

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Introduction

Sub-Saharan Africa is home to over one billion people (World Bank, 2022). By 2050, the region's population is expected to double, with half under the age of 18 (Yeboah, 2018). Smallholder farmers constitute 80% of the region's agricultural sector (Oyewole, 2022), and agriculture is the primary source of livelihood for a significant fraction of the population (Geza et al., 2021). Considering the economic prospects of agricultural development and the youth bulge in sub-Saharan Africa, agriculture and youth engagement continues to gain prominence in the region's development initiatives (Sumberg & Okali, 2013). In Liberia, 46.7% of the population live in rural settlements (Kemp, 2023). With more than 60% earning their livelihood from agriculture, the sector accounts for 31% of the nation's GDP (International Trade Administration, 2022).

Developing countries defying post-conflict consequences face the deterioration of their economy (Fearon et al., 2009). In its recovery from civil war, Liberia encountered significant struggles that included job shortages, a fragile economy, and a rise in a poor and at-risk youth population (Blattman & Annan, 2011). Aggravating the post-conflict setbacks, historically, Liberia has depended on foreign aid (Eise & Connaughton, 2019) and up to 80% of importation, which recorded a significant increase after the war (UNDP, 2020). According to Rutherford et al. (2016), these socioeconomic problems and Liberia's codependency have negative implications for the country's future.

Geza et al. (2021) opine that, despite multiple constraints to youth participation in agriculture, it is critical to harnessing the economic potential of agriculture in Africa to address inequality, unemployment, and poverty. Given the current state of Liberia, agriculture offers a significant opportunity for poverty reduction, gender equity, youth development, and rural transformation. Gobewole (2020) recommends agricultural industrialization and initiatives that save time and increase agro-entrepreneurial capacity through managerial knowledge as strategic focal points for poverty reduction and economic development policies in Liberia. In addition, experts suggest that a solution to reduce Liberia's economic vulnerability is to transform it into an agriculture-based one (Rutherford et al., 2016).

Scholars have pointed out that agricultural education is a potent development driver in sub-Saharan Africa (Gill et al., 2016). It is also generally recognized that education in rural areas is considered a fundamental component of increased agricultural productivity, especially regarding adopting new methods, improved inputs, and advanced technology (Lockheed et al., 1980; O'Donoghue & Heanue, 2016). Moreover, it serves as a growth catalyst for rural communities (Apeh et al., 2020) and is directly connected to global agricultural industry advancement (Ibezim & McCracken, 1994). Jappah and Smith (2022) recommend teacher training to the Liberian government, describing it as the backbone of strong educational systems and development accelerator for post-conflict Liberia. Education as a tool for agricultural development offers multiple socioeconomic benefits (Okiror et al., 2011) because poverty reduction is twice as effective when driven by growth in the agriculture sector compared to growth in other sectors (USAID, 2023).

Considering these, AgriCorps—a nongovernmental organization—in its mission to establish school-based agricultural education programs (SBAE) in developing countries (AgriCorps, 2020), has designed and offered a series of trainings to develop these programs in Liberia. SBAE, through teaching, entrepreneurship development, and leadership development,

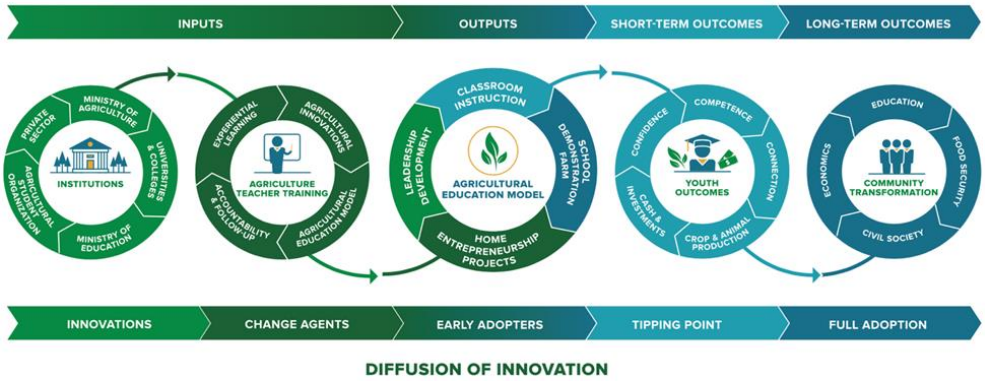
seeks to develop skills in students necessary to make them citizens aware of natural and agricultural resources (AgriCorps, 2020; FFA, 2020; NAAE, 2020). Implementing SBAE in low-income countries like Liberia can potentially increase the adoption of various agricultural innovations and impact the livelihood of youth through agricultural transformation (Yeboah, 2018), especially in Africa's rapidly changing agri-food systems (Kabasa et al., 2015).

SBAE model in Liberia

Developed a century ago, SBAE offers a recognized, cost-effective, and sustainable solution to Liberia's frail economy (OSU, 1969; Park, 2014; Schlutt, 1957; Wessel &Wessel, 1982). As Liberia recuperates from the effects of wars, Sayndee (2007) posits that human capital development in education and agriculture will be instrumental in attaining socioeconomic stability. Hence, SBAE, as revised by AgriCorps, aims to alleviate food insecurity in developing countries by leveraging the following theoretical foundations – diffusion of innovations (Rogers, 2003), experiential learning (Kolb, 1984), positive youth development (Benson et al., 2007) and behavioral economics (Kahneman & Tversky, 1979). AgriCorps' SBAE model, as adapted for Sub-Saharan Africa, is a holistic system of delivering agricultural innovations within a local context of secondary education (Dado et al., 2023). Through this, students learn about improved agricultural methods, which are then adopted in the school demonstration farm and diffused through home entrepreneurship projects (see Figure 1).

Figure 1

School-Based Agriculture System Model as Developed by AgriCorps



According to Shayo (2020), youth are potent pollinators of innovations because of their high receptivity to novel agricultural knowledge. Daudu et al. (2023) corroborate this in a recent study demonstrating how the resourcefulness and entrepreneurial spirit of youths—described as "an undeniable and untapped potential" (p. 2) can be explored to revolutionize agriculture in West Africa. Hence, by utilizing youth as early adopters of agricultural innovations and change agents for the diffusion of agricultural innovations, SBAE can become an economic incubator for Liberian rural communities – supplementing existing agriculture and education initiatives.

SBAE has two primary objectives— contributing to youth's academic, vocational, and life skills development through experiential learning methods and improving rural livelihoods by transferring skills and agricultural innovations into the home and community through schools (AgriCorps, 2020). Guided by an experiential learning model, SBAE effectively accelerates agricultural innovation adoption in rural communities by reaching youth through a tailored pathway (Madende et al., 2023). Implementing the SBAE model in Liberia is driven by a rapidly

growing national 4-H organization that partners with AgriCorps to harness the proven potential of the century-old agricultural education model—SBAE.

Purpose and Objectives

This study was part of a more extensive investigation exploring the long-term outcomes of SBAE implementation in Liberia as well as the overall effectiveness of Liberia's SBAE training. This study aimed to determine the likelihood that participants in an agricultural teacher training would implement the SBAE model in their school. We consider the implementation of the SBAE model using Ajzen's (1991) Theory of Planned Behavior. The following objectives guided our study: (1) determine participants' self-reported intent to implement SBAE after attending three trainings on SBAE; (2) determine changes participants expect to see as a result of SBAE implementation; and (3) determine participants' concerns regarding SBAE implementation.

Theoretical Framework

Ajzen's Theory of Planned Behavior (1991) was used to determine how attitudes, subjective norms, and perceived behavioral control influence the intention of Liberian teachers, principals, and parents to implement the SBAE model in their communities within 12 months after the training. This framework considers three key determinants of behavioral intentions. Attitudes toward behavior are shaped by whether individuals hold positive or negative beliefs about the behavior, which are directly influenced by their overall belief index. Subjective norms arise from social pressures, based on what others approve or disapprove of (injunctive normative beliefs) and whether others engage in the behavior (descriptive normative beliefs). Perceived behavioral control involves the belief in one's ability to perform the behavior, influenced by factors such as skills, time, money, and social support. It is assumed that perceived control can predict behavior when actual control knowledge is limited, acting as a proxy for behavioral prediction.

The Theory of Planned Behavior (TPB) has been used to predict human behaviors in agricultural education. For example, it has been applied to understand Senegalese professors' intent to engage in learner-focused instructional strategies in agriculture courses (Anderson et al., 2019) and agriculture students' proclivity to choose agricultural career paths in Tanzania (Shayo, 2020). This study took into account how unanticipated events may prevent individuals from acting on their intentions, as the extent to which individuals can exert genuine control over their behavior depends on their capacity to overcome these barriers. Factors such as prior experience and assistance from others can aid in surmounting these obstacles (Ajzen, 2020).

Using this framework, the study was valuable in understanding the effectiveness of the teacher trainings hosted in Liberia, specifically how participants discussed their attitudes towards SBAE implementation. The insights gained from this application of TPB provided a deeper understanding of the factors influencing the participants' intentions to implement SBAE in their communities, highlighting the importance of addressing both individual beliefs and external support systems in facilitating successful behavioral change.

Methods

Study Context

This study is part of a multi-institutional, multi-NGO Randomized Controlled Trial (RCT) funded by the United States Agency for International Development (USAID), the French

Development Agency (ADF), and the National Science Foundation (NSF) to ascertain the propensity of the SBAE model to diffuse agricultural innovations and facilitate youth development in Liberia. The treatment sample consisted of 100 randomly selected schools, those who would initiate SBAE, and 97 control schools as control, those who would not initiate SBAE. The initiative led to establishing 157 active 4-H clubs across seven Liberian counties. The treatment schools are in 5 counties: Bong, Lofa, Nimba, Gbarpolu, and Margibi. These counties are in what is called the breadbasket of Liberia, producing large amounts of Liberia's rice and cassava (LISGIS, 2017).

In 2020, the RCT project launched in Liberia, and a significant initial component was teacher training. Starting in March, agriculture teachers from the treatment schools began their first of many trainings on SBAE, 4-H, experiential learning, and innovative agricultural methods and techniques. The first six-day training was offered exclusively to secondary agriculture teachers who agreed to participate in the RCT. This training introduced participants to the SBAE model, student-centered teaching strategies, and the purposes and benefits of 4-H. The second six-day training was open to agriculture teachers and their administrators, including principals and local Parent Teacher Association (PTA) members. This training introduced participants to agricultural innovations such as planting techniques and how those could be modeled on the school demonstration farm. The third training was three days long and highlighted home entrepreneurship projects, 4-H club development, and reviews from previous trainings. This training also included agriculture teachers, school administrators, and PTA members. Below is a brief description of each training, its objectives, and attendees.

Table 1

Overview of Liberian Teacher Trainings

Training	Description	Training Topics	Attendees
Agriculture Teacher Training I, March 2020	4 separate, 6-day trainings conducted in Lofa, Bong, Nimba, and Montserrado counties; Training facilitated by two AgriCorps staff	Student-centered pedagogy and the purpose and components of School-Based Agricultural Education, including 4-H	Secondary agriculture teachers from treatment schools
Agriculture Teacher Training II, September 2020	3 separate, 6-day trainings conducted at Booker Washington Institute; Training Facilitated by AgriCorps and 4-H Liberia staff	Agricultural innovations, practices, and techniques include but are not limited to sweet potato mounds, cassava spacing, proper use of agricultural mulch, composting	Secondary agriculture teachers from the treatment schools and their administrators and PTA chairs/members

		and green manure, and appropriate fertilizer use.	
Agriculture Teacher Training III, May 2021	3-day trainings hosted at individual school sites in Lofa, Bong, Nimba, and Montserrado counties; Trainings led by 14 Liberian Field Officers	Student-centered teaching, Home Entrepreneurship projects, 4-H club development, and agricultural innovations	Secondary agriculture teachers from the treatment schools and their administrators and PTA members

[a] – 14 field officers were trained separately during this same period. They received duplicate training on the content from each agriculture teacher training in addition to content on facilitation. Once trained, they facilitated the third agriculture teacher training in the counties they supervise. Field Officers facilitated each training in pairs. Field Officers are similar to U.S. 4-H Extension agents; their roles are supervising assigned 4-H clubs, facilitating agricultural trainings for agriculture teachers and farmers, and connecting agriculture teachers/4-H advisors to regional and national resources, activities, and events.

Instrument

This study used survey methods to ascertain participants' intentions to implement SBAE in their schools and their attitudes regarding expected changes and concerns resulting from implementation. Structured pre-and-post-training questionnaires were used to collect data. Although there are instruments designed to deploy the TPB, for this study, we crafted custom questions relevant to our audience and context. The instruments underwent vetting from multiple American and Liberian professionals to ensure the vocabulary, question structure, and formatting were culturally relevant and crafted in a manner that ensured participants understood the survey was a tool for us to understand their opinions of the training. We also carefully wrote the survey items to be to be aligned with the reading proficiencies and vocabularies of adults in the five counties. The construction of the survey items was developed after several iterations and feedback from both American and Liberian professionals including American professors whose research focus is in international agricultural education, 4-H Liberia staff, andAgriCorps staff who live in Liberia.

The questionnaire included participant demographics, reactions to the training, and a content knowledge test. Thirteen items from the post-training questionnaires were used to inform the objectives of this study. To measure participants' intention to implement the knowledge gained from the training, participants answered 11, 5-point scaled questions that measured intentions of adoption where 1-"I will definitely not use this information", to 5-"I will definitely

use this information" (See Table 2). These items were adapted from Lamm et al. (2020), who created this scale to measure intention to change behavior. Responses to the open-ended question: *if you were to use all the knowledge you have gained at this training, what kinds of changes would you expect to see in your students?* were used to identify the intentions of participants to implement the knowledge they acquired during the training. Responses to the open-ended question: *what concerns do you have about using the SBAE model in your school?* were used to identify participants' concerns about implementing SBAE in their schools and communities.

Data Collection and Analysis

Pre- and post-training questionnaires were printed before each training session. Upon registration, facilitators administered the pre-training questionnaire to all attendees. The training was led by two staff members from AgriCorps who facilitate SBAE in Liberia and Ghana. On the last day of the training, facilitators allocated 30 minutes to one hour for participants to complete the post-training questionnaire. Facilitators received training from the research team on how to administer the surveys ethically and in a way that would allow participants to feel at ease and comfortable asking questions. During both the pre- and post-training survey administrations, facilitators read the instructions aloud to the entire group, circulated the room while participants completed the survey, and answered any clarifying questions participants had about terms or question formats. In addition to the questionnaires, facilitators collected field notes from the first and second sets of trainings. They were asked to record insights and observations during and after their facilitation experience and then send their notes to the research team.

Questionnaires were mailed to Oregon State University, then scanned and saved digitally. Data from each questionnaire was manually entered into a spreadsheet and then uploaded into Statistical Package for Social Science (SPSS) for analysis. We used descriptive statistics to answer objective one and thematic analysis to answer objectives two and three. Thematic analysis was helpful in "identifying, analyzing, organizing, describing, and reporting themes found within a data set" (Nowell et al., 2015, p. 2). This method offered a flexible approach to analyzing the open-ended survey questions while generating unanticipated results (Braun & Clark, 2006; King, 2004). While the content from each of the three trainings was slightly different, we holistically approached data analysis for the two open-ended questions, illuminating variations by training in the results below. As the focus of this study was to explore participant intentions to adopt SBAE, we centered data analysis and our reporting of the findings to the voices and perspectives of the participants themselves. The facilitator field notes contained helpful contextual data that helped explain our findings. As such, we chose to include relevant field note commentary in the discussion section. This allowed us to offer context to the study and increase the trustworthiness and credibility of our findings (Phillippi & Lauderdale, 2017). To establish the trustworthiness of our findings, we demonstrated how our conclusions and interpretations were derived, made plain our reasons for theoretical, methodological, and analytical choices (Koch, 1994), and offered descriptions in ways that readers can judge the transferability of our findings (Lincoln & Guba, 1985). The methods and procedures for this study were approved by the Institutional Review Board IRB-2020-0527 at Oregon State University.

Results

Below, we report findings from quantitative followed by qualitative data analysis. A total of 357 individuals received training throughout the three trainings offered in 2020 and 2021, of which 182 were agriculture teachers, 57 were PTA members, and 118 were school principals. In Table 2, we present descriptive statistics reflecting participants' intentions to use the information presented at each of the three trainings. Overall, quantitative results indicated a positive intention for participants to utilize the presented information, with mean scores suggesting a favorable disposition. Specifically, participants showed the highest inclination to use content related to 4-H club development (M = 4.86, SD = .406) and school demonstration farms (M = 4.83, SD = .378). In contrast, the content about student-centered pedagogy (Training 3) received slightly lower mean scores, indicating a somewhat lower likelihood of implementation (M = 4.67, SD = .398). Despite this, the mean score still suggests a generally favorable intention to use this training's content.

Table 2
Participants intentions to use information from trainings

Training 1	*n*	*M*	*SD*
Intent to use any information	155	4.79	.406
Intent to use overall SBAE model	155	4.79	.506
Intent to use 4-H development information	154	4.86	.363
Intent to use student-centered pedagogy	154	4.79	.481
Training 2			
Intent to use any information	210	4.82	.386
Intent to use school demonstration farms information	210	4.83	.378
Intent to use agricultural innovations content	208	4.80	.476
Training 3			
Intent to use any information	140	4.81	.390
Intent to use overall SBAE model	142	4.77	.440
Intent to use 4-H	142	4.78	.431
Intent to use student-centered pedagogy	138	4.67	.698

Items were measured on a 5-point scale where 1 – I will definitely not use this information, 2 – I will probably not use this information, 3 – I have not decided if I will use this information, 4 – I will probably use this information, and 5 – I will definitely use this information.

Three themes were created as a result of the thematic data analysis. The four themes are, *"From Best to Better" – Youth as Engaged Entrepreneurs*, *"Back to the Community" - Youth as Conduit for Improved Communities*, "*By God's Grace, Nothing Will Prevent Me" - Overwhelming Enthusiasm for SBAE,* and *"My PTA Chair and Principal" - Concerns about Human and Material Resources.* Together, the four themes pain a compelling story about how participants engaged in the SBAE training and their intentions to implement SBAE in their communities.

Theme: "From Best to Better" – Youth as Engaged Entrepreneurs

Participants resoundingly anticipated transformative changes in their students through the implementation of SBAE, envisioning a spectrum of positive outcomes. This was discussed in a variety of ways and ranged from broad positive changes such as "a great knowledge development and a new way of productiveness for future benefits" and for students to become more "effective" and "better citizens" to specific skills students would obtain such as "leadership abilities," "public speaking," entrepreneurship skills, and business acumen. Several participants mentioned that their students would serve as positive role models, and they were eager "to see students becoming great leader[s]." Many participants, expressing a poetic sentiment, likened this transformation to "awakening the spirit of my students" and taking their students "from best to better," a common phrase amongst Liberians.

Moreover, participants foresaw an impact on student participation in school, extending beyond academics to include personal responsibility for materials and fees. One participant shared, "I will expect them to buy their own school materials like uniforms, shoes, literature books, etc.; I will also expect them to pay their own school fees." Another shared, "The changes that I will expect to see in my students is to see them buying some of their own school materials." The prospect of self-funding educational opportunities was reported because of potential profits from student home entrepreneurship projects. The conviction in these expectations was captured in statements like, "The changes that I would like to see in my students are to see them growing and selling their own crops and vegetable[s]," "When the knowledge acquire[d] from this training is applied my students will score 100%, everyone will be engaged in to active entrepreneurship", and "Harvesting their crops on their own farm [allows them to pay school fees]." Echoes of entrepreneurship were seen in statements from all three trainings with statements such as "I love to see my students earn their own money," "They will be able to establish their own farm and make more money" and "They will discover the importance of school-based agriculture. To see them controlling their own produce funds".

Theme: "Back to the Community" - Youth as Conduit for Improved Communities

The momentum of student entrepreneurship transcends individual gains, converging toward community impact. Participants expected students to disseminate agricultural innovations learned in SBAE to parents and communities, sparking a ripple effect on livelihoods, the economy, and the nation. This would occur by involving adults on the school demonstration farm and taking new ideas back to their home farms. This finding emerged as participants shared statements like, "I will expect my students to implement and teach their parents. To improve their life." "…parents will help us, students will take the ideas to their parents", "Student taking knowledge back to communities" and, "I would like/expect to see parent[s] partaking in the students' demonstration farm work and children working on the farm with willing mind."

The envisioned parental and community engagement was seen as a catalyst for the adoption of improved farming methods to create more resourceful communities. This emerged as participants wrote statements like, "Plenty food will be produce[d] in the community. People will learn the improved method of farming", "I expect my community members to do the new innovation of agriculture" and, "The community people also will change the old way of planting and go by the new way of planting. They will observe plenty yield than the previous years". One participant discussed this as their community being more resourceful, "I expect to see my school, community, and country to have more trained agriculturalist who would make my school, community and country more resourceful. Develop boys and girls who would assume leadership at local and national levels".

This theme culminated in a vision of agricultural development as a mechanism for improved lives, directly connecting to matters of food security and poverty alleviation. One participant said, "I would expect to see students, schools, or community use agriculture to develop their own lives and apply the new ideas." Another stated, "Some of the changes I would love to see in my students could be sharing the knowledge with the community, applying the knowledge learned to improve the economy, using it as a livelihood skill." Many participants made direct connections to matters of food security with statements like, "there will be an improvement in food security in Nimba County and Liberia at large" and "The entire communities of our nation will be able to feed themselves."

Theme: "By God's Grace, Nothing Will Prevent Me" - Overwhelming Enthusiasm for SBAE

Participants exuded confidence and enthusiasm when asked about concerns regarding implementing what they learned through each training. Their responses reverberated with unwavering commitment, often expressed as "By God's grace, nothing will prevent me from applying what I had learned," "Absolutely nothing, because the mission and vision are very important to the growth and development of our nation" and, "I will do everything possible to implement what I learned from this training." Even in the face of potential challenges, such as illness or death, participants were determined, asserting that nothing else would hinder their implementation efforts. A few shared, "What I think might prevent me from implementing these strategies is sickness or a call by God.", "Except death, besides that nothing," and "Maybe death, but as I live, I will always use this information from this training."

Overwhelmingly, participants shared excitement, commitment, and eagerness at their ability to implement SBAE in their schools. As they answered this item on the questionnaire, participants quickly connected the components of SBAE to the outcomes of SBAE and how youth would serve as conduits for community transformation through 4-H, the school demonstration farm, and home entrepreneurship projects. One participant captured this succinctly by stating, "I will change the old method of farming to the new method. I will improve agricultural practices in the school and community." Participants expressed high expectations of themselves and stated that they initiated this and made it happen. They were firm in the role they played in this endeavor. A few expressed this with statements such as, "To be one of the best example in my community as a 4-H teacher" and "I will change the old method of farming to the new method. I will improve agricultural practices in the school and community."

Theme: "My PTA Chair and Principal" - Concerns about Human and Material Resources

While the participants' commitment resounded in their bold acclimations of implementation, a commonality of potential barriers emerged: human and material resources. Interestingly, these concerns more notably emerged in the responses in the post-questionnaires from training two and three. Participants expressed the need to have the full support of their school principals and Parent Teacher Association (PTA) chairs to succeed in SBAE implementation. Their responses implied that knowledge and training of SBAE would result in this support. These concerns were shared with statements such as "My limitation could be my PTA chair and my principal. If 4-H trainers do not properly train them as [I'm] to understand the functions 4-H in Liberia", "The lack of the PTAs and the community involvement," "The only thing that will stop me from using this information is the school principal or the PTA" and, "There are serious reason could put stop to it they are: PTA Agreement, Community participation, teacher and staff are willing ." This theme articulates worries about a lack of

support from parents and administrators, which could hinder students' engagement in the program and insufficient verbal encouragement. One participant said, “Failure of parents to send their children to the demonstration farm.” Two others shared, “If the parents of the student fail to encourage their children to attend school. If the administration of the said school fails to encourage/support the project of the above organization,” and “The school administration may not give us the time to perform some of the parents may not want their children to take up extra time for the program.”

Additionally, concerns about resource allocation, including land for the school demonstration farm and agricultural materials, tools, and inputs, were raised as potential barriers that could impede the effective implementation of SBAE. These resources would also likely come from the community, parents, and administrators. Three participants exemplified this concern, “There is need for working tools and improved varieties of seeds. Tools-cutlass, regular hoe, knives, shovel, twine rope, spraying can, watering can, rainboot, meter ruled, stopwatch”, “My concerns is about working tools, farmland, and money. That will prevent me from implementing these strategies” and, “Failure of donors to provide support/cash for training and failure to perform in accordance with the commitment signed. And failure of PTA to support the program.” Participants underscored the pivotal role of the community, parents, and administrators in overcoming these challenges and facilitating successful SBAE implementation.

Discussion, Recommendations, and Conclusions

Our findings unveil the favorable sentiments harbored by Liberians toward the SBAE model and their keen intentions to integrate it into their schools and communities. Ajzen (2020) states that individual attitudes, subjective norms, perceived behavioral control, and behavioral intentions shape behavior. Analyzing the findings through this framework offers valuable insights. The participants in this study, comprised of agriculture teachers, principals, and PTA members, had overwhelmingly positive attitudes regarding the prospect of SBAE implementation. Participants adeptly articulated short and long-term outcomes of SBAE adoption and expressed their favorable value judgments about it. Although the study did not gauge the subjective weighting of participant beliefs, both the quantitative and the qualitative data indicated positive evaluations of SBAE implementation outcomes and affirmations implying favorable attitudes toward SBAE.

The quantitative findings reveal an interesting pattern; although statistical differences were not measured, mean scores were slightly elevated for the items on 4-H development and school demonstration farm content. While the participant data does not explain this trend, we postulate that the historical prominence of 4-H in Liberia, dating back to the 1950s and resurgence post-war in the early 2000s (Brinn & Sheriff, 2018), may contribute to participants’ familiarity with the organization. This sentiment was echoed in the facilitator field notes; many participants felt a sense of pride and patriotism when they learned that 4-H was once thriving in Liberia.

Additionally, participants demonstrated a lower inclination toward adopting student-centered teaching methods in the quantitative results. The pedagogical approaches presented in the training sessions advocated for a shift towards more experiential, constructivist, and engaged teaching and learning methods—approaches significantly divergent from the prevalent lecture-heavy methods in most African countries, including Liberia (Sarrazin & Webb, 2019). Both AgriCorps facilitators mentioned in their field notes that participants often struggled with the

lessons on student-centered teaching, specifically the theoretical roots of connecting the new teaching methods to student learning. Facilitators also expressed challenges to participants in understanding the purposes and methods of incorporating reflection into the learning experience. Future research might explore the ways in which teachers interact with different instructional strategies as well as how to best support the adoption of more student-centered and engaging approaches.

Subjective norms, encompassing perceived social pressures or influences from significant individuals, wield considerable influence over behavioral intention (Ajzen, 2020). Within this study, particularly the qualitative finings, participants conveyed a perceived lack of support from school administrators and PTA members—individuals identified as potential inhibitors to their ability to implement SBAE. The data does not, however, illuminate whether these concerns revolve around the foundational purpose of SBAE or the time required for agriculture teachers to implement SBAE. We also do not understand what participants precisely mean by "support" or the extent to which they perceive their ability to overcome these potential barriers, other than the mention of necessary resources to initiate a school demonstration farm. These concerns are integral to participants perceived behavioral control, representing their perceptions of the ease or difficulty of implementing SBAE in their schools. Therefore, we recommend that future research delve into these intricacies, shedding light on the multifaceted dimensions of perceived behavioral control in implementing SBAE.

Based on this study, we make the following recommendations for future training. We recommend allocating sufficient time for survey administration and flexibility that allows for oral responses, translations into local language, or take-home completion of surveys. The questionnaire design should factor in the reading competencies of participants, as many participants in our study struggled with reading. An oral reading and responding facilitation of the survey may have results in additional and more robust data. Aso, reiterating the purpose of the survey removes the chances of it being misconstrued as a test. Consider an expanded training model to include even more principals, PTA members, and other influential community figures. However, separate tailored sessions for principals and PTA members may be necessary to emphasize their pivotal role in the success of SBAE implementation.

Furthermore, developing targeted curricula and workshops to address implementation concerns and barriers is highly recommended. We recommend beginning this process by creating a space that allows participants to voice their concerns in small groups and with facilitators. This will be a gateway to support the navigation of constraints and lead to exploring ways to provide the tools and resources for school demonstration farms. Since the historical significance of 4-H inspires action, future studies should regularly refer to the rich history of 4-H. This is necessary to boost morale and passion for SBAE outcomes. Also, the facilitators from this study commented that activities involving singing and dancing were well-received by the Liberian audiences. Thus, we recommend leveraging culturally resonant activities to facilitate better assimilation of unfamiliar content and exciting the learners.

This study explored Liberian agriculture teachers, principals, and parents' intentions regarding adopting SBAE, including 4-H, within their schools and communities after three trainings. Participants expressed optimism towards the positive impact of SBAE on Liberian livelihoods as they foresee students diffusing agricultural innovations. This aligns with Shayo's (2020) perspective on youths as potent pollinators of innovations and Jappah & Smith's (2022) recommendations for teacher trainings as a tool for accelerating development in post-conflict

Liberia. Results from this study are positive, and we look forward to engaging in future studies that will help guide Liberia's future.

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