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THE USE OF NON-CONVENTIONAL INSTRUCTIONAL APPROACH TO INCREASE AGRICULTURE STUDENTS' INTEREST IN PURSUING POST-SECONDARY SCHOOL AGRICULTURE

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Abstract

Agricultural science is very crucial in secondary schools since it leads to the acquisition of skills highly looked for in agricultural and allied industries. To reap the benefits of Agriculture in providing employment for the youth, more students are needed to enrol in it at secondary school and post-secondary school levels; however, this is not the case. This can be attributed to poor knowledge acquisition in Agriculture learned in class, negative attitudes and perceptions about general Agriculture and eventually poor performance in national exams and few school graduates opting to take Agriculture at higher levels including taking up the agricultural careers. This study hence delved into determining how learning outcomes in Agriculture could be impacted on by adapting the Supervised Agricultural Experience Programme (SAEP) in Migori County. Specifically, it sought to compare the levels of interest in pursuing post-secondary school Agriculture between learners involved in SAEP and those involved in conventional learning programmes. It applied the pre-test post-test control group design with a target of 3,600 secondary school Agriculture students in Form Three. Simple random sampling and proportionate stratified sampling were used to obtain 384 respondents who were equally assigned to treatment and control groups after which the treatment group took part in a SAEP. A questionnaire and a learning outcome test were used to collect demographic and learning outcome data. Descriptive and inferential statistics were used to analyse data. Results showed that the level of interest in pursuing Agriculture post-secondary school was moderate without intervention and that SAEP significantly improved students' interest to study Agriculture at post-secondary school. It is recommended that learning activities should be hands-on for students to develop positive attitude in Agriculture and schools should ensure that the farming activities are learner-owned to increase the interest in the subject at school and for further studies.

Keywords: *Agriculture, agricultural education, supervised agricultural experience, learning outcome.*

Introduction

Agriculture is critically placed in the secondary school curriculum because Agriculture sector is the cornerstone of economies world over (Maurice, 2012). About 75% of formal and informal workers draw income from Agriculture (Maina, 2020). Therefore, it produces most of the human capital central to the growth of agro-based industries. These well-mentioned groups of workers stem from secondary schools where foundational Agriculture is taught as a subject. Students learn Agriculture in secondary schools to create a pool of agricultural human capital well versed in knowledge, skills and labour market-readiness for the growing economy (Agriculture for Impact, 2019). Low numbers of learners in the subject

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coupled with dwindling performance in the national examinations impedes the building of a strong human resource base in Agriculture and has made it necessary for schools to design better ways ensuring that many students view Agriculture subject positively and as practice (Boliyan, 2015). As Waithera (2013) postulates, the enrolments in Agriculture were lower compared to Business Studies (another technical subject). These poor enrolments and performance in national examinations therefore call for the need to relook at the teaching of Agriculture to pinpoint if there is need to review the teaching approaches employed in schools.

The teaching of Agriculture in Africa, Kenya included is undergoing revolution. In Uganda for example, secondary school Agriculture has seen tremendous growth in attempts to upscale its uptake and interest in Agriculture-related careers. The central aim of the Ugandan Agriculture curricula and syllabuses at secondary school is to prepare students in the basic Agricultural principles, develop skills and change the attitudes of young people in Agriculture (Stiftung, 2016). This is strongly derived from the reason that future farmers, value-chain actors and agriculturists in general will need basic scientific, technical, agricultural, managerial and entrepreneurial skills to compete in the expanding agricultural and global economy. Despite the recognition of the potential of the Agricultural sector nationally and internationally, literature points to the decline of young people's interest and engagement in farming (Ahaibwe, Mbowa & Lwanga, 2013). In Uganda, school gardening programmes as an experiential model have effectively been used to teach Agriculture and to improve the participation and interest in Agriculture. According to Amanda (2012), learning outcome scores showed improvement in Agriculture in the period after implementation of the school garden and decreased in the school without a school garden program. Differences in pre-test and post-test achievement were not found between schools; however, gender was found to have an impact on achievement in Agriculture.

Agriculture is a practical-oriented subject however its teaching in Kenya has been theory-based. It has been in the curricula for several years but teaching and training methods are still focused on knowledge transfer for purposes of examinations excellence (Vandenbosch, 2006). Practical instruction in Agriculture has many stumbling blocks (Waithera, 2013), including the lack of the requisite facilities. Plans for agricultural instruction in Kenyan schools has also been done without proper guidelines hence knowledge transfer has remained theoretical. This has worsened the problem of missing interest and poor performance of learners in it (Daluba, 2013). Kenyan secondary school Agriculture teaching has been isolated from the real farming situations since the advent of the 8-4-4 system of education (Ngugi, Isinika & Kitali, 2002). Teachers who are among the curriculum implementers are isolated from the practical realities of Agriculture and farming. This theoretical approach in teaching of Agriculture has directly affected students' learning of the subject and equally impacts on the future of agricultural practices. It is fundamentally important to shift from theory-based to practical and hands-on strategies in agricultural instructions in schools.

One of the teaching approaches that can be used to boost learner's interest and participation in Agriculture is through experiential learning with Supervised Agricultural Experience Programme (SAEP) as a key part. Experiential learning is the main fabric of agricultural education instruction, because through practice and experience, learners

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put into practice what they have learned in real problems, therefore the learned material becomes easily comprehensible and of use in real life. Lubos (2017) points out that experience supersedes theory because it is only in experience that any theory has a vital and verifiable use. Dale (1946) used the cone model to explain inter-relationships among various learning experiences to abstractness of directness. He classified the "doing" experiences as direct experiences, contrived experiences, and dramatic participation and indicated that these experiences were the foundations of all education (Rangel, 1993). SAEP model is considered as a component of experiential learning.

Most secondary school goers are particularly keen about how they perceive post-secondary school study fields and are not certain about what agricultural careers are, based on limited or irrelevant information availed to them (Gicharu, 2015). This is however contradicted by Hansel (2009) who argues that students may enroll for agricultural programmes since they prefer careers in Agriculture. In earlier years, students' enrolments in Agriculture in secondary school were low due to their close attachment to farm work, however this has shifted (Hansel, 2009). Vandenbosch (2006) shows that some learners take the subject because they wish to pursue Agricultural professions. A study by Ngumy (1988) showed that many students would wish to pursue agricultural careers after post-secondary school, a view strongly weighed on by the 1989-1998 World Bank report, entitled *Human Capital and Agricultural Productivity*, arguing that many out of school students will work outside the mainstream civil service and since the private employers cannot take in all of them, they will require jobs in agricultural and non-formal sector (WB, 1988). To add to this, there are numerous opportunities for study in agriculture including veterinary medicine, forestry and Agriculture teaching, just to mention.

Agriculture is central to Kenya's socio-economic development, hence the need for more young people to take it up. Learners' enrolment in Kenya Certificate of Secondary Education (KCSE) Agriculture, consequently, uptake in post-secondary institutions is reducing, a problem attributed to lack of interest in the subject due to how it is taught. It is central therefore that Kenya urgently changes how Agriculture is taught in schools to improve the learners' interest in it. It is on this premise that this study was conducted to find out the difference in level of interest in studying Agriculture post-secondary school by comparing learners exposed to SAEP and those not taking part in it. The study aimed to find out if the use of non-conventional teaching methods could enhance learners' interest in pursuing post-secondary school agriculture.

Research Methodology

The study was guided by Outcome Based Learning (OBL). OBL focuses on results, unlike traditional systems that focus on the learning process. It puts the learner at the core and provides opportunities that enhance detailed and practical learning experiences (Brahmadas, 2023). This educational approach has key principles. Firstly, it gives clarity of learning outcomes where the outcomes are well defined from the onset, and the learners are made aware of what they are expected to know and be able to do. Secondly it aligns the curriculum and assessment, where the curriculum, instructional approaches and assessment are well aligned with the curriculum ensuring learner are adequately prepared to display specific outcomes. Thirdly, OBL stresses the development of competencies of relevance and their applicability to real-world problems such as problem-solving. Fourthly, it

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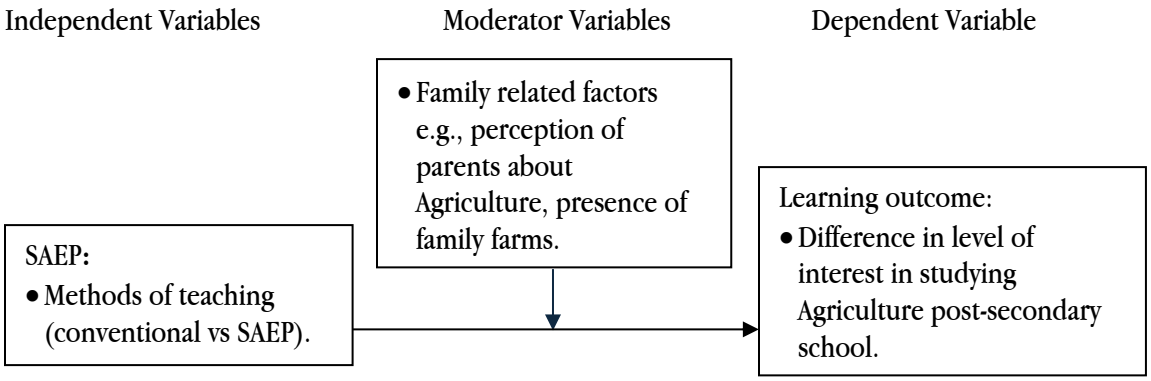
encourages continuous assessment and provision of feedback, hence guarantees improvement. Finally, it holds instructors, schools and learners accountable for attaining the specified learning outcomes as well as meeting performance standards (Learning Corner, 2025). In this context, OBL offers numerous advantages to learners and instructors such as clear expectation on the side of the learner, development of practical applicable skills, personalizing learning experiences, continuous assessment and eventually guaranteed improvement (Yashica, 2025). SAEP is a learning programme designed to practically help learners show competencies of what is learned in experiences that prepare them for careers in agriculture (Fabamise, Owolawi & Fasuyi, 2020). It focuses on the application of what is learned to achieve an outcome.

Borrowing from the OBL theory, the following conceptual framework was used to illustrate the interaction of variables under investigation.

Figure 1.1

The conceptual framework showing the interaction among variables.



The study adopted quasi-experimental design, particularly the pre-test post-test control group design. Subjects were non-randomly assigned to experimental group and control group. The experimental group was taught about crop farming through SAEP, where they grew a coriander crop, managed it and sold it then had the proceeds. The non-experimental group learned about the crop via conventional classroom methods. Both groups responded to test items related to research objectives before and after taking part in this experiment. The research was done in Migori County, Kenya. The target population comprised 3,600 Form Three secondary school Agriculture students from which a sample of 384 was selected utilizing Cochran's (1977) formula.

Unlimited population: $N = \frac{z^2 x\, \hat{p}(1-\hat{p})}{\varepsilon^2}$

Where;

z = the z score

ε = the margin of error

N = population size

$\hat{p}$ = the population proportion

Considering 95% confidence, and a margin of error of 5%, assuming a population proportion of .5, and unlimited population size; and that z for a 95% confidence level is 1.96 from the z-table. Substituting the formula;

$$N = \frac{1.96^2 x\ 0.5(1-0.5)}{0.05^2} = 384.16$$

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A researcher-designed questionnaire with closed and open-ended items was used. Using stratified random sampling, the researcher selected 16 schools. A visit was done to the schools to identify the Agriculture teachers who later provided the lists of Form Three Agriculture students. In each of the schools, proportionate sampling was used to identify appropriate number of students to take part in the study, effectively giving the 384 required. The schools were randomly assigned to experimental and control groups. The questionnaire was administered to gather information on the demographic characteristics of the respondents and the facilities available for the teaching of Agriculture. At the same time, a pre-test was administered using learning outcome tests to collect relevant data on the interest in studying Agriculture post-secondary school. The control group was taught about the crop through conventional classroom methods which covered the areas concerning the field production of the crop for one month. The experimental group was subjected to a SAEP lasting for 4 months where they were instructed about coriander crop and monitored in a treatment condition of growing and managing the crop from the point of land preparation, planting, field management and disposal. This crop was chosen after it emerged as the most popular among the list of crops presented to learners to choose from. An appropriate site on the school land was selected under the guidance of the teacher upon which land preparation was done by the students using simple farm tools and equipment available within the school. The crop was cultivated and managed until maturity, after which it was harvested. A post-test to measure difference in the level of interest in studying Agriculture post-secondary school among students who took part in SAEP and those who did not take part was then administered to both the experimental and control groups to see if differences existed in learning outcomes between the two groups. The data collected was analyzed using SPSS Version 22.0. Data on variables was measured as indices generated from respondent's score in the 3 items, each with a minimum score of 1 and a maximum of 5. The maximum score for the student's interest in pursuing post-secondary school Agriculture would be an index 5, implying that the higher the score, the higher the interest. The indices were obtained by dividing the total scores in all items by 3. This was interpreted as: 1.0-1.84 = very low interest, 1.85-2.64 = low interest, 2.65-3.44 = moderate interest, 3.45-4.24 = high interest and 4.25-5.00 = very high interest.

Results and Discussions

Respondent's demographic characteristics

School type

The respondents in this study were distributed in three school types as shown in Table 3.1.

Table 3.1

Distribution of Respondents by School Type (n = 384)

School type	Frequency	Percent
National & Extra-County	48	12.5
County	48	12.5
Sub-County	288	75.0
Total	384	100.0

Though the respondents were sampled from different school categories, National & Extra-County and County schools contributed 12.5% each which was equal in proportion while the largest proportion (75%) came from the Sub-County school's category. This is based on the proportionate sampling bearing in mind that Sub-County schools in the County have majority of the students taking Agriculture.

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Number of subjects studied by the respondents

The agriculture students were asked to specify the number of subjects they had studied in school. The results were as shown in Table 3.2

Table 3.2

Number of Subjects Studied by Respondents (n =384)

No. of Subjects studied	Frequency	Percent
7	10	2.6
8	374	97.4
Total	384	100.0

It is shown therefore that 2.6% of the Form Three Agriculture students in Migori County studied 7 subjects while the majority (97.4%) of those who responded studied 8 subjects. The Ministry of Education, Science and Technology (MOEST) requires the secondary school students to register for a minimum of 7 and a maximum of 9 subjects when they join Form Three. It is seen that the subjects' uptake increases by achievement for the traditional academic subjects: Mathematics, English, Chemistry, Biology, History, Geography, and Physics (Rodeiro, 2007).

Students' first subject of choice

Respondents indicated their most preferred subject; the results are shown in Table 3.3.

Table 3.3

Students Most Preferred Subject (n = 384)

Subject	Frequency	Percent
History	168	43.8
Biology	49	12.8
Mathematics	44	11.5
Agriculture	43	11.2
Physics	25	6.5
English	21	5.5
Kiswahili	13	3.4
Geography	9	2.3
Christian Religious Education (C.R.E)	7	1.8
Chemistry	9	2.3
Total	384	100.0

History was the most popular subject in this category with 43.8% of the respondents indicating it followed by biology at 12.8%. The third, fourth, fifth, sixth, seventh, eighth, ninth and tenth subjects in the category were Mathematics, Agriculture Physics, English, Kiswahili, Geography, C.R.E and Chemistry with 11.5%, 11.2%, 6.5%, 5.5%, 3.4%, 2.3%, 1.8% and 2.3% respectively.

Respondent's place of residence

The respondents were required to indicate their places of residence at the time of this study whether in village with a farm, village without a farm or urban areas. The results are as shown in Table 3.4

Table 3.4

Respondent's Home Residence (n = 384)

Place of residence	Frequency	Percent
In a village with a farm	367	96.1
In a village without a farm	7	1.8
In urban areas	10	2.6
Total	384	100.0

The majority (96.1%) of the respondents were currently living in a village with a farm. Few respondents (1.8%) were living in a village without a farm while another small group (2.6%) stayed in an urban setting. It can therefore be said that majority of Agriculture students in Migori County stay in the rural areas where farms are present and where most of the agricultural activities take place.

Father's occupation

The respondents were asked to indicate the occupation of their fathers, and the results are as shown in Table 3.5.

Table 3.5

Occupation of Father (n = 269)

Option	Frequency	Percent
Agricultural fields	26	9.7
Education and training	37	13.8
Forces/security provision	1	0.4

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Medical areas	11	4.1
Peasant farmer	126	46.8
Small scale trader	7	2.6
Carpenter	4	1.5
Truck/bus/*matatu* driver	32	11.9
Mining and quarrying	7	2.6
Mason and contactor	14	5.2
Tailor and dressmaker	3	1.1
Housing manager	1	0.4
Total	269	100.0

Note. Sample size (n = 269) means 115 respondents did not provide an answer to this item.

Out of the 269 respondents who responded to this, 9.7% had fathers working in the agricultural fields. Another 13.8% had fathers who work in the areas of education and training including teachers and education officers. A small fraction (0.4%) of the Agriculture students had fathers around forces and security including police and army, yet 4.1% had fathers working in medical fields including nurses, doctors and surgeons. Almost half (46.8%) of the students said they have fathers who are small scale or peasant farmers while 2.6% had fathers involved in small scale trades. Further 1.5%, 11.9%, 2.6%, 5.2%, 1.1% and 0.4% said they had their fathers engaged as carpenter, truck or bus or *matatu* driver, mining and quarry worker, mason and building contractor, tailor or dressmaker and housing manager or estate manager respectively. It can therefore be said that more than half (55.5%) of the respondents have fathers engage in agricultural activities. Parents' engagement in Agriculture can also influence the young people to like the agricultural activities and the extent to which they also engage in Agriculture.

Description of items on interest in pursuing further studies in Agriculture

Three items were used to assess the objective, and the results are shown in Table 3.

Table 3.6

Interest in pursuing further studies in Agriculture

		Pre-experiment		Post-experiment		Pre-experiment		Post-experiment		Pre-experiment		Psot-experiment	
		Q1: Agriculture is useful in my future studies				Q2: I have high intentions to pursue further studies in Agriculture after secondary school (in college/university)				Q3: I am convinced that what I study in Agriculture will be useful in my future life			
S		E	C	E	C	E	C	E	C	E	C	E	C
1	f	57	19	20	19	27	32	12	31	16	25	8	24
	%	29.7	9.9	10.4	9.9	14.1	16.7	6.3	15.1	8.3	13.0	4.2	12.5
2	f	17	33	13	33	25	41	22	41	25	26	14	27
	%	8.9	17.2	6.8	17.2	13.5	21.4	11.5	21.4	13.0	13.5	7.3	14.1
3	f	24	21	90	21	35	26	39	28	23	26	12	27
	%	12.5	10.9	46.9	10.9	18.2	13.5	20.3	14.6	12.0	13.5	6.3	14.1
4	f	40	45	42	45	46	35	93	37	41	36	21	38
	%	20.8	23.4	21.9	23.4	24.0	18.2	48.4	19.3	21.4	18.8	10.9	19.8
5	f	54	74	27	74	48	58	26	55	87	79	137	76
	%	28.1	38.6	14	38.6	30.2	30.2	13.5	28.6	45.3	41.1	71.3	39.5
T	f	192	192	192	192	192	192	192	192	192	192	192	192
	%	100	100	100	100	100	100	100	100	100	100	100	100
M		3.09	3.64	3.22	3.64	3.43	3.24	3.52	3.23	3.82	3.61	4.38	3.60

Key: S- Likert scale; f- frequency; %- percent; E- experimental group; C- control group; T- total score; M- mean score.

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Level of perceived usefulness of Agriculture in future studies

The respondents were asked to indicate the perceived usefulness of Agriculture they study today on their future studies. The result is displayed in Table 3.6. The data reveals that before the programme, 29.7% of the respondents in the experimental group gave a rating of 1 as the level at which Agriculture is useful in their future career choices while 8.9% gave a rating of 2. Another 12.5% of them gave a rating of 3, 20.8% rated it at 4 while 28.1% gave the biggest rating of 5 as the level at which Agriculture is useful in their future career choices. In the after-test period, 10.4%, 6.8%, 46.9%, 21.9% and 14.0% gave a rating of 1, 2, 3, 4 and 5 respectively as their level of Agriculture's usefulness in future career choices. It was a moderate pre-test index of 3.09 and another moderate post-test index of 3.22 showing that there was a little interest increase in the perceived usefulness of the subject following involvement in the programme.

In the control group before the programme, 9.9% of the respondents gave a rating of 1, 17.2% gave a rating of 2, 10.9% gave a neutral rating of 3, 23.4% gave a rating of 4 while 38.5% gave the rating of 5. In the period following the SAEP, 9.9% rated the statement at 1, 17.2% rated it at 2, 10.9 rated it at 3, and 23.4% rated it at 4 while 38.6% rated it at 5. These revealed high pre-test and post-test indices of 3.64 and 3.64 respectively. The experimental group apparently had an increase in their perceived usefulness of the subject in future career choices while the control group did not show a change at all. This goes contrary to the findings of Omojowo, (2015) which revealed that students only take Agriculture in secondary schools but were not keen on pursuing it in tertiary institutions and taking up related careers because to them it is synonymous only with farm work. This could be attributed to mere lack of knowledge on the usefulness of the subject.

Intent to pursue further studies in Agriculture after secondary school

The respondents were asked to indicate intentions to pursue further studies in Agriculture after secondary school. The result in Table 3.6 reveals that before the programme, 14.1% of the respondents in the experimental group gave a rating of 1 on intentions to pursue further studies in Agriculture after secondary school while 13.5% gave a rating of 2. Another 18.2% of them gave a rating of 3, almost a quarter (24.0%) rated it at 4 while 30.2% gave the rating of 5 as the level at which they have intentions to pursue further studies in Agriculture after secondary school. In the post-test period, 6.3%, 11.5%, 20.3%, 48.4% and 13.5% gave a rating of 1, 2, 3, 4 and 5 respectively as their level of intentions to pursue further studies in Agriculture after secondary school. It was a moderate pre-test index of 3.43 and a moderate post-test index of 3.52 showing that there was a little increase in perceived intentions to pursue further studies in Agriculture after secondary school.

In the control group before the programme, 16.7% of the respondents gave a rating of 1, 21.4% gave a rating of 2, 13.5% gave a neutral rating of 3, 18.2% gave a rating of 4 while 30.2% gave the rating of 5. In the period following the SAEP, 15.1% rated the statement at 1, 21.4% rated it at 2, 14.6% rated it at 3, and 19.3% rated it at 4 while 28.6% rated it at 5. This shows high pre-test and post-test indices of 3.24 and 3.23 respectively. Both groups had a small increase in their perceived intentions to pursue further studies in Agriculture after secondary school.

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Perceived usefulness of secondary school Agriculture in future life

The respondents were asked to indicate if they thought that what is studied in Agriculture could be useful in the future life. The results shown in Table 3.6 show that before the programme, 8.3% of the respondents in the experimental group had a rating of 1 that what is studied in Agriculture could be useful in future life while 13.0% gave a rating of 2. In the same group, 12.0% gave a rating of 3, 21.4% rated it at 4 while 45.3% gave a rating of 5 as the level of significance of what is studied in Agriculture in the future life. In the post-test period, 4.2%, 7.3%, 6.3%, 10.9% and the larger proportion (71.3%) gave a rating of 1, 2, 3, 4 and 5 respectively as their level of significance of what is studied in Agriculture in the future life. This is seen as a high pre-test index of 3.82 and a very high post-test index of 4.38 showing that there was an increase in perceived significance of what is studied in Agriculture in the future life.

Before the programme, 13.0% of the respondents in the control group gave a rating of 1, 13.5% of them gave a rating of 2, 13.5% gave a neutral rating of 3, 18.8% gave a rating of 4 while 41.1% gave a rating of 5 respectively as the level of significance of what is studied in Agriculture in the future life. In the period following the SAEP, 12.5% rated the statement at 1, 14.1% rated it at 2, 14.1% rated it at 3, and 19.8% rated it at 4 while 39.5% rated it at 5, showing high pre-test and post-test indices of 3.61 and 3.60 respectively. It can be seen therefore that the experimental group had an increase in their perceived level of significance of what is studied in Agriculture in the future life while those not taking part did report a small reduction. This could mean that after the SAEP, respondents taking part in the programme had increasingly appreciated that what is studied in Agriculture is very significant in the future life after school.

Level of interest in studying Agriculture post-secondary school secondary school Agriculture students

To gauge interest in studying Agriculture after secondary school, mean indices were calculated among secondary school Agriculture students. Seven questions were used and the mean index score is summarised as shown in Table 3.7.

Table 3.7

Group Statistics for Differences in Interest to Pursue Further Studies in Agriculture

			Group statistics		
Category	Indicator	n	Mean	Std. Deviation	Std. Error Mean
Experimental	A	182	3.2338	.83947	.06148
	B	184	3.8846	.82231	.05988
	Mean Difference (Change in interest)		.6508	-.01716	
Control	A	175	3.3453	.88448	.06610
	B	175	3.3353	.88342	.06001
	Mean Difference (Change in interest)		-.01000	-.00106	

Key: *A- Interest to pursue further studies in Agriculture before SAEP*
B- Interest to pursue further studies in Agriculture after SAEP

Table 3.7 shows that the experimental group had a moderate mean of 3.23 (SD = 0.84) in Agriculture before the SAEP. After the SAEP, the group had a mean of 3.88 (SD = 0.82). For the control group, mean was 3.35 (SD = 0.88) before the SAEP which was moderate. After the SAEP, this group reported

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a similar mean of 3.33 (*SD* = 0.88), showing no change.

It can be said that interest in pursuing further studies in Agriculture was moderate in both treatment and control groups before SAEP but increased for the experimental group (high) while it remained constant for the control group.

Testing of hypothesis on students' interest in studying Agriculture post-secondary school

To test the hypothesis that there is no statistically significant difference in interest in studying Agriculture post-secondary school between secondary school Agriculture students exposed to SAEP and those not exposed to SAEP, a one-way ANOVA, a paired sample t-test and an independent sample t-test were computed at 95% confidence level. The results are presented in Tables 3.8, 3.9 and 3.10.

One-way ANOVA test for differences in interest to pursue further agricultural studies

A one-way ANOVA test was conducted to give an insight into the differences within the groups as well as to show the group with significant increase in interest to advance agricultural studies. The results are shown in Table 3.8.

Table 3.8

Post SAEP ANOVA Test for Differences in Interest in Further Studies in Agriculture

Category		Sum of Squares	df	Mean Square	F	Sig.
Experimental	Between Groups	17.868	7	2.553	2.675	.012
	Within Groups	175.584	184	.954		
	Total	193.452	191			
Control	Between Groups	12.592	7	1.799	2.494	.181
	Within Groups	120.469	167	.721		
	Total	133.061	174			

Data for the experimental group indicated that the 24 respondents from Masara had a mean perception about further studies in Agriculture of 3.77 (*SD* = 0.00) while the ones from Nyango showed a mean of 3.69 (*SD* = 0.64). Those from Sori had a mean of 3.73 (*SD* = 0.93) with Nyamome's respondents reporting a mean of 3.79 (*SD* = 0.82). The participants from Tuk Jowi had a mean of 3.78 (*SD* = 0.00), those from Agenga had a mean of 3.68 (*SD* = 0.00), the participants from Kubweye had a mean of 3.79 (*SD* = 0.00) while Nyamuga's participants had a mean of 3.78 (*SD* = 0.90). The difference in the interest in pursuing further studies in Agriculture, therefore, was significant, $F(7, 176) = 2.68, p = .012$.

In the control group after SAEP, the 24 respondents from Abwao showed a mean perception about further studies in Agriculture of 3.08 (*SD* = 0.87); the 24 participants from Kakrao had a mean of 2.8 (*SD* = 0.79); the 24 participants from Akala had a mean of 3.33 (*SD* = 0.82); the 24 participants from Moi Suba had a mean of 2.84 (*SD* = 0.85); the 24 participants from Bishop Okinda had a mean of 3.40 (*SD* = 0.83); the 16 participants from Onyalo had a mean of 3.55 (*SD* = 0.91); the 24 participants from Nyarach had a mean of 3.45 (*SD* = 0.87); the 24 participants from Nyikendo had a mean of 3.45 (*SD* = 0.87). The difference in perceptions about further studies in Agriculture, therefore, was insignificant, $F(7, 167) = 2.49, p = .181$. These findings showed that the schools taking part in

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SAEP had means that were statistically different. It also affirmed that the schools not taking part in SAEP had means that were significantly different. These differences could be attributed to the variations in levels of guidance on subject choice in schools, so that some students are more aware of the significance of Agriculture in further studies

Paired sample t-test for group differences in interest to pursue agricultural careers

A paired sample t-test test was conducted to show the level of interest in agricultural careers. This was done by comparing pre-SAEP and post-SAEP means in each group. The results are shown in Table 3.9.

Table 3.9

Paired Sample T-test Results for the Differences in Interest in Further Studies in Agriculture in Experimental and Control Groups

		Mean	Std. Deviation	Std. Error Mean	t	Df	Sig. (2-tailed)
Experimental	A	.6508	-.01716	-.00016	1.19821	174	.000
Control	B	.0100	.00106	.00609	1.40341	174	.074

Key: *A- Interest before average – interest after average*
B- Interest before average – interest after average

As seen in Table 3.9, the experimental group had a larger increase in the mean (0.65) while the control group had a small change in the mean (0.01). The experimental group mean increase in interest was therefore statistically significant, $t(174) = 1.20, p = .001$, while that for the control group was not statistically significant, $t(174) = 1.40, p = .074$.

Independent sample t-test for differences in interest in further studies in Agriculture

To determine if there were differences in interest in further studies in Agriculture between the two study groups, an independent sa mple t-test was done, and the results are as shown in Table 3.10.

Table 3.10

Independent Sample T-test for the Differences in Interest in Studying Agriculture Post-Secondary School

			Levene's Test for Equality of Variances			T-Test for Equality of Means		
		F	Sig.	t	Df	Sig. (2-Tailed)	Mean	Dif. Std.
Overall interest before SAEP	Equal variances assumed	.711	.400	-.261	355	.794	-.02354	.09018
	Equal variances not assumed			-.261	352.016	.794	-.02354	.09028
Overall interest after SAEP	Equal variances assumed	.366	.546	6.169	357	.000	.54926	.08903
	Equal variances not assumed			6.158	351.615	.000	.54926	.08920

From Table 3.10, pre-test independent sample t-tests revealed that the group means between the experimental ($M = 3.21$, $SD = 0.83$) and control ($M = 3.24$, $SD = 0.87$) groups were not statistically different, $t(352.02) = -0.26$, $p = .794$, on the interest in pursuit of further studies in Agriculture. There was enough evidence to believe that the two groups were similar in terms of interest in pursuing

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further studies in Agriculture. Post-test t-test revealed that there was a statistically significant difference in interest in pursuit of further studies in Agriculture between the experimental group (M = 3.78, SD = 0.81) and control group (M = 3.23, SD = 0.87), $t(357) = 6.17$, $p = .001$. This therefore shows that post-SAEP, the interest in taking up further studies in Agriculture between students taking part and those not taking part was significantly different. The null hypothesis is rejected because there is a statistically significant difference in interest in studying Agriculture post-secondary school between secondary school Agriculture students exposed to SAEP and those not exposed to SAEP.

Conclusion and Recommendation

The level of interest in studying Agriculture post-secondary school is moderate without any intervention among students of Agriculture, however Agriculture students taught through SAEP had more interest in pursuing Agriculture post-secondary school hence SAEP positively influenced student's interest in further studies in Agriculture. The study recommends that schools should ensure that non-conventional methods are incorporated into agriculture instruction for students to develop interest in the subject and appreciate agricultural careers.

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Author Contribution

Ongang'a Peter Odhiambo: Conceptualization, software, formal analysis, funds acquisition, investigation, methodology, writing of draft, project administration.

Sang Irene Chepkosgei: Data curation, methodology, project administration, writing – review & editing.

Conflicts of Interest

The authors declare no conflicts of interest.

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