Secondary School Agriculture Curriculum Reforms in Kenya 1959-2016: Challenges to Innovations

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ABSTRACT
Fifty seven of curriculum reforms targeting innovations to education through school agriculture remain unattainable to date. Observations indicate challenges to reforms rather progress as there exists a gap between the desired and the reality, the demand for quality and the relevance of what is implemented. The target population for the study included individuals and institutions with both primary and secondary information on innovative strategies on school agriculture. The study used qualitative research with historical design to purposively sample respondents from 26 secondary schools with an initial population of 104 respondents where innovative strategies on school agriculture were implemented. Self-administered interview schedules, visits to school and education offices archives for documentary sources were used to collect data. The data was synthesized and analyzed qualitatively by generating an account of curriculum innovative approaches. This involved selecting, organizing and analyzing the collected data in to topical themes and central ideas and concepts. The findings of this study shows that the perceived reforms either stagnated or were reversed leading to a knowledge and skills gap making the consumers of the curriculum less competitive in the economy of the country. The lessons learnt in this study may help design worthwhile approaches for curriculum reforms with an increased drive for skills and knowledge in producing graduates who are destined to the world of work. The paper recommends the need to establish policy monitoring and implementation machinery to ensure that policies are interpreted and implemented as recommended.

Key words: Kenya, reforms, skills, curriculum, strategies, resources.

INTRODUCTION
Curriculum reform refers to the need with the purpose of improving and creating relevance in education. Relevancy in education leads attainment of sustainable livelihoods. The world-wide desire for innovative curriculum remains the goal for educational planners. In Kenya the realization of curriculum reforms targeting school agriculture remains elusive.The drive to introduce school agriculture has been based in the belief that the strategy would improve access and at the same time respond to the needs of quality and relevance in education. The Kenya vocational agriculture programme in which resources and facilities are provided to spur reforms in the teaching of the subject dates back to 1959 (Jago & Tanner, 1999; Maxwell, 1965) when agriculture was first introduced in the Secondary School curriculum. The subject targeted rural schools, and according to World Bank (2014), ensuring access and quality must be intensified for

the vast rural population who are generally excluded by poverty, ethnicity, gender and other social stigmas. Skills and knowledge acquired in school agriculture is essential in promoting increased farm production through the systematic adoption of new technology and agricultural research findings (Lewa & Ndung'u, 2012). The drive has been guided by the long established mission of agricultural education which emphasizes the scientific study of agriculture targeting the inclusion of the farming community; to dissemination of results of research to a large category of farmers for increased and sustainable agricultural production (Acker &Grieshop, 2004).

Despite the efforts to create innovative strategies in school agriculture for rural transformation between 1959 and 2016 the policies for implementation especially on resources and facilities took a back seat as early as the 1970s as the subject effectively assumed theoretical teaching. Whereas school agriculture in Kenya traces its origin to the US Vocational Agriculture Acts such as the National Vocational Education Act of 1963, (Soretire 1968; FAO/ILO/Ministry of Agriculture 2007) secondary school agriculture in Kenya has remained a hope and wishes tucked in education policy documents gathering dust in shelves. An analysis of the foundation objectives of school agriculture EAEC (1969) shows that the innovative driven objectives would have led to reforms and innovations in agriculture which would have narrowed the knowledge gap between the subject matter and skills required in economic undertakings.

LITERATURE REVIEW.

Curriculum Reforms through School Agriculture

Relevant literature reviewed in this study indicates that Kenya has had a long history of innovative ideas on school agriculture. As early as between 1928 and 1933, recommendations of the Organization of Agricultural Education for Africans and of the Directors of Education in the then three East African countries: Kenya, Uganda and Tanzania were that; agriculture be made a compulsory and examinable subject and that the practical work in the individual demonstration plots be graded equally with theory(King,1971;Soretire,1968).It is significant to realize that whereas these recommendations were made over eighty five years ago, there is lack of data to confirm the implementation reality on the contrary practical agriculture in schools has declined significantly.

On the other hand, the recommendation was an reform touching on assesement.In an effort to implement reforms, the nature of examinations and evaluation is paramount. (UN, 2007; World Bank, 2014) re-iterates that examinations are powerful tools influencing and shaping the school curriculum. Curriculum reform requires good assessment tools which guides policymakers in making effective decisions for evaluating the cost effectiveness of a reformed curriculum. The demand for a purely academic education by Kenyans has remained high going back to colonial period up to this period of time stifling reform strategies (Sifuna, 2001; Bennell, 2007) and this has stifled innovative approaches for vocational and practical oriented subjects.

There is need to understand the nature of the society in which the curricular is provided, this is essential as it will enable adjustments to the reforms with respect to agriculture and education and for sustainability. Curriculum reforms according to (Akoojee & McGraths, 2005;Koulaouzides, Vergos,Acker&Crunkilton, 2003) cannot ignore to ensure that young people are acquiring skills and knowledge that they may need to serve as facilitators to economic progress and reduction of

absolute rural poverty.The immediate consumers of any curriculum reform are the learners and the implementer who is the teacher. There is as (Stewart, Moore Flowers, 2003; Acker &Grieshop,2004) points out, the need to establish what the current and possible future learner needs in order to have successful careers after completing an education program. There is need to identify reform approaches which may address the apparent challenges to agriculture curriculum reforms which may lead to greater investment in agriculture and a move towards sustainable rural livelihoods and by elimination of global hunger and malnutrition.

Successive reports (World Bank,2014;UN,2007 & UNSECO,2012) all emphasizes that the benefits of an innovative curriculum include provision of opportunities for life by opening-up avenues for acquiring employable skills by the youth leading to decent work and which enables them to climb out of poverty. Sustainable innovative vocational and practical education relies heavily on what goes into it in the first place, ideas, technology, people and financial resources and these must be tied to time available. Making schooling more useful (Akoojee & McGraths, 2005; Koulaouzides, Vergos, Acker& Crunkilton, 2003; Bennell, 2007) has been a major concern for vocational and practical curriculum reform movers and educational planner's worldwide. Experiences from Ghana show the need for appreciation to the value of transferable skills which includesproblem solving, effective communication of ideas, creativity and demonstration of entrepreneurial capabilities which a reformed curriculum could provide (FAO/ILO/Ministry of Agriculture, 2007).

Challenges to Curriculum Innovations

The (King& Martin,2002; UNESCO,2012) on the other hand points out at the failure of advances to scientific and technological reforms in agriculture in addressing the needs of small scale farmer in developing countries a factor which agricultural curriculum innovators have similarly neglected. This could be due to observations which show that the position, structure and the activities of the political leadership and policy makers favours academic education which is seen as leading to greater prosperity and power. Indications from relevant literature show that agriculture in the school curriculum has been perceived as second class education unlikely to lead to modern sector employment making any reforms on the curriculum inconsequential. Analyststend to show that there has been no meaningful approach to re-orientate the direction of education from purely academic to embrace vocational education, but reality has it that the subject has been merely added to the curriculum without change in philosophy. This is based on the fact that the establishment of school agriculture was not internalized by the rural communities as a desire to improve their lot of living standards. It has continued to reflect its introduction by foreigners in the colonial period, religious groups in which it facilitated the exit of a few gifted rural youth to more prestigious clerical jobs and other white collar jobs (Sifuna,2001;UNESCO,2012)

Innovative Challenges in the 8-4-4 System of Education.

The drive for innovative curriculum was the flagship in reforming the school agriculture in the 8-4-4 system of education in 1984 (GoK, 1984). The 8-4-4 system of education approach aimed to reflect the philosophy of experiential education (Brunner, 1996 &Bird, 2002). This new initiative was to revamp the Kenya Vocational Agriculture programme launched between 1959 -67, and which had been expanded to 135 schools by 1984 (GoK, 1984; Maxwell,1965; Onyango, 1975). It was believed that the practical and vocational curriculum approach would ensure that the students graduating at different levels of education would have been equipped with scientific and

practical skills essential for self and salary employment or higher levels of education.

Despite the noble 8-4-4 approach to practical and work oriented curriculum, reality has it that the innovative ideas remained still-born as theoretical teaching and aspirations to academic certificates at the expense on skills, attitudes and values which can enrich community development remains buried. There is need to move away from what both Brunner (1996) and Bird (2002) rightly points out that a purely academic education in Africa is still perceived as the major determining factor for social mobility and that it is only through this type of education that an individual can achieve higher occupational enhancement, high income, higher status and higher prestige. This perception according to (Onyango,1975), can be traced to colonial era in which the peasant or the children of the poor were to remain attached to the land and with practical oriented curriculum, and that their education should fit them for that status in life.

The above is also reinforced by the deep-rooted and quiet negative attitude to vocational subjects by teachers, parents and students who continue to view practical subjects as inferior form of education and in such circumstances the provision of resources and facilities is in effect inconsequential. Indications from schools through occasional visits show that despite the existence of agriculture teaching facilities, the schools have adopted the "chalk and talk" teaching strategy which in the views of (Stewart, Moore& Flowers, 2004; King & Martin,2002) does not relate to ask for reforms in education.

Curriculum Reforms and the Teacher

Innovative curriculum demands creativity in teaching and must be linked to the training of agriculture teacher. Innovative teachers Dewey and Dewey (1915) promote learner centered approach that awakens the psychology of the educator to plan for the needs of students in relation to the use of resources. This is a strategy for learning by doing in which the learners must be active participants in educational encounter. Where stagnation to reform emerges there must be a review of the strategy and the teacher must be able to engage in teachable methods with the ultimate goal of assisting learners to be intrinsically motivated to be innovators.

It is noteworthy to say that reforms are usually promoted by teachers who are thinkers Acker & Grieshop, 2004) and whose desires are to address the societal ills or promote societal changes, most often through creation of ideas and knowledge creation as opposed to knowledge consumers. Similarly the views from (UN, 2007 & UNESCO, 2012) shows that reforms and innovations require teachers to look for new ideas and new ways of delivery of content and programs. The speed at which technology and knowledge is advancing requires teachers to prepare students to adopt with change. Helping the learner to deal with change is a strategy of ensuring sustainable reforms in the curriculum. A view shared by reports (World Bank, 2014 &FAO/ILO2007) expresses the view that to ensure a sustainable innovative agricultural education proramme, there is a need to attract and keep high quality teachers. To achieve this, teachers would need the support from stakeholders to help them keep pace with changes in teaching technology, and methodology and technical knowledge inagriculture.

This paper presents an analysis of innovative approaches to school agriculture in the secondary school curriculum. The paper further sought to establish and analyze the relevancy of resources and facilities provided for teaching agriculture over the study period and their implications to

curriculum reforms. Practical based learning reinforces problem solving and inquiry-based teaching and learning which breeds reforms. The literature reviewed shows that an approach where the curriculum is backed by relevant resources, the students see learning as interesting and meaningful and this can be one way of addressing the negative perception in school agriculture (Grifiths, 1968; King & Martin, 2002), gets the reforms breeding further reforms and not reversals to creativity.

Theoretical Framework

This paper has investigated, examined and analyzed the approaches to the implementation of school agriculture curriculum within the context of relevancy to the societal goals and aspirations (Dewey & Dewey, 1915; Haralambos & Heald, 1980). An approach to provide resources and facilities relating to the syllabuses and curricula was a response to the functionalist theory of the French sociologist Emile Durkheim (Haralambos & Heald, 1980) which sees education as the transmission of the society's norms, values and skills.

METHODOLOGY

This study adopted a largely qualitative approach of historical design. It used the systematic nature of historical studies by interviews, documentation of past records from schools, education offices and archives to research for facts relating to approaches to curriculum reforms. These were described, analyzed and interpreted with reference to their impact on curriculum reforms. The study further searched for information relating to provision of resources and facilities relevant to secondary schools with a view for creativity and reforms in teaching. The study adopted a variety of foci that historical research uses such as; issues, movements, concepts, approaches, theories and development (Smit, 2003 & Wiersma, 1995). The historical research in this study contributed in covering a broad area which led to the understanding on approaches to curriculum reform strategies. The study, (Keppel, 1991) involved un-obtrusive methods that investigated the process and occurrences at different times and in different places. It involved data collection through interviews to the actual participants who were involved in designing the approaches touching various aspects of curriculum reforms. The individuals interviewed for information included former and current agriculture teachers who taught and were believed to have .been key to Agriculture curriculum implementation, the current and former head teachers who in their roles sourced for the resources and facilities and who were the implementers of the curricula polices at the school level. The study further targeted the archives, actual sites where the resources were provided, libraries, diaries, government plans, newspapers and official curricula and reports relating to the resources and facilities provision and use. The study purposively sampled 26 secondary schools in which agriculture was taught over the study period, the schools represented a select category of the population with specific data requirements.

RESULTS AND DISCUSSIONS

A review of the related literature identified several approaches including education commission recommendations and agreements dating back to the colonial period which had linkages to syllabuses, curricula, resources and facilities for teaching agriculture. An analysis of different reports and recommendations, visits to schools and workshops involving a wide category of Stake-Holders revealed varied approaches to reform the education by including agriculture in the school curriculum.

Secondary School Agriculture as Curriculum Reform *Initiative.*
The drive for curriculum reform through school agriculture in Kenya goes back traced to 1959 at Chavakali High School in the current Vihiga County-Kenya. The objective of the strategy included making rural secondary schools more responsive to the needs of society.The strategy was promoting the subject so that all people will value and understand the vital role of agriculture in the society.

The findings of this study shows that Kenya vocational agriculture policy which covered the period between 1959 to 1971 and which included the Chavakali High School, the USAID and IDA projects, set the direction for innovative teaching of school agriculture. The Chavakali Vocational Agricultural Programme project was supported by a clear syllabus approved by the Government of Kenya, Cambridge Examinations Syndicate and the 1969 East African Examinations Council syllabus. The programme had support through defined identifiable resources, equipment and other facilities which were considered relevant for the implementation of the curriculum. The syllabus shows the content and other strategies like the project work, field visits and extra activities, which were considered essential for vocational agriculture.

However this study shows that there was lack of relationship of resources and the objectives, a key element in curriculum implementation. In the absence of syllabus objectives, it becomes difficult for the teacher to implement the syllabus as it is not easy to pick the relevant resources, and facilities. However, the syllabus was quite detailed in content. It had adequate coverage in skills acquisition which required measurable objectives. A key component of the curriculum was its connections to the stakeholders in the agricultural industry through student field attachment and teacher visits to the community farmers to offer technical advice.

This study established that for school agriculture to promote reforms in agricultural sector there must be a linkage with the community in the absence of this the needs of the agricultural industry will not be reflected in the implementation. Further findings relating to curriculum implementation were revealed through the samples of examination items from the examining bodies, the East Africa Examinations Council, and the Kenya National Examinations Council over the study period which reveals that although these resources and facilities were provided, their use did constitute an area of examination question paper item. Most of the questions focused on identification of tools andtheoretical questions on maintenance of workshop tools and equipment.

It was illogical to provide tools of such magnitude in terms of cost, quality and specialty only for identification. Instead of testing the psychomotor skills and applications on use of the resources, the testing emphasized identification using photographs. This indeed was far from reforms. The study further shows that the type of tools, equipment and facilities supplied required trained engineers or mechanics technicians, animal husbandry and crop husbandry technicians to handle.

It was a task beyond the competency of an agriculture teacher trained in the general area of agriculture. In the absence of the above, reforms is stifled as the would be user cannot handle the tool. As a consequence the tools and equipment were not only misused evidenced by the magnitude of the remnants of resources and facilities found lying in waste in several schools where such facilities had been supplied either under the Chavakali project, the USAID, IDA and the Kenya Government project schools.

Among the relics includes farm structures, tractors, cultivators, combine harvesters an assortment of tools and equipment like welders, microscopes, engineering surveying equipment and audio teaching resources like over-head projectors. The agriculture buildings which had been considered as a leading mark of schools teaching agriculture had been converted to other uses, such as industrial education, science laboratories, dormitories and general workshop for maintenance.

Reforms and innovations require monitoring and evaluation for continuity or modifications. The study has established that this was not the case with school agriculture. The study shows expansion to more schools without regard to financial implications. This is evidenced by the 1970-74 development plan coming immediatelyafter the USAID and IDA in which a recommendation to construct of 75 agriculture workshops to be built in secondary schools over the plan period. This was in support for the 1969 Agriculture Principles and Practices Syllabus adopted in East Africa. Notably although the workshops were to be constructed, it became apparent that the magnitude of the funding was not sustainable.

The relationship in funding for resources and facilities which had a bearing on teaching methodology is noted with respect to reduced level of funding as compared to the vocational program between 1959 and 1969. Whereas the funding was scaled down, the syllabus remained the same in terms of objectives, content, resource needs and the teaching methodology. According to (Chrisman,1987) there is evidence of planning as shown by (GoK, 1970-74) development plansshows the initial financing level at a cost of £258,000 or Kshs. 5,160,000 for the 75 agriculture workshops recommended, the average of Kshs. 122,857 per school. In May 1974, the MOE released £14,000 (equivalent to Kshs. 280,000) at an average of Kshs. 20,000 per school to 14 schools for purchase of agriculture tools and requirement.

Documentary sources and the response from the respondents in this study show that after the 1970-74 Development plans, the funding for the subject ceased and therefore the variations in resources and facilities became a reality as the funding levels declined. The provision of resources and facilities similarly ceased. When the funding ceased, the motivation for practical teaching of agriculture also diminished, and the subject turned to be theoretical and any gains made in reforming school agriculture took a downward trend.The findings of this study further reveals that the 8-4-4 system of education which was envisaged to be more practical and problem solving curriculum shows to the contrary that it instead entrenchedtheoretical teaching of the subject by doing away with the requirement of land as a basic facility for teaching the subject. In the absence of land and other resources for teaching the subject, the above recommendations were inconsequential.

A visit to the 43 schools in the study provides summarized findings in Table 1 giving a clear picture of implications of resources to possibilities to reforms. Documentary data and school records show that all the ten USAID and IDA project schools in this study had been supplied with tools, equipment and facilities which when put in the hands of competent teachers, would facilitate creativity in class room work. An interview with the former and current teachers from these schools with regard to the common methods of teaching reveal that only seven out of the 43 had a practical approach to the teaching of the subject. The seven schools fall within the category schools which were not provided with resources but went out on their way to promote creativity. A related

finding from the 43 schools visited was the relationship of the school farm as a teaching facility in relation to possible innovative activities as shown in Table 1.

Table 1: Category of schools visited in-relation to availability and use of agriculture workshop and facilities for innovative teaching and learning

Category of school	Number of schools visited	Schools with workshop facilities	Workshops and facilities used in agriculture	Workshops & facilities used for other purposes	Un used workshops and facilities	Schools without workshops and facilities
USAID Funded	6	6	0	6	-	0
IDA/ Kenya Government	5	5	0	4	1	0
Kenya Government Funded	12	7	1	6	-	5
Kenya Government Non funded	20	0	-	-	-	20
Total	43	18	1	16	1	25

Table 1 reveals most insight information. It shows that 25 or 58% of the 43 schools in the study had no workshops, but much more revealing information was that only 13 or 40% of the 32 schools which fell under the Kenya Government had workshops. From the table, it can be seen that none of the 11 schools funded by the USAID or IDA were using the workshops for teaching agriculture. Of the 18 workshops from the 43 schools visited in this study, only one is being used for teaching agriculture. It can be construed that had these few workshops been put in to effective use agricultural technology and indeed reforms and creative teaching would have instituted.

Table 2: Category of schools visited by availability and use of school farm for teaching agriculture

Nature of farms in schools	USAID schools	IDA/WB Schools	Kenya Government Funded	Kenya Government Non Funded	Total
Schools with agriculture farms	6	5	12	19	42
Schools with Y.F.C. plots	1	1	2	6	10
Schools with demonstration plots	0	0	0	4	4
Schools with commercial agriculture farms	6	5	12	19	42
Schools with KNEC plots	6	5	12	19	42
School farms under Agriculture teacher	0	0	1	4	5
School farms under head teacher	6	5	11	15	37
Schools without school farms	-	0	0	1	1

Table 2 further shows that out of 42 schools with school farms, only 5 schools had the agriculture teachers involved in managing the school farm for teaching purposes; this reflects that 88% of the schools have school farms whose functions are outsides the agriculture teacher's use. Responses from teachers show that the school farms exist only in theory and as such the activities in the farm never show any creativity. Similarly, in all the 42 schools with school farms, it is only in 5 schools where the agriculture teachers are given roles to play in the school farms, this reflects that the school farms are under the total control of the head teachers, or it is only the head teachers who can explain the roles of school farms under their care. Further findings show that the students are not incorporated in the school farms for any purposes except the Form IV KCSE projects. None of the schools have either the demonstration plots or the Young Farmer's Club plots for practical teaching of the subject which implies absence of leadership and project learning.

CONCLUSIONS AND RECOMMENDATIONS

The results and the findings confirm that the standards of what would have constituted a reformed school agriculture curriculum were set under the Kenya Vocational Agriculture programme between 1959 and 1974 and those adequate and relevant resources and facilities were provided for the same.

However, it can also be concluded that the teachers of agriculture failed to translate the curriculum objectives in an innovative strategy, they had the resources and facilities on would ask on the quality of their training, their visions and missions for the subject. This is a major reason for the downward trend in school agriculture.

The agriculture teachers have lost control of the school farm which is considered as a laboratory for teaching and experimentation in the teaching of school agriculture. The school farm in an avenue for promoting agricultural entrepreneurship, a key area in reforms in agriculture curriculum. Every student must have a chance to entrepreneurial aspects of agriculture.

Reforms must be sustainable to breed further reforms; short term reform goals cannot withstand the test of change. Self sufficiency at the school level is only a replica for subsistence farming a strategy which only promotes poverty. Most schools view agriculture in this direction and this has created a perception that school agriculture is for the low achieving students. Collaboration with farmers and community development agents would see school agriculture taking lead in areas such as value chain addition. School agriculture remains irrelevant if does not respond to the societal challenges.

The agriculture teacher plays a key role in innovative and creative teaching. The methodology employed by teachers must be meaningful and enjoyable for both learners and teachers. The agriculture teachers should continue to evaluate, reconstruct, and improve the face of school agriculture as we focus to the next century. However this they will not achieve on their own but the stake holders must provide high quality instructional materials to stimulate reforms in agriculture

The contribution of agriculture teachers in challenges to reforms are more than the factors outside the classroom and the downward trend can be effectively halted by the teachers. There is a need for teachers to include wider participation of community stakeholders in agriculture to determine the agricultural education program in line with the community needs and school syllabuses. These will the teacher to determine where to put emphasis on.

The drive for excellence in examinations has overshadowed the relevance of skills, values and attitudes hence relegating the drive for reforms in which vocational and practical subjects like agriculture struggling to remain afloat. This implies that the provision of resources and facilities for school agriculture has been inconsequential. An analysis from KNEC reports of 1999 and 2016 shows, impressive results from schools on agriculture yet there are no facilities, for teaching the subject in the same schools. The performance has no relations with facilities and resources besides books, teachers and the chalk. This re-affirms the historical misconception that, the teacher is the omnipotent and the unchallenged source of knowledge through the lecture and the chalked –up notes delivered and hence the irrelevancy of resources and facilities. The drive for curriculum reforms in which agriculture is included in the school curriculum has remained a wish and the hopes and aspirations on what school agriculture continues to be elusive.

This paper recommends that hard decisions have to be made on the education and training of agriculture teachers. Many institutions have mounted agricultural education courses. An analysis on the content of their programmes calls for an urgent stakeholder's conference to determine the mission and philosophy of school agriculture in the country. This will guide those offering agricultural education courses for teachers to address the downward trend of the subject. Similarly, the Education Ministry needs to define a strategy of monitoring and implementing recommendations from different commissions and committees.

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