
Status and Significance of Professional Development for Agriculture Teachers in Nakuru County, Kenya: A Teachers' Perspective

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Abstract – A nation is made great by its teachers as they educate the future generation. A nation may have, equipped schools with up to date facilities and resources and an excellent curriculum that has the potential to meet the needs of the society but, if the teacher is not well prepared to implement the curriculum, the whole programme is likely to be ineffective and a waste. Professional development for teachers is a structured professional learning that seeks to develop teacher practices and improve students learning outcomes. Professional development for teachers is therefore a necessary curriculum development activity that needs to be given the attention it deserves. A survey done in Nakuru County sought to find out the agriculture teachers' views about professional development activities organized for them. The survey utilized three instruments namely; Agriculture teachers' questionnaire, Agriculture teachers' Focus groups and classroom observation guide to collect data. The Cronbach's coefficient for the Agriculture teachers' questionnaire was 0.752. A sample size of 151 agriculture teachers were the respondents to the Agriculture teachers' questionnaire, three focus group discussions were conducted and ten classroom observations done. The findings of the study were that, though agriculture teachers face numerous challenges in teaching the subject, professional development activities for agriculture teachers are insufficient. Some of the challenges the agriculture teachers face include, large class sizes, lack of adequate resources, special needs students in class, high teaching workload and increased diversity among the students to which the agriculture teachers are often unsure of how to handle them correctly. The agriculture teachers also expressed a desire to have regular professional development forums where they can share their experiences as well as learn from experts and peers. Recommendations made from the findings of the study is that, there is need to have a deliberate effort right from the policy formulation level to implementation in having professional development for agriculture teachers being purposeful and continuous. The government should therefore consider allocating more funds towards professional development for teachers so that professional learning can be more regularly availed to agriculture teachers. This is pertinent as Kenya implements the competency-based curriculum, the 100 percent primary to secondary transition policy as well as working towards achieving the Sustainable development goals.

Keywords – Professional Development, Agriculture Teachers, Teaching Effectiveness.

I. INTRODUCTION

As one of the Sub-Saharan Countries, Kenya's agricultural potential include the ability to alleviate poverty, increase food security, create employment and raise the income of the agrarian community (Ngugi, Isinika, Temu & Kitalyi, 2002). One of the big-four agenda for Kenya is improving the level of food security. One way of releasing the potential in agriculture in dealing with such issues is by offering quality education in schools which research has shown that there is a positive correlation between secondary school agricultural education and farming productivity (Yasmeen, Abbasain & Hussein, 2011; Kipkemei, Kipsat, Sulo, Korir, & Inyanje, 2012). According to policy document by Kenya government, agricultural productivity has a direct impact on economic growth (Republic of Kenya, 2005). One factor that contributes significantly to quality of education and the success of any curriculum is teacher effectiveness. The question to ask is whether students can learn if the teacher is not

adequately equipped to teach.

According to research on teaching, teacher effectiveness as a major factor in any education system is mainly what happens in class and is critical in determining how much or how well a learner learns (Roy & Halder, 2018). In addition, the researchers assert that only teachers have the power to control the wholesome development of an education system. A nation may have, equipped schools with up-to-date facilities and resources and an excellent curriculum that has the potential to meet societal needs but, if the teacher is ill-prepared to implement the curriculum, the whole program is likely to be ineffective and a waste. Currently, Kenya is implementing a competency-based curriculum and hence professional development for teachers (PDT) is imperative. In order for the education system to benefit from PDT, there is need to understand the challenges the agriculture teachers face so that the professional development activities can be decisively planned for. PDT be should be conducted in view of the principles of adult learning and as some authors state, PDT should be ‘experiential and reflective rather than transmissive’ (Hayes, 2000, p138).

Darling-Hammond, Hyler and Gardner (2017), describe PDT as any structured professional learning that results in changes in teacher practices and improvements in student learning outcomes. Similarly, OECD (2009) gives the meaning of PDT as ‘any activity that develops an individual’s skill, knowledge, expertise and other characteristics as a teacher’ p49. Other terms associated with PDT are, teacher practice, continuing professional development, professional learning, professional learning community or network, mentoring and coaching. The aim of PDT is to change teachers’ classroom practice by changing their professional thinking, content knowledge, pedagogical skills as well as attitudes about teaching with an aim of improving student learning outcomes.

An assertion by Pitsoe and Maila (2012) is that good teachers constitute the foundation of good schools and therefore, improving teachers’ knowledge, skills and attitudes is one of the most important investments of time and money that a nation can make in education. Findings from research suggest that improvement in education almost never takes place in the absence of PDT. Professional development is key in meeting today’s educational demands (Sparks, 2002). The same author states that quality teaching will not occur by accident rather, it requires the design and implementation of a good professional development program.

Professional Development for Teachers in Kenya

A report by UNESCO (2018), asserts that the current general global trends in education require that teachers be well endowed with skills and knowledge especially as a nation focuses on sustainable development. Thus, effective teachers, according to Roberts and Dyer, (2004) are those who have mastered the teaching techniques, and know how to make the right choices to teach different content. Such teachers will be required to help achieve the education agenda in Kenya. A report by UNESCO(2015a) cites Kenya as one of the countries where the teachers fail to receive adequate curriculum support in the classroom. To emphasize the dire need of PDT, some reports state that a large proportion of teachers in Kenya enter the teaching professional when inadequately prepared (Bett, 2016; Kanyi, 2015) and, those already in the field receive unsatisfactory support as they carry out their professional roles (Gathumbi, Mungai & Hintze, 2013). In making sure that Kenya is not left behind in the sustainable development movement, it is critical to have teachers trained and developed in a way that will enable them to handle the learners and produce graduates at all levels that are able to promote the sustainable development agenda. Therefore, there should be more effort asserted towards PDT, after all, quality teaching has been said to be a key in achieving most of the sustainable development goals (UNESCO, 2015b).

In Kenya, one of government's policy framework for education and training states that education is essential to human and economic development (Ministry of Education & Ministry of Higher Education, Science and Technology, 2012). The report underpins the importance of equipping the learners with desired values, attitudes, knowledge, skills and competences. For this to be a reality, the teachers must be equipped first before they can equip the learners.

When a new curriculum and or educational policies are introduced, they come along with challenges that may necessitate the teachers to acquire new skills, knowledge, attitudes and values (Pitsoe & Maila, 2012). Teachers are expected to implement a carefully specified curriculum and instructional procedures to produce standard products referred to as students. For the implementation of a curriculum to be successful, the teachers may be required to make use of a variety of teaching skills and knowledge to achieve the laid objectives. Other than strengthening the pre-service training, the practicing teacher requires continuous support and training which would help to seal the gaps in teacher training and also help cope with the ever-increasing encounters in executing their roles as teachers.

One of the educational policies that has been introduced in Kenya is the 100 percent transition of learners from primary to secondary schools. While this policy is good in ensuring that the citizens have basic education, it is not commensurate with the resources, including human resource, on the ground. In addition to this, the nation is at a state of re-inventing the education system into a competency-based curriculum (Republic of Kenya, 2017) and still struggling with access to basic teaching facilities and resources. This situation poses a number of challenges to the teacher who must implement the curriculum and make it succeed. These challenges include coping with large class sizes, lack of adequate resources, special needs students in class, high teaching workload and increased diversity among the students.

Darling-Hammond, Hyler and Gardner (2017), posit that for PDT to be effective, it should be a structured professional learning that results in changes in teacher practices and improvement in student learning outcomes. According to recommendations made by Pitsoe and Maila (2012), PDT should be a critical consideration in policy implementation. Effective PDT should make teachers understand and apply what they have learnt to their teaching especially to solve problems that are evident in students learning. Professional development helps teachers change teaching approaches and assists teachers to have a deeper understanding of the content to be taught as well as broaden themselves as educators and as individuals. To become a competent teacher is a process and not a training event implying that PDT should be a continuous program (Bunyi, Wangia, Magoma & Limboro, 2013).

There has been an outcry concerning the poor performance of students in agriculture subject in the national examinations in Kenya. According to reports by Kenya National Examinations Council (2019), the mean score for agriculture subject has been below 50 percent for several years in a row and in fact the subject has been the least performed compared to other technical subjects offered in secondary schools. This poor performance in agriculture subject has deteriorated in the last three years (2016, 2017 and 2018) which has been of great concern to all stakeholders and demotivating to the agriculture teachers. The poor performance in the subject may have implications in enrolment levels in program that require agriculture both at the middle level colleges and also at the universities.

The education systems are charged with the responsibility of addressing the ever-increasing demands of the society which are diverse in nature. Such demands include; the need to reduce achievement gaps; achieving the set goals and managing the requirements of special needs-students. Therefore, to keep abreast of the important

advances occurring in education, PDT is very crucial in helping agriculture teachers remain current on the increasing pedagogical demands and content area. An educational report by Eleonora (2003), states that PDT is a process that begins at the teacher training level up to retirement.

Since education seeks to respond to rapidly evolving societal needs, the teaching profession therefore becomes a key mediating agency between society and the young generation. It is imperative that the teacher be up-to-date whether it is with content knowledge, pedagogy or in handling the diverse classroom situations that may present themselves in the course of teaching. It is vital therefore to seek for interventions that will improve the students learning outcomes in agriculture and a good starting point is by structuring and implementing a PDT that will equip the agriculture teachers such that the subject will be taught effectively.

II. THEORETICAL FRAMEWORK

Most educational research that has been done is on children learning; what is referred to as pedagogy, and therefore most views of learning that have been developed are in the context of children learning. According to Litster (2016), these models of pedagogy have a very different view from studies that look at settings beyond compulsory schooling which is a characteristic of adult learning. Professional development for teachers fits in as andragogy which is a study of how adults learn.

Fernando and Marikar (2017) suggest that andragogy can be entrenched in several theories and models of learning among them the Knowles model for adult learning and the constructivist theory. The constructivist theory emphasizes ‘learning as an adaptive activity, learning as situational in the context where it occurs, knowledge as constructed by the learner, the role of experience and prior understanding, resistance to change and the role of social interaction in learning’ (Chaulk, 2007, p2). This implies that learners should be active participants in the learning process as opposed to ‘sit-and-listen’ teaching and learning approaches. This is supported by Komulanein and Natsheh (2008), when they state that learners should construct their own meaning and understanding of the world around them based upon their experiences and unique prior conceptions that they bring to class. Since individuals have differing experiences social constructivism is therefore encouraged where learners collaborate and share experiences and knowledge thus enriching the learning process.

Knowles model for adult learning provides assumptions and principles of adult learning. (Fernando and Marikar 2017; Litster, 2016; Shikha, 2015). The model outlines five assumptions and four principles which are important in planning and implementing any adult learning program. The four principles of adult learning as portrayed in Knowles model are, self-concept whereby the adults choose to engage in learning activities hence they need to be involved in the planning and evaluation of their learning (Litster, 2016; Shikha, 2015). The second principle is that of role of experience; adult learners have an array of experiences (including mistakes) which should provide the richest resource for learning (Litster, 2016). This means that this assortment of experiences that they possess should be capitalized on as they go through the professional development activities. The third principle readiness to learn implies that adults are ready to learn that which they need to know in order to cope effectively with life situations (Fernando and Marikar, 2017). Knowles as the proponent of this model inserts that adult learning should therefore be planned around life application. This is in line with the fact that the designing of any professional development program should begin with needs assessment to make sure that the teachers’ needs in line with the curriculum are being addressed. The teachers will then be able to see the usefulness of the professional development activities and wholly be involved and thus reap the benefits.

III. PURPOSE OF THE STUDY

The purpose of the study was to find out the perceptions of agriculture teachers concerning the level of professional development activities offered to agriculture teachers in helping them cope with the challenges they face in implementing the secondary school agriculture curriculum. The challenges may have contributed to the dismal performance of students in agriculture subject in the national examinations.

IV. METHODOLOGY

The researchers used a descriptive survey in which three instruments were used to collect data in this study namely; the Agriculture teacher’s questionnaire (ATQ), Focus group guide (FGG) and the Classroom observation guide (COG). The ATQ had a Cronbach’s Alpha of 0.752. Stratified simple random was used to sample 151 agriculture teachers from the four categories of public secondary schools in Nakuru County. The sampled agriculture teachers thus represented the four school categories of public secondary schools in Kenya, namely; National, Extra-County, County and Sub-county schools. The agriculture teachers were proportionately sampled from the four school categories to give 4, 11, 15, and 121 agriculture teachers from National, Extra-county, County and Sub-county public secondary schools respectively. The sample had 77 males (51%) and 74 females (49%) agriculture teachers. From the sample, ten agriculture teachers gave consent to participate in the classroom observation exercise in which the researcher was a non-participant observer in an actual agriculture lesson. Among the respondents who were willing to participate, three focus groups comprising of 7-10 participants were formed and their discussions were used to gain more information on professional development for secondary school agriculture teachers.

V. RESULTS AND DISCUSSIONS

Results

The data collected was then analyzed using descriptive statistics; mean, mode and frequencies. The analysis gave the agriculture teachers perspective on professional development activities planned specifically for teachers of agriculture subject. The responses to the Likert-type items in the ATQ were assigned dummy values of 1- Strongly disagree, 2- Disagree, 3-Undecided, 4-Agree and 5-Strongly Agree. Table 1 shows the frequencies, mode and median of the responses given.

Table 1. Agriculture Teachers’ Responses to Items on Professional Development.

	n	Median	Mode	Frequency
I have had exposure to new teaching approaches through seminars organized for agriculture subject teachers	151	2	4	71
I attend workshops/seminars organized for agriculture subject teachers regularly	151	2	2	55
There are limited workshop/seminar availed to agriculture subject teachers	151	2	4	79
I have attended at least one workshop/seminar on technical help in teaching agriculture the last twelve months	151	2	4	58
I want to implement what I learnt in the seminars organized for agriculture teachers	151	4	4	68

When asked if they have had exposure to new teaching approaches through professional development activities organized for them, the ‘agreed’ response from the agriculture teachers had the highest frequency (n = 71),

meaning that gaps about appropriate teaching approach to use may have been addressed. Majority of respondents (n = 55) disagreed on the fact that workshops and seminars are organized on a regular basis which is supported by their agreement (n = 79) that there are limited workshops and seminars for agriculture teachers, but agreed that they have attended a workshop or seminar for agriculture teachers in the last twelve months (n = 59). They were also in agreement (n = 68) that they want to implement what they have learnt from the workshops and seminars. The results thus indicate that the agriculture teachers agreed with the statements 1, 3, 4 and 5 and they disagreed concerning statement 2.

In comparison, the findings from the ATQ concurred with the information collected from the focus group discussions. During the discussions, majority of the agriculture teachers who participated expressed that the workshops and seminars organized for agriculture teachers are rare and though majority said they have attended a workshop or seminar, the professional development activities are far apart. Some of the agriculture teachers said that the last time they attended a workshop or seminar for agriculture teachers was several years ago and a few have never attended any. They also expressed that the frequency of the seminars and workshops for agriculture teachers was too low and especially in comparison to other subjects like sciences and languages.

Discussions

During the focus group discussions, the respondents expressed their frustrations in not being exposed enough to workshops and seminars that would keep them updated on relevant agriculture information, better ways of teaching as well as forums where they can express or share the challenges they face in teaching the subject. The teachers expressed their concern that the only time agriculture subject teachers had been invited for a meeting is usually to discuss results for the national examinations or to communicate a new policy affecting teaching of agriculture. The seminars are usually a one-way communication but as the participants expressed during the focus group discussions, they long for a forum where they can share and discuss challenges in teaching secondary school agriculture, that is, they want to be 'heard'. This is in line with one of Knowles' readiness to learn principle of adult learning which declares that adults are ready to learn that which they need to know in order to cope effectively with life situations (Fernando and Marikar, 2017). The agriculture teachers expressed their desire to have professional activities where they can learn from experts and peers on how to keep on improving their teaching effectiveness.

Suggestions given are that professional development for teachers should be intentional, that is, linked to the broader vision of the teaching profession and also ongoing, meaning that it should not be a one-off activity but should be regular and frequent (Pitsoe & Maila, 2012). This is supported by Hunzicker (2011) who argues that effective professional development is anything that engages teachers in learning activities that are supportive, job-embedded, instructionally focused, collaborative and ongoing.

VI. CONCLUSIONS AND RECOMMENDATIONS

No matter the situation, PDT is critical to policy and curriculum implementation. Effective PDT helps teachers to understand and apply what they have learnt to their teaching. PDT is best directed to teachers' daily experiences and also aligned with standards and assessments. It is prudent to think of new approaches to PDT that will respond to the needs of both the agriculture teachers and agriculture students, for example, taking up new teaching approaches that will emphasis on knowledge construction rather than transfer of knowledge.

In conclusion, the PDT organized for agriculture teachers are not regular or meaningful enough for the teachers to benefit fully from them. Persistence of this situation of PDT implies that the poor performance of students in agriculture continues which demotivates the agriculture teachers and the vicious cycle continues. If the state of poor performance in agriculture subject persists, agricultural productivity may reduce and admissions into agriculture related courses in technical colleges and universities will dwindle. This is likely to impact negatively on Kenya's objective of achieving food security. The government of Kenya need to have well-structured PDT especially in the face of the changes that are taking place in the education sector.

The following recommendations are fronted from the findings of the study:

- Professional development activities should be continuous so that new knowledge and skills learnt can be reinforced for the agriculture teachers to 'get it' and apply it in the classroom.
- There is need to involve the agriculture teachers in planning especially in the needs assessment stage in order to know the pressing issues that require to be addressed.
- It is necessary to review and re-think how PDT should be structured and handled. It is of importance to embrace the principles of adult learning in order to ensure that the agriculture teachers benefit maximally from the PDT.

There is need for a dynamic, responsive and well-coordinated PDT as a prerequisite for the success of any curriculum.

Implications for Practice

The following suggestions may be considered in strengthening professional development for agriculture teachers in Kenya:

- Assess professional development needs and outcomes regularly in order to keep on improving on delivery of PDT and ultimately students' learning outcomes. To make PDT more effective, the 'needs' should include not just the intellectual and behavioral aspects but also attitudinal and emotional aspects.
- Policy makers to consider making enough funds available for a sustainable PDT, that will support collaboration, mentoring, coaching and use of technology.
- To increase the ripple effect of positive PD outcomes, there is need to identify and develop expert teachers in various learning areas who will act as mentors and coaches.
- Professional development should include all stakeholders for it to be more effective. The professional development activities should be offered to teachers along-side school administrators, policy makers, parents so that all operate within same concepts and practices.
- Planning of the PDT should have a participatory approach. Top-down approaches which focus on problems to be fixed, for example, compliance with school or national agenda and which often do not empower teachers to develop as learners are often ineffective.

'The quality of an educational system cannot exceed the quality of its teachers'

Muireann Sheehan & Peter E. Childs University of Limerick, Ireland.

REFERENCES

- [1] D. Ngugi, A. Isinika, A. Temu, & A. Kitalyi, (2002). Agricultural Education in Kenya and Tanzania (1968-1998). Regional Land Management Unit (RELMA), Technical Report No. 25.
- [2] K. Yasmeen, E. Abbasain, & T. Hussein, (2011). Impact of educated farmer on agricultural productivity. *Journal of Public Administration and Governance* 1(2), 158-164.
- [3] E. Kipkemei, M. Kipsat, T. Sulo, M. Korir, & L. Inyanje, (2012). The contribution of secondary school agricultural knowledge in farm business management to farmers in Uasin Gishu County, Kenya. *Agriculture and Food Science Research* 1(2), 33-37.
- [4] Republic of Kenya, (2005). Sessional Paper No. 1 of 2005 on a policy framework for education, training and research. Published by: Government Printers.
- [5] R.R. Roy, & U.K. Halder, (2018). Teacher Effectiveness: A self-report study on Secondary School Teachers. *International Journal of Research and Analytical Reviews*, 5(3), 914z-919z.
- [6] D. Hayes, (2000). Cascade training and teachers' professional development. *ELT Journal*, 54, 135-145. <http://dx.doi.org/10.1093/elt/54.2.135>
- [7] L. Darling-Hammond, M.E. Hyler, & M. Gardner, (2017). Effective Teacher Professional Development. Palo Alto: Learning Policy Institute.
- [8] OECD, (2009). *Creating effective teaching and learning environments*. First results from TALIS. www.oecd.org/edu/school/43023606.pdf
- [9] V.J. Pitsoe, & M.W. Maila, (2012). Rethinking continuing professional teacher development within the open distance learning framework. *International Journal of Technology and Inclusive Education (IJTIE)*, 1(1).
- [10] D. Sparks, (2002). Designing powerful professional development for teachers and principal. Published by: National Staff Development Council, Oxford, OH.
- [11] UNESCO (2018). Issues and trends in education for sustainable development. Published by UNESCO.
- [12] T.G. Roberts, & J.E. Dyer, (2004). Characteristics of effective agriculture teachers. *Journal of Agricultural Education* 45(4), 82-95.
- [13] UNESCO (2015a). Education for all 2000-2015: Achievements and challenges. Paris.
- [14] H.K. Bett, (2016). The cascade model of teachers' continuous professional development in Kenya: A time for change? *Professional Education & Training, Cogent Education*, 3, 1139439 <http://dx.doi.org/10.1080/2331186x.2016.1139439>
- [15] R.W. Kanyi, (2015). A study of teachers' strategies for coping with challenges of teaching integrated English in public schools in Mombasa County. (Doctoral dissertation).
- [16] A.W. Gathumbi, N.J. Mungai, & D.L. Hintze, (2013). Towards comprehensive professional development of teachers: The case of Kenya. *International Journal of Process Education* 5(1), 3-14.
- [17] UNESCO (2015b). Rethinking education-Towards a global common good. France.
- [18] Ministry of Education & Ministry of Higher Education, Science and Technology (2012). A policy framework for Education and Training: Reforming Education and Training in Kenya. Printed by Government of Kenya.
- [19] Republic of Kenya, (2017). Basic Education Curriculum Framework. Published by Kenya Institute for Curriculum Development.
- [20] G.W. Bunyi, J. Wangia, C.M. Magoma, & C. M. Limboro, (2013). Teacher preparation and Continuous professional development in Kenya.
- [21] Kenya National Examinations Council, (2019). *The Year 2018 KCSE examination report, Volume 2*. Kenya National Examination Council, Nairobi, Kenya.
- [22] V. Eleonora, (2003). Teacher professional development: An international review of the literature. UNESCO: International Institute for Educational planning.
- [23] J. Litster, (2016). Breaking barriers: Research report on 'The principles of adult learning'. Published by UCL Institute of Education.
- [24] S.Y. Fernando, & F.M. Marikar, (2017). Constructivist Teaching/Learning Theory and Participatory Teaching Methods. *Journal of Curriculum and Teaching*, 6(1), 110-122.
- [25] C. Chaulk, (2007). Constructivism, Learning theory, Instructional design. Model or information technology agent? Memorial University. Retrieved from <https://www.mi.mun.ca/users/cchaulk/reports/ChaulkFinal.pdf>
- [26] R. Komulainen, & A. Al Natsheh, (2008). Constructivism theory based learning: A total quality approach. Development project report for Jyväskylä University of Applied Sciences, teacher Education College.
- [27] K. Shikha, (2015). Andragogy: The adult learning theory. *Indian Journal of Adult Education* 76(2), 50-60.
- [28] J. Hunzicker, (2011). Effective professional development for teachers: A checklist. *Professional Development in Education* 37, 177-187. <http://dx.doi.org/10.1080/19415257.2010.523955>

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